



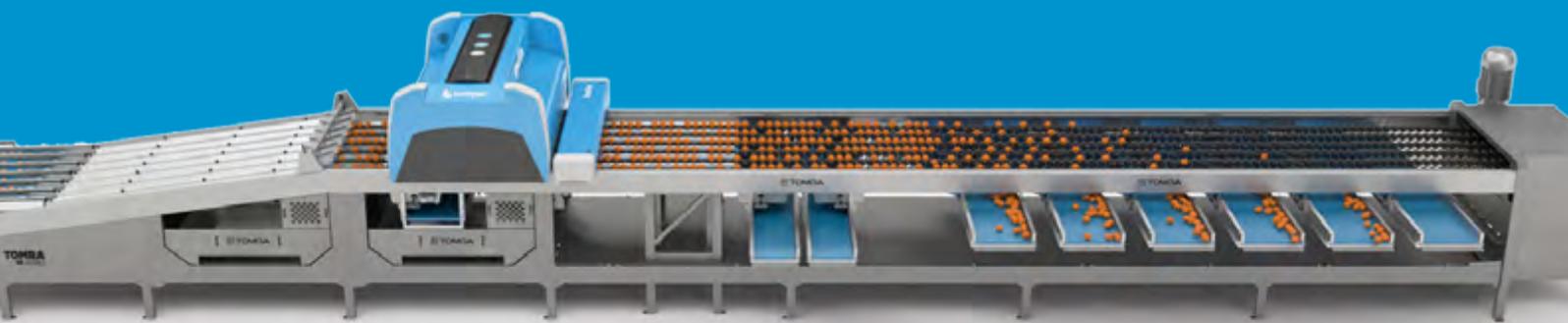
## Sharing knowledge

Pre-season forums in Queensland

P 6

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AUSTRALIAN

# Citrus News

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**Cover image:** Ainsley Emmerton, Quebec Citrus, Mundubbera, with Jose and Debbie Caamano-Bermudez. Julum Citrus, Mareeba, at Quebec Citrus. Debbie is the Chair of the FNQ Regional Advisory Committee and travelled south to take part in the Southern Queensland Regional Forum in March, and visit some of the district's citrus businesses.

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# Check in on your mates in another challenging year

There's no doubt as we navigate our second citrus season affected by the pandemic that there are a multitude of impacts and effects caused by government intervention and regulation aimed at controlling COVID-19 – both here in Australia and overseas in our markets.

Added to this, the impacts of geopolitical tension between the Australian and Chinese governments means confidence in that market is under pressure.

We value highly the trade that has been built to date in China and continue to see China as a significant market for Australian fruit.

China's appetite for Australian citrus meant that more fruit was sent there at the expense of growing volume in other markets. There's now opportunity to realise that potential.

Undoubtedly, given the circumstances, exporters will take every opportunity to grow volume in markets such as Korea, Vietnam, Thailand and Japan and even to reevaluate opportunity in the EU, UK and North America.

I believe Citrus Australia's role is to forge a way into South Asia's premium markets more rapidly than we had previously forecast.

We can do this through establishing government to government relationships driven by industry that look to address some of the key barriers to expansion of a premium markets like India and Bangladesh.

One such issue is the lack of appropriate cold chain infrastructure to handle perishable, premium products.

I am in discussions with our government here and also through Austrade in India to begin conversations with both the trade and government officials to see how we may address this issue.

During my 2019 visit to India, I found the market was open to importation of a range of quality and fruit types, including premium oranges and mandarins.

I feel there is a gap in our knowledge of the affluent regions of India, the progress in modern retail, the adoption of e-commerce and other areas, that will form part of our attempt to work into this market more rapidly.

Citrus Australia will be battling the Department of Agriculture, Water and Environment in the meantime as they have recently released a new Cost Recovery Implementation Strategy (CRIS) for horticulture exports.

In its current form, it will see the cost of many fees increase by as much as 100% over the next four years.

Citrus Australia has been clear in our advocacy to DAWE that these increases are poorly timed and unreasonable, and that greater transparency is needed on expenditure that is cost recoverable.

Minister Littleproud has final sign off on the CRIS and I will raise this with him at my next scheduled meeting in June.

You may have heard the Auditor General (AG) handed down a report about the government's ability to handle biosecurity noncompliance, it's fair to say they received a D minus.

Amongst a raft of findings, the AG said: "There are no documented arrangements to ensure the resources

allocated to different pathways or threats are proportionate to the risk posed."

Citrus Australia has long been critical of the efforts to intercept pests both at our ports and with travelling public at airports, especially the lack of effort to match the increase in containers and passenger numbers reported in the past decade.

Whilst investment has been made in x-ray equipment to improve rates of interception, it is in our view necessary to have more human resources in these roles to adequately address the risk and to send the message to the public that Australia takes border biosecurity seriously.

In what is already proving to be a challenging season, the Citrus Australia team is working hard for our growers in many areas, including labour shortages and market access.

However, there's one area that you as growers are best equipped to lend a hand, and that's in looking out for your mates.

I spoke recently with the founder of 'Are you Boggled Mate?', Mary O'Brien, who has been flat out around the country sharing her message of the need for blokes to support each other.

We are hoping to have Mary speak at some of our end of season regional forums in November but in the meantime, I encourage you to read the article on pages 18-19 for tips on how to check in on your neighbours and mates this year. ●

## Thanks to all members who have renewed and to our new members

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# Citrus Australia's succession plan sees new Chair elected

Citrus grower Richard Byllaardt was elected Chair of Citrus Australia following the peak industry body's annual general meeting.

Richard was elected Chair following Ben Cant's planned resignation after three years in the position. Ben has been appointed Deputy Chair as part of the succession plan.

Ben and Independent Directors Iain Evans and Greg Fraser were all re-elected at the AGM.

Richard has served on the Citrus Australia Board for four years, and served as Deputy Chair for the past three.

"It is a privilege to be appointed to this position and I would like to acknowledge the work of outgoing Chair Ben Cant and former Chair Tania Chapman. Their leadership over the past 10 years has been instrumental in building the technical capabilities of Citrus Australia that benefit growers nationwide," Richard said.

"I look forward to travelling to all our citrus regions – from Manjimup in south west WA to Dimbulah in Far North Queensland – and talking to growers to hear how we can address issues that would benefit their business.

"I hope my own experience as a grower, who has dealt with everything from planting trees through to developing customers in export markets, will provide some benefit in these discussions."

Richard was a co-owner and the former Managing Director of Seven Fields, and together with Greg McMahon grew the company to become one of the largest citrus growers in Australia with sites in Sunraysia, Queensland and the Northern Territory.

As head of growing and marketing, he travelled regularly to key export markets, establishing a network of people around the world in the citrus industry. He said maintaining and growing current export markets would be a key focus.

## Key points

- ❖ Richard Byllaardt, Chair
- ❖ Ben Cant, Deputy Chair

"I'd really like to see Australian citrus grow in some of the smaller markets across Asia, such as Vietnam, Korea, and Indonesia, and to see growth in premium fruit exports to South Asia, particularly India.

*"Australian citrus is present in these markets, but each of them have such huge potential for growth."*

"The key to growing these markets is finding and encouraging the middle class to purchase Australian citrus. I'd like to see our exports grow in these markets over the next five years."

Ben congratulated Mr Byllaardt on his election and thanked him for his support over the past four years.

Citrus Australia has grown from a concept to a respected facilitator of R&D for growers, and a leader in market access and now a strong advocate for growers' rights to all levels of government," Ben said..

"Farming has always been a multi-faceted business and this is increasingly so. I'm proud that Citrus Australia reflects this in its representation of growers at all levels – by leading where R&D is needed, and also what governments should prioritise.

"We have faced many challenges in the past three years, in particular the citrus canker outbreak in the Northern Territory and the impacts of the pandemic on industry.

"It has been an honour to lead an organisation that always puts its members and growers first." ●



Richard Byllaardt, Chair, Citrus Australia

# Queensland government asked to fund three new citrus specialists

The Southern Queensland Regional Forum in March included a field day component held at Ironbark Citrus in Mundubbera, owned by Allen and Susan Jenkin, followed by further presentations at the Mundubbera Bowls Club. More than 50 people attended.

The day was attended by Ebony Faichney from Queensland Department of Ag and Mareeba growers Debbie and Jose Caamano-Bermudez. Debbie is the Chair of the FNQ RAC. Cris Bryant, the Chair of the newly renamed Southern Queensland Regional Advisory Committee (SQRAC), was a guest at the FNQ Regional Forum a fortnight earlier.

“We invited them down to get a bit of cross-pollination of regions, so they can see not only what happens in other regions but what other committees bring to their forums,” Citrus Australia CEO Nathan Hancock said.

The field day included a demonstration on improving spray efficiency and another on pest detection and management.

“There are softer predatory mites and predatory insects that can do a great job in assisting growers control

## Key points

- ❖ Citrus specialists needed
- ❖ Update on new chemistry
- ❖ IPM increasingly important

pests without the use of agchem,” Nathan said.

Cris said the forums are relevant because local growers form the topics and agendas. Citrus Australia then provides support in accessing speakers and providing additional information.

“We looked at some impressive spray demonstrations and the science behind it, which provided additional information to consider. We also gained insight into new chemistry and new research being conducted

in all parts of Australia, including Queensland, which will be relevant going forward in terms of how we manage things like MRLs which then lead into our export abilities and capabilities and how we control and manage pests on our farm,” Cris said.

Following up on grower concerns at the Southern Queensland Regional Forum, and from the SQRAC meeting, Nathan and Cris met with Queensland Agriculture Minister Mark Furner to request three additional government-funded citrus specialists in the State to support the emerging citrus industry.

“In the past decade, the Queensland citrus industry has lost experience in the areas of pathology and entomology, as well as horticulturists, physiologists and local Industry Development Officers, to the point where there are effectively two positions focussed on citrus in the State,” Nathan said.

“This loss of expertise has coincided



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*FNQRAC Chair Debbie Caamano-Bermudez with her husband Jose, Sue Trott and Mark Trott, Luscious Citrus, Mundubbera; Citrus Australia CEO Nathan Hancock, Laura Parr; Glengrove Orchard, Gayndah; and Ebony Faichney, DAF. The Citrus Australia team, along with Debbie, Jose and Ebony, conducted member farm visits before the SQ Regional Forum.*

with the emergence of several issues that may have been avoided, or their impact significantly reduced, had a solid base of technical expertise been maintained.

“The Queensland citrus industry needs to generate a core of expertise on which it can depend not only for the research but for advice as emergencies and new problems arise.”

Citrus Australia has subsequently written to the Minister asking for an opportunity to present further information on the specific needs of the industry and the associated benefits. ●



*Delegates at the Southern Queensland Regional Forum.*





# Pest detection and chemical application a focus in FNQ

The 2021 Far North Queensland Regional Forum was held on Wim and Demi Van Niekerk’s farm at Dimbulah, outside Mareeba, in March with 80 people attending.

The field day component comprised demonstrations of effective spray application, as well as pest and disease detection.

Mareeba citrus grower Debbie Caamano-Bermudez, Chair of the Far North Queensland Regional Advisory Committee, said pest and disease was a priority for FNQ growers and a focus for the RAC.

## Key points

- ❖ Pest and disease focus
- ❖ FSB, mites an issue
- ❖ Too much regulation

“Biosecurity threats in the Cape York Peninsula have the potential to significantly impact our local produce and we’re pleased to work with Citrus Australia, which has placed top priority on surveillance,” Debbie said.

“Other priorities for our committee include enhancing biosecurity best practice, plant health, optimising chemical application for pests, particularly FSB and mites, as well as labour shortages in our remote location. These were all addressed at the Forum and it was good to have so many local growers in attendance.”

Wim and Demi grow lemons and limes in this fast-growing region.

“FNQ is fast becoming a major growing region for citrus in Australia and days like this are beneficial for everyone involved,” Wim said.

“It was great to have guys come in that have R&D and explain how we can improve through implementing new technology and grow our industry.”

Citrus Australia CEO Nathan Hancock said regional forums are important for the Citrus Australia team, providing another opportunity to speak with growers firsthand.



Citrus Australia’s Kerry Thompson and Mara Milner with Gina Galati, Galati Citrus, (centre) at their packing shed in FNQ.

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*“In particular, it became very clear to us that the amount of auditing and regulation put onto growers at a time when it is hard to find workers and other market pressures has become unbearable.*

.....

Citrus Australia will continue to advocate state and federal governments on behalf of our members for removal of duplication in regulatory processes and reduction in audit costs. ●



*John Golding, NSW DPI post-harvest specialist, Giovanni Galati, Galati Citrus, and Cris Bryant, Blue Cow Citrus and Southern Queensland Regional Advisory Committee Chair at packing shed. Citrus Australia team members visited Galati Citrus whilst in FNQ for the FNQ Regional Forum (below).*

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# Hitting the road to share latest research with growers

Citrus Australia and NSW DPI held an R&D Roadshow in the tri-state area in April, delivering research extension and providing updates on research and development projects that are funded by the citrus levy and managed by Hort Innovation. More than 250 people attended the event.

Each grower pays an R&D levy on every tonne of fruit grown. This is collected by a government agency and invested by Hort Innovation.

Service providers such as Citrus Australia and NSW DPI submit project applications in a competitive process to deliver R&D projects.

Management at Citrus Australia and NSW DPI recognise the importance of sharing the latest information and outcomes of the R&D projects with growers.

Working with the Riverina Regional Advisory Committee, which comprises local citrus growers, a program of speakers and topics for the tri-state area was developed.

The Roadshow was an opportunity to discuss R&D that can be picked up and used today, R&D for adoption in the near future and some longer term R&D projects that could yield results in 10+ years.

## Key points

- ❖ 250 attend roadshow
- ❖ Growers lead agenda
- ❖ Robotics peak interest

Some of the key issues discussed included:

- Post harvest fungicide resistance, testing options and sanitation practices
- Varietal information, assessments of new varieties which help growers make decisions on varietal mix for their orchards
- Citrus tree census which highlights increased area of production in key varieties, providing growers with data for business decisions



Presenters also discussed what the long-term future of the citrus industry might be, where orchards could be grown on a 2D plane on trellis so that robotic pickers could efficiently harvest fruit reducing pressure on labour and reducing cost.

Presentations from the Roadshow are available on the Citrus Australia website at [www.citrusaustralia.com.au](http://www.citrusaustralia.com.au)



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# Trellis systems could pave way for robotic harvesting

NSW DPI is growing citrus on three different trellising systems in a bid to reduce vigour, increase flowering and fruit production, and potentially open the way to robotic harvesting.

The navel trellis trial, part of the national tree crop intensification in horticulture project, is being conducted at NSW DPI's Dareton research centre. Citrus development officer Steven Falivene provided an update at the R&D Roadshow.

This experiment is comparing different trellising systems to maximize the capture of sunshine.

"We're comparing parmata, aspellia and cordone trellising systems where we'll be quantifying the production, canopy development and cost of installation," Steven said.

"We hope this work will reduce vigour, increase flowering and increase fruit production."

Steven said citrus was being trialed on a trellis structure for three reasons:

- Yield
- Harvest efficiency and safety
- Robotic harvesting

As a comparison, Steven said an untrellised section of the NSW DPI site had navel trees planted on a 5 metre spacing. It is constricted and overcrowded with a shaded canopy and narrow tractor access. The trees were regularly hedged and yields are 15-30 tonnes/ha.

"Trellising is one strategy to improve light penetration into the canopy that will produce more fruitful wood and hopefully raise yields," Steven said.

## Key points

- ❖ Three systems trialled
- ❖ Increase production
- ❖ Assist robotic harvesting

Trellising will also improve harvest efficiency and safety, as it will enable pickers to use a stable step up platform ladder.

Labour shortages, work health and safety issues and advances in technology mean robotic harvesting is more viable - trialling the trellis systems will provide insights in to the best systems for robotic harvest in the future.

*"Robotic harvesting is already being trialled in citrus but the robots are unable to pick the citrus effectively within the canopy."*

"The trellis structure will enable the robot to pick all the fruit efficiently and effectively."

Researchers hope that benefits of the trellis structure will include improved light penetration for even colouring of fruit, reduced albedo breakdown, reduced fruit blemish and improved

spray penetration.

The first treatment is the aspellia method, where the team will attempt to train the trees with a central single-leader limb growing upright from the main trunk, and bend and train laterals from the central leader horizontally along the wires.

The second treatment is cordone, where they will train multiple vertical limbs, grown about 30cm apart from the first horizontal lateral on the first wire.

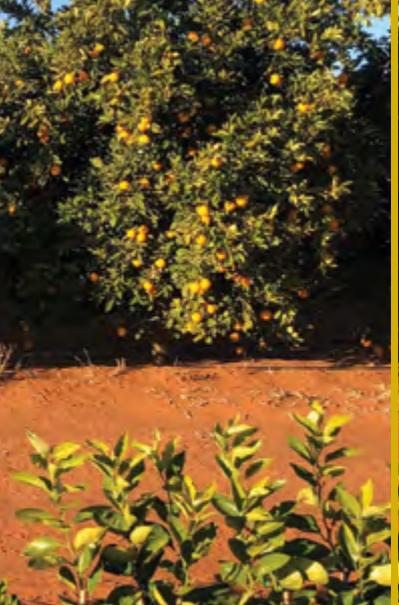
The last treatment of the replicated trial is palmate, where the team will attempt to fan out all the branches all directions with some growing along the wire, some crossing the wire diagonally. This training style is expected to fill the trellis quicker than other treatments.

"We will be monitoring all labour and physical inputs and yield outputs of the trial, developing financial models to help determine if trellis production is a viable option for Australian citrus," Steven said. ●



Growers inspect the the trellising trial site at the NSW DPI, Dareton.





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# R&D ROADSHOW



## GALLERY



# More interest in new varieties but which is best for you

There are more new varieties of commercial citrus available to Australian growers than ever before, and more interest in growing them.

NSW DPI has been evaluating new varieties of citrus in Australia at its Dareton research facility for more than 20 years.

In the past three years, there has been an increase in people visiting the facility in pursuit of new varieties, with 300 people visiting in 2019 and 285 the year before.

Research Horticulturist for NSW DPI, Dr Dave Monks said he is evaluating new citrus varieties against a criterion so growers can make an informed decision about what to plant.

“We’ve recently had 6 or 7 new ones come into the property, and I am propagating them in the hothouse so I can get budwood to top work it,” Dave said.

## Key points

- ❖ Evaluate potential markets
- ❖ New navels, mandarins, lemons

“In the last four or five years we’ve probably had 15 new varieties top worked into the block and I am evaluating those fruit now.”

Dave looks at a collection of characteristics in new varieties including seed count, colouration, size, brix, acid and thickness of the rind.

Dave stresses to growers selecting new varieties to grow in their orchards to be conscious of the impact on their farm’s bottom line.

“You can’t just sell fruit that you like, or that grows well on your farm, you need to grow and sell fruit that your market takes, that your consumer likes.”

Many growers are looking for a variety to fill any gaps in their picking season however, Dave stresses there needs to be a market for that fruit to go to.

“Things you should consider when looking at a new variety, not just fruit quality, and not just its maturity window but who will you sell that fruit to, will your packer be able to take it at

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## New varieties tasted at the R&D Roadshow



the time you need to pick it, will you have pickers available at the time you need to pick it.

“The questions that are all part of running a successful profitable business, it’s not just driven by fruit.”

At Citrus Australia and NSW DPI’s Citrus R&D Roadshow in April, Dave introduced growers to eight new varieties currently being evaluated in Dareton.

Attendees at Dareton taste-tested the M4 mandarin, which is a small early-mid mandarin, low seeded, and in maturity around April in the Sunraysia area.

“There’s been a very small commercial interest in them but we are continuing to learn more information about it,” Dave said.

Two versions of the Mojo Mandarin, a bud sport and limb sport were also on display.

“They are a traditional, flatter piece of fruit which is a late-April maturing variety.”

Royal Honey Murcots (RHM) from Ironbark Citrus in Queensland is a new variety still under evaluation, although not in season to taste.

“This will be our fifth season with it. It has a balanced acid profile at full colour, but drops to low acid quickly during the maturity window.”

RHM recorded for the first three years had a moderate seed count, however in its fourth season the seed count was zero. Dave will continue to evaluate the fruit.

*“It takes two seasons of yield data to make a hard call on seed quantity and that’s only in my environment in my block,” Dave said.*

There are around 90 varieties on the Dareton block alone with 50 currently under close evaluation.

The Honeybee mandarin is in its first year of yield.

The new variety mid and late-season navels are Palmer (Washington), Witkrans (late) and Glen Ora (late).

The Italian Lemon was also taste-tested in its first year of yield, and there has been some interest from growers.

This year, Dave has budded for multiplication six new varieties:

UFSunrise mandarin, HBI01 and HBI05 mandarin, Shiranui, (Public) mandarin/dekapon and BA001 lemon.

Dave welcomes any growers seeking advice or who are interested in the varieties available.

“I am available to contact and you’re always welcome to come to visit our site to see the work that we do in person.

“My outputs are available online on the NSW DPI website. We released 40 updated fact sheets last year.” ●

To find out more about new varieties, or to visit the Dareton NSW DPI Institute please contact **Dr Dave Monks** on 03 5019 8400, or email [dave.monks@dpi.nsw.gov.au](mailto:dave.monks@dpi.nsw.gov.au).

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# Are you bogged mate?

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By Mary O'Brien

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I spend a lot of time raising awareness about spray drift but recent events have compelled me to talk about something that disturbs me even more than spray drift.

I have spent my whole life working in rural and remote Australia and always around country blokes; working with them, for them, and beside them.

My father was one, my brother is one, and most of my dearest friends are country blokes.

I have always worked in male dominated occupations and that certainly doesn't make me special but I believe it has given me a good understanding of rural men and it has definitely given me a deep and profound respect for them.

So when I see country blokes facing challenges like never before, I need to say something because I know none of them will.

I'm talking about rural men's mental health and more specifically, rural male suicide.

Yes, that mongrel black dog that sneaks in when you least expect it, grabs all of your rational thoughts, buries them somewhere you can't find them, and without you or those close to you noticing, it gradually pulls you into a hole, a bog hole.

As I recently watched a massive line of four-wheel drives file slowly in and park reverently outside a small country town church, something in my heart changed forever.

They emerged, dressed in their Sunday best; some of these blokes I didn't even know owned a tie.

It was a really busy time of year but they stopped all of those important farm jobs to come and say goodbye and pay their respects to a mate who decided to hand in his time sheet way too early.

As the minister lamented quotes from the bible about 'a time for everything; a time to be born and a time to die, a time to plant and a time to reap', you know the one.

All I could think was, these are farmers, no one knows better than this crowd about planting and reaping but I'm stuffed if I could find any reason for this man to die at his own hand in the prime of his life.

And judging by the faces on the country men around me, neither could they.

The statistics are everywhere, Australian males between 15 and 45 years of age are one of the highest risk categories for suicide.

Men are 3 to 4 times more likely to take their own life than women and the further you move from the coast into regional, rural, and remote Australia, the more that figure climbs. Why? Why are my country heroes cashing in their chips early?

The experts will tell you that that it's due to reasons like 'the isolation', 'men don't talk about emotions', 'they don't know how to express their feelings'.... Well I call bullshit!

I don't have a psychology degree of any kind, I'm not a doctor of any type, I haven't studied mental health at all but I do know country men.

And this is what I do know... country men are the toughest, hardest working, funniest, most sincere, totally dependable, thoroughly genuine people you will ever meet.

So don't sit in your university office in the city and tell me that you know rural men.



As a rule I don't think rural men are challenged by 'the isolation'. I think most actually thrive on it, they enjoy the peace and tranquillity that surrounds them.

They enjoy the time they spend tending the earth and it's creatures. They are nourished and challenged by nature and all it's hardships.

Everyone needs interaction with other people but isolation only really becomes a major problem when coupled with depression.

True: rural men 'don't talk about emotions', that's not how they are wired and they never will be so stop expecting it of them.

True: rural men don't 'express their feelings' in the same way that inner city society expects them to.

Let's face it, rural men are never going to be like their soft pink-handed city counterparts (no disrespect to city blokes intended, purely a comparison!).

Country blokes aren't going to join a men's group or catch up with mates to discuss their feelings, relationships, or finances over a double decaf latte at some hipster café that has kale on the menu. That's not how they roll.

Rural men let off steam (release emotions) differently. They play footy, go camping, shooting, fishing, ride horses or dirt bikes, go water skiing, have a few beers with mates, they might even throw a few harmless punches with a mate after too many beers or on the footy field.

These are just some of the release valves for rural men and they need to be supported and encouraged to do whatever it is that gives them release. Don't let the pressure build up inside.

There are multitudes of factors that lead to depression in rural men - droughts, floods, rising input costs, falling commodity prices, pressure from banks, family pressure, feeling compelled to stay on the farm, etcetera.

Today rural men and particularly farmers have additional pressures to previous generations. They are expected to be soil scientists, agronomists, hydrologists, accountants, meteorologists, chemical experts, mechanics, engineers, marketers, environmentalists and the list goes on.

Add to that a society that tells them they need to share 50% parenting of their children, support their partner in her career, share the housework, and all the other gender equality stuff.

Before anyone yells at me for dragging women back to the 1950s, I'm merely comparing the dramatic change in just one generation. Sorry fellas, you aren't getting out of cleaning the dunny that easily!

The suite of skills needed to live and work in the rural sector has never been greater and yet the divide between city and country has never been bigger.

Never before has agriculture been so scorned by city dwellers who view farmers as environmental vandals and poisonous food producers.

And if all that isn't enough pressure for rural blokes, what about adding a sick child, the loss of a loved one or a marriage breakdown into the equation? I don't think we need another study to find out why rural men are struggling.

Millions of dollars are spent every year on rural men's mental health, there are endless support services available, and yet the suicides keep happening.

I certainly don't have the answers but I know that most rural men will not seek help or talk to someone when they are struggling.

I like to use analogies to explain things so here is my spin on it.

We have all been bogged at some point. It might have been just a sticky patch of the road or paddock where the vehicle stopped moving, you panicked, threw it into four-wheel drive and got out.

Maybe you needed low range, maybe you had to winch yourself out, but you got out, you got through it. But what happens when you get properly bogged? When it's down to the running boards, sitting on the chassis, you are not getting out of this one easily - that's the kind of bogged I mean. So what do you do? Do you burn the vehicle? Hell no!

When you have finished swearing, praying and walking around in circles scratching your head; you know this is as bad as it gets, you are going to have to ask for help.

Oh the shame! The whole district is going to be laughing about it, your mates will bring it up for years (probably ever!). You don't want anyone to know but you have to get help.

It's a bit the same with depression, but it's not funny like when you get bogged in mud. Most of the time we get ourselves through the rough

patches in life but when depression strikes, you need proper medical care to get you out of this bog hole.

The more bogged you get the harder it is to ask for help. In your head, you will justify to yourself with a million excuses why you can't or won't ask for help.

None of those excuses are any comfort as I watch a grieving widow, a young family and a whole community grapple to find answers and repeatedly ask 'why didn't he tell someone'.

You don't want anyone to know that you aren't coping and you don't want to talk to some counsellor that doesn't know you, I get that.

But please, for the sake of your family and your precious rural communities, reach out to somebody, anybody, your partner, your mates, or even me. We will support you. You are only bogged, it's ok, we all get bogged but most importantly, you can definitely get out of it.

Don't destroy your vehicle just because you are bogged to the ass. Tell someone you are feeling bogged. If your son was struggling, would you want him to ask for help?

I promise you there is always a way out of the bog hole and there are plenty of people ready to help you. Don't choose a permanent solution for a temporary problem. We have already lost too many good men.

.....

This article was written in February, 2018 by Mary O'Brien, the founder of Are You Bogged Mate? It has been reprinted with permission. Are you bogged mate? is all about helping country blokes talk about mental health and suicide while spreading awareness about depression in the bush. You can find out more at [www.areyouboggedmate.com.au](http://www.areyouboggedmate.com.au)



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# New addition to the Silvan Supaflo Range

Silvan Australia has just released the latest addition to its Supaflo orchard and vineyard sprayer range with the high capacity 5000L Supaflo now available.

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Key features of the 5000L Supaflo are a fully galvanised steel chassis, choice of Comet diaphragm pumps depending on the application, suspension axle with flotation tyres and electric controls with in-cab pressure adjustment.

Options include Bravo 180S spray rate controller, dual spray lines for greater droplet size control and the SCRAM Jet or AVO Jet auxiliary spray units that are designed for spraying very tall trees in conjunction with the Radak conveyor.

Silvan has also taken the opportunity to introduce a 1000mm fan on all Radak conveyors for greater performance. This is a further response to customer needs and understanding the challenges they face in managing pests and disease.

Silvan Australia's spraying specialist Gavin Wheatcroft says that the introduction of the new 5000L Supaflo is designed to help growers further improve efficiency in their spraying operations.

"In developing the 5000L Supaflo we have taken on board feedback from orchard owners and managers across Australia.

"Everyone in the field is driven by improving efficiency and productivity across their entire operation and we believe that the Silvan 5000L Supaflo and new 1000mm Radak fan have the potential to meet today's demands for efficient and high quality orchard production" Mr Wheatcroft says.

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# CB and Premier Murcotts “tick a lot of boxes”

## Key points

- ❖ Two new varieties
- ❖ Visually appealing
- ❖ Different maturity windows

Two new varieties from the National Citrus Breeding Program were showcased on June 1 to growers in Queensland for the first time.

Roughly 20 growers attended the display held on Nick and Deb Ulcoq’s orchard to see the five-year-old Premier Murcott before harvest.

The soon-to-be-released Central Burnett (CB) Murcott was also under inspection for growers who attended.

CB Murcott was named to acknowledge the Central Burnett growers who invested additional and voluntary levies into the breeding program over 20 years ago.

The Premier Murcott was named because it is the first released variety from the Diploid Breeding Program.

Committee Member and DAF citrus breeder, Malcolm Smith said they think they will be a productive variety with a palatable taste.

“Our two breeding objectives have always been to produce fruit that looks very good, it’s got to be visually very appealing, and it also got to taste very good.

“These two new varieties address those two very basic issues,” Malcolm said.

The two varieties have different maturity windows with the Premier Murcott mid-May to the end-May and the CB Murcott in July (in Queensland).

Malcolm said the varieties will also satisfy Australian domestic consumers as well as export markets’ needs.

“We certainly think they tick a lot of boxes at this point and that’s why we wanted the growers to be able to see them.

“The main purpose of the display was to allow growers to make up their minds.”

Both varieties are low seeded with the Premier Murcott already planted in commercial settings while the CB Burnett was only released over two weeks ago.

If you would like to know more about the Premier and CB Murcott, or would like to book an inspection, please contact Malcolm Smith by emailing: [malcolm.smith@daf.gld.gov.au](mailto:malcolm.smith@daf.gld.gov.au) ●



Grower Nick Ulcoq and citrus breeder Malcolm Smith at the recent orchard display of the Premier and CB Murcotts.



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# Bec Grant ready for new challenges that await

Bec Grant started at the bottom and worked her way to the top, transferring her management skills from viticulture to citrus.

## Southern Cross Farms

Bec started her citrus journey at Southern Cross farms in 2017, working on a property near Nangiloc.

After 3 months Bec was promoted as Operations Manager and after 15 months she became the Business Manager for Sunmar Orchards.

Bec now manages two properties for Southern Cross Farms - Hillston Citrus at Hillston, in NSW's Riverina; and Sunmar Orchards in the Sunraysia district.

This is Bec's third harvest with Sunmar and she has been working at Hillston Citrus since August last year.

At Sunmar, Bec manages three farms, roughly 130 hectares of citrus with varieties of navels, mandarins, tangos, tangelos and cara caras. At Hillston she manages roughly 315 hectares with similar varieties.

## Key points

- ❖ Managing three farms
- ❖ Worked across commodities
- ❖ COVID still an issue

## Before Citrus

Before transitioning to citrus, Bec worked for five years – first as an Operations Supervisor then Farm Manager – for Macquarie Ag, holding the role when they were bought out by Duxton Vineyards.

She managed two large-scale properties – one of 935 hectares and the other 800ha.

But Bec's background in agriculture extends beyond just citrus and grapes.

"I left school; I always liked the farm life. My parents owned a hobby farm and that's sort of where I got started," she said.

Bec started working on beef and cattle/broadacre properties around Dubbo and Gulargambone before moving into table grapes in the NT. Her two daughters were born in Alice Springs.

Slowly from there, Bec 'climatised' and made her way back to NSW, staying in the table grape industry for 6 years before moving on to wine grapes, and now into citrus.

"I started more or less at the bottom again once changing over to the citrus industry and worked my way back up into management," she said.



*Business Manager Bec Grant at Hillston Citrus, managed by Southern Cross Farms.*



Southern Cross Farms have moved to a MAIT drip irrigation system (above and right).

### Women in Agriculture

Bec says agriculture can be a male-dominated field and women in management positions, particularly in agriculture, are rare but she would like to see more women step up.

“You’ve just got to be cut out to do it and I think being in the farming industry for 20 years or more now, I still feel you’ve always got to prove yourself.

“That’s how I’ve been brought up and to get the respect of everyone you’ve just got to work hard at it!”

### Irrigation and drainage management

The majority of the farms Bec manages have transferred to the MAIT drip irrigation system. Also converting some low-lying sprinkler blocks to drip.

“The reason why we converted those three blocks to drip from low line sprinkler was that the land in that area was undulating.”

With the low line sprinklers Bec said water was prone to sitting in lower and flatter areas of land creating pockets of water.

Bec says the MAIT irrigation system is an easier program to use and less complicated to teach to employers and so far has worked well.

Bec has also been working with management and contractors focussing on fixing some of the drainage issues where the majority of her Afourer mandarins grow.

“We spent probably the last 12-18 months looking at installing more drainage over there to remove any excess water that may be sitting in the water table.

“The trees are starting to come back now; it’s starting to have a flush so that’s a good sign but it won’t be for another two or three years for those trees to start to produce fruit again.”

### Covid-19 Management

Bec says border closures caused some inflexibility around accessing seasonal workers last year but they still managed to get their fruit picked.

“We were fortunate to have pickers on the same side of the border that were picking so we were lucky,” she said.

“It certainly slowed the picking down but it never stopped it because we just kept going but I think we’re going to have probably similar challenges this year.”

Further stress was added in the pandemic trying to keep pickers around throughout the duration of the harvest but Bec says that’s the ‘beauty of the citrus industry’.

“Citrus is a bit like wine grape harvest. It starts off slow, then boom you’re straight into it for the next four or five months and then it slows down again towards the end of the season.

Southern Cross Farms put in place a number of policies and procedures to combat Covid-19 last year such as daily temperature checks at the gate, hand washing facilities, sanitizer, social distancing and hygiene practices.

Bec is moving into the new season with the same precautions to the pandemic as last year but says it’s harder to implement Covid-19 rules now that people are relaxing with less restrictions.

“With Covid still around we still need to be careful. We still need to do temperature checks because everyone’s out and travelling now, so we don’t know who’s who, where they’ve been.

“We all have to take those precautions and we just do what we’ve been doing for the last season”. ●

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# Investment in business management and technology underpins Gill Farms growth

Gill Farms started in 2005 with just 14 hectares of almonds but adapting to industry and keeping an open mind has turned this family farm into a 1000 hectare business.

Born in India, Billa Gill farmed wheat, rice and maize before migrating to the Middle East where he worked in construction. Unhappy there, he made the leap to New Zealand where he continued working in agriculture and invested in a cattle farm. In 2005, Billa decided to make another leap but this time to Red Cliffs, buying himself a 14-hectare almond farm.

But when drought hit, his business started going backwards and it wasn't until 2011 when he brought his first piece of land in Iraak that things started to turn around.

Finance and Operations manager, and son of Billa Gill, Hardeep Singh said the farm grew 'little bit by little bit' until they reached to where they are today.

"Every scenario has an opportunity so you should always be looking out to see what opportunities there is in any circumstance," Hardeep said.

## Key points

- ❖ Establishing new structure
- ❖ Investment in staff
- ❖ Planting new varieties

Now, Gill Farms comprises approximately 1000 thousand hectares of land with 30 permanent employees and they're currently on the path of transitioning their family farm into a well-structured family business.

"We talk about industry but a lot of growers don't spend time on the business side of things as well so we're putting a bit of emphasis on there as well."

"Its about sharing a bit of the work load and making sure that were not being left behind in terms of what is

good future business management," Hardeep said.

Gill Farms has roughly 200 hectares of citrus planted with another 65 going in the next two years. They plant a combination of varieties including Lane Late Navels, Washington Navels and a little bit of Lengs, and Navelinas. They are also planning on having a crack at the new Ruby GS variety.

"We really don't want a one hit wonder variety, you make good money for two years and then you're pulling it out another few years, so its gotta be solid," Hardeep said.

Hardeep also explained the varieties were selected to keep pickers working throughout the season.

"The aim was that when the pickers rocked up to do the Navelinas in May they stayed until we finished our Valencias in October as well so there's no opportunity for the pickers to go



*Danny and Hardeep Singh with their father, Billa Gill.*



to another farm for a short period and then we could potentially lose them," he said.

At the moment Gill Farms use a MAIT irrigation system, Hardeep said they're always looking into investing into irrigation and fertigation infrastructure technology, adapting and changing to what best suits their farm so year in and year out they can improve their systems.

"We try to get all the aspects on screen so we can see the flows and the pressures at every valve which is

out there rather than going around and cleaning every filter. That can save three hours a day."

Gill Farms is also excited about some future technology, specifically new developments in automatic sprayers that could potentially save time and money.

"New ideas, new technology, new growing practices, new chemicals and the most efficient way to do whatever you need to do to achieve the right outcomes."

Gill Farms is also keeping a close eye on nutrition and crop manipulation. They're cautious how the industry might be changing in the future and how they can prepare for those changes.

"I think you have to be ready and up to date to new thought processes around nutrition and all the crop manipulation type, so you have to be really up to date with that.

"Especially, I think the new thing that they will have to get ready for is with the pest management, there's a lot of the chemistry being removed from other markets, so you really have to get up to speed with that," Hardeep said.

Despite these modern changes, Gill Farms is still very much a family farm. Hardeep said 'dad's still the boss' and they're always seeking input from their employees and keeping an open mind to changes.

"I think we're very lucky in this area and there's a lot of good practices around which a lot of other industries and countries will be looking at, so yeah these guys are doing a pretty good job." ●

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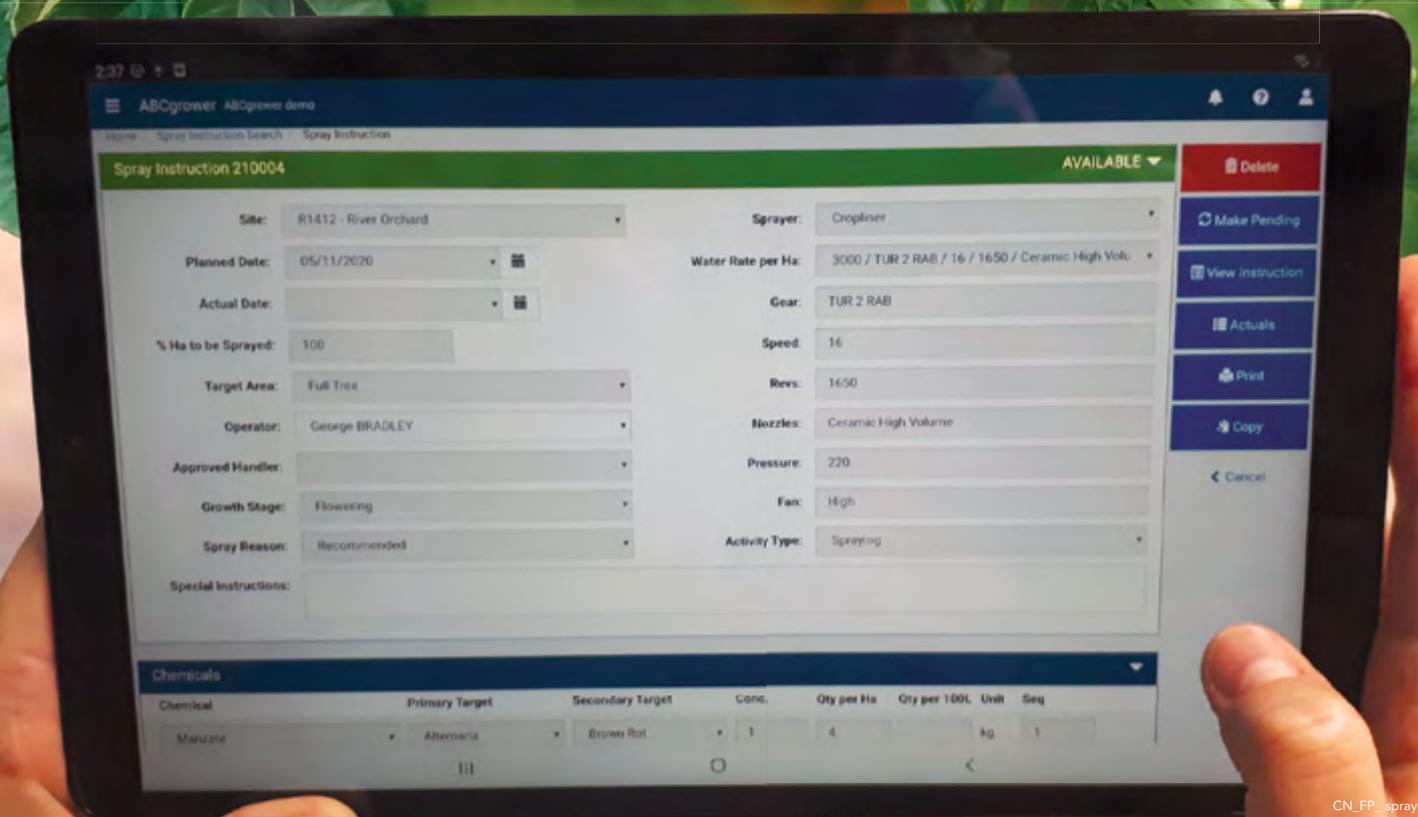
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% Ha to be Sprayed: 100 Speed: 16

Target Area: Full Tree Revs: 1450

Operator: George BRADLEY Nozzles: Ceramic High Volume

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Growth Stage: Flowering Fan: High

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Chemical	Primary Target	Secondary Target	Conc.	Qty per Ha	Qty per 100L	Unit	Seq
Manzate	Alternaria	Brown Rot	1	4		kg	1

# Keeping watch on 10,000km of northern coastline

Northern Australia has roughly 10,000km of coastline between Broome and Cairns and it is the Northern Australia Quarantine Strategy (NAQS) that plays a critical role in protecting Australia's citrus industry.

NAQS - an operational group within the Biosecurity Plant Division of the federal Department of Agriculture, Water and the Environment (DAWE) - provides early detection for plant and animal pests and diseases.

NAQS Senior Entomologist Dr David Britton and colleagues conduct surveillance for exotic agricultural insect pests in the north to provide early warning for Australian agriculture and assist in responding to these pests by agreement with relevant state and territory authorities.

"Because of our relative isolation Australia is largely free from a lot of significant pests and diseases, but when you get up to the north, we aren't all that isolated," Dr Britton said.

"We are really close to PNG [Papua New Guinea], and the islands in Torres Strait could potentially act as stepping-stones for exotic pests and diseases to get across to the mainland."

Plant diseases and pests can enter northern Australia through pathways like human movement, transportation of goods and via natural pathways such as wind, tidal movements and animal migration.

"In the north, one of the risks of greatest concern is wind-assisted dispersal," Dr Britton said.

"When we get into the northern wet season we experience north-westerly 'monsoonals' that blow across PNG and Indonesian West Papua, potentially carrying pests and diseases that we don't have in Australia, into Torres Strait and Cape York.

"That's probably the most significant pathway in Northern Queensland, although similar pathways are known in the NT and WA."

These seasonal weather events usually start around December and carry through until May.

Dr Britton said that's when they start to see detections of pests and diseases in Torres Strait.



*Dr Britton*

*"This is a definite event that happens every season, but the extent of the risk is quite unpredictable because we don't always know what's happening in PNG and western Papua."*

"They don't actively use a lot of pest control in those areas, so it's unpredictable as to how many and what sort of pests we will see blown into Torres Strait each year."

### **Fruit fly traps**

Dr Britton said NAQS maintains a network of fruit fly traps in Torres Strait, and regularly sends plant health scientists there as part of our active surveillance program.

DAWE staff based in communities in the Torres Strait maintain and clear fruit fly traps. These staff and their communities are the 'eyes and ears' for biosecurity in these remote islands and are a critical part of the biosecurity picture in Torres Strait.

Indigenous rangers also support NAQS on the mainland by undertaking biosecurity monitoring work for exotic pests and diseases on a fee for service basis.

"We engage rangers to do host plant surveys on Country, which provides us with data on what and where host plants are present. This includes hosts of agricultural and biosecurity significance such as citrus.

"A key part of our partnership with rangers is capability building. This includes delivering 'Biosecurity Fundamentals Training' so that skills are kept current, and information can be shared about emerging biosecurity threats.

"In this last year we've provided direct training to conduct biosecurity surveillance of key crops, including pests and diseases on citrus."

Suspect exotic plant pests and diseases should be reported through the biosecurity hotline (Exotic Plant Pest Hotline: 1800 084 881) which will, in turn, notify the Chief Plant Health Officer (CPHO) of the territory or state where the pest has been detected. The CPHO will notify what the next steps are and what needs to be done.

### **Backyard and garden surveillance**

Backyard or garden surveillance is an essential part of northern biosecurity, especially for the early detection of pests or diseases that might have entered the Torres Strait and other areas of northern Australia.

"The main reason we work in backyards is that commercial crops already have pest management in place, so it often masks the presence or absence of exotic pests and diseases."

"We're most likely to detect them in people's gardens, because they're usually not being sprayed and there's no active controls in place," Dr Britton said.

Dr Britton said another important role of NAQS surveillance in gardens and communities is to make people aware of biosecurity risks.

"We need to have this awareness and access, otherwise we risk not knowing things are present in Australia until it's too late.

*Continued page 28*



From page 27

**Emerging pests and disease**

Dr Britton said there are several emerging citrus diseases and pests near Australia that are not included on the industry biosecurity plan, but may be of interest to growers in northern Australia.

He said parts of industry may not always be interested in some pests and diseases because it doesn't affect them directly but it's still worth knowing.

"There's a lime gall wasp that's present and native to PNG, and while it only affects limes, it causes significant damage there and could be a problem for Australian lime producers in the north.

"We've got a couple of moth species that bore into the rind of citrus that are included on our list of biosecurity targets. While they are significant pests overseas, there's not much published information available on diagnostics and distribution which makes it a challenge to conduct successful surveillance.

ACP is a vector of HLB, considered to be the worst citrus disease in the world, as it is incurable and almost impossible to eradicate once established in a region.

In 2002 it was detected in north western PNG near the border with Indonesian West Papua, but since then has not moved any further towards Australia, but it is important to keep monitoring and to be prepared as if it was to arrive in Australia.

"There's a place called Merauke in south eastern West Papua. It's a major regional centre so there's a lot of trade and commerce going on there and it's susceptible to both ACP and the disease. It's just across the border from PNG and only 120 km or so away from Torres Strait."

**ACP sticky trap trial**

Citrus Australia's National Surveillance Coordinator, Jeff Milne has been working with NAQS through an ACP sticky trap trial.

Dr Britton is hoping to continue the trapping trial to help increase the sensitivity of NAQS surveillance for this key pest.

"When we see curry leaf or Murraya plants, we will be sweeping them with nets for ACP, but having the sticky traps just increases the likelihood that we will detect this pest early and we will be able to do something about it," Dr Britton said.

NAQS plays an important role in protecting the industry from pests and diseases and, without this surveillance, growers would potentially have many more things on their plate to worry about.

Without the surveillance of Torres Strait gardens and biosecurity measures in place there, many pests and diseases wouldn't be discovered until they reach production areas, when they often become very expensive or technically impossible to eradicate.

Dr Britton said his team relies heavily on public reporting, on rangers, and producers to report anything unusual to NAQS, Citrus Australia or to the relevant State or Territory authority.

"The systems are in place and they are very effective at getting people out to do something about it early; if you catch it early you've got a much better chance of doing something about it.

"This also highlights the importance of our national emergency response arrangements, which Citrus Australia is a participant." ●



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*Berto and Anna Srhoj run Australia's biggest Tahitian lime orchard in Dimbulah, Far North Queensland: Srhoj Farming. "We use the Farm in ONE program daily and have also been involved with the development and testing of the program". Berto has been a customer of HTM Complete for 15 years and has contributed valuable information regarding the development of the app over the past 3 years. Berto said that after using the Spray Schedule module for the past 12 months, he has saved 10% on his chemical use. He has also been using the Harps and OH&S forms in the program and has drastically reduced his paperwork. Not only that, but he was able to provide all the forms to the auditor electronically.*

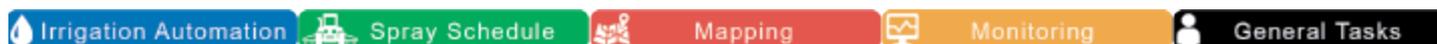
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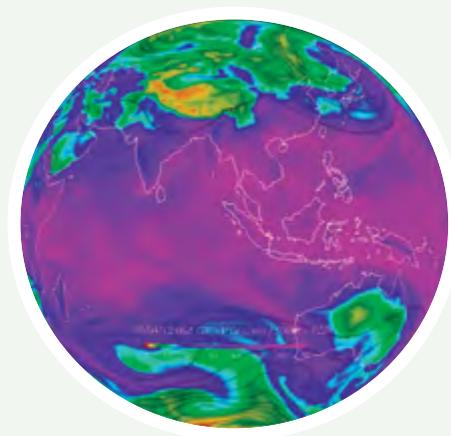
# A New Irrigation Forecasting Service

**Implexx Sense has just released The Implexx Crop Water Use Forecast. The forecasting service is ideal for the citrus industry because it is easy to use, low cost, and does not require expensive and hard to maintain field equipment. A 14-day free trial of the forecast is available from the Implexx website.**

Irrigation management strategies can be reactive or proactive. A reactive strategy makes decisions based on past events whereas a proactive strategy makes decisions based on forecasts of future events. The Implexx Crop Water Use Forecast is a new tool available for citrus growers that is advancing proactive irrigation management.

Reactive irrigation management is common in the citrus industry. It has been productive however there are significant limitations. For example, decisions based on expensive and difficult to maintain soil sensors and dendrometers are made on what occurred yesterday or a few days ago. Even using freely available Bureau of Meteorology (BOM) evapotranspiration (ETo) is at least one or two days old.

A proactive irrigation management strategy is receiving increasing attention in the citrus industry. A proactive strategy makes decisions on what may occur today, tomorrow, or further into the future. A proactive strategy is advantageous because growers can plan more effectively. For example, purchasing of water



allocation is more efficient with estimates of future events rather than data from days or weeks past.

Two primary factors are required for effective irrigation forecasting: the weather and crop water use. Weather forecasts are becoming increasingly accurate with improved technology. Importantly, estimating crop water use is increasingly accurate due to advances in satellite technology.

The Implexx Crop Water Use Forecast provides a 14-day estimate of crop water demand, and the weather. Crop water use is estimated from satellite technology using unique algorithms developed over many years by scientists at Implexx Sense. The forecast provides an estimate of tree water use at the stand or block scale.

A personalised and localised weather forecast, within a 5 km radius of your location, is also provided. This localised weather forecast is likely more accurate than relying on BOM forecasts that are based on a regional airport many kilometres away.

The Implexx Crop Water Use Forecast is provided as a daily email. No logins, passwords or complicated web platforms are required. Simply open an email and the 14-day forecast is there.



For further information, visit [www.implexx.io](http://www.implexx.io) or email: [info@implexx.io](mailto:info@implexx.io)



## The Implexx Crop Water Use Forecast is a...

- 14-day estimate of your crop's irrigation needs
- personalised and localised rainfall and weather for your property
- easy, no hassle irrigation decision-making tool for any grower small or large!

**VISIT:** [www.implexx.io](http://www.implexx.io) or email [info@implexx.io](mailto:info@implexx.io) for more information.



# Assessing potential enemies of the citrus gall wasp

Lucerne interplanting is practised by some citrus growers to suppress weeds, reduce soil compaction and improve soil fertility.

It was recently reported that lucerne interplanting (**Figure 1**) improved the control of the citrus gall wasp (CGW). One possible explanation is that lucerne enhanced the biological control of CGW.

Lucerne seeds are attacked by a gall-forming wasp closely related to CGW, the lucerne seed wasp (LSW). Adult LSW looks very similar to adult CGW and, like CGW, LSW is attacked by a suite of parasitic wasps, at least two of which are present in Australia (**Figure 2**).

The assumption was that parasitic wasps of LSW also attacked CGW. We posed the question: Does such cross-species parasitism really occur?

## Key points

- ❖ Assessing lucerne interplanting
- ❖ Trial in NSW
- ❖ Parasitic wasps sought

To answer the question, we investigated CGW parasitism on a farm in central west NSW, where the benefit of lucerne interplanting for CGW control was reportedly observed.

Despite being in a historically high CGW infestation region, this farm had not seen any citrus galls until

the summer of 2019, 10 years after its establishment.

The farm has 20 hectares of Hamlin orange on the Trifoliata rootstock and 20 hectares of Pineapple orange on the Citrange rootstock. Lucerne was planted in two out of every three rows throughout the farm.

A total of 844 galls were randomly collected from citrus foliage in a 14ha Pineapple block, a 5ha Pineapple block and a 13ha 'Hamlin' block on the farm in late October 2020.

A total of 28,612 CGW adults and 3,754 parasitic wasps emerged from these galls. Random dissection of the galls revealed 11,755 un-emerged CGW

*Continued page 33*



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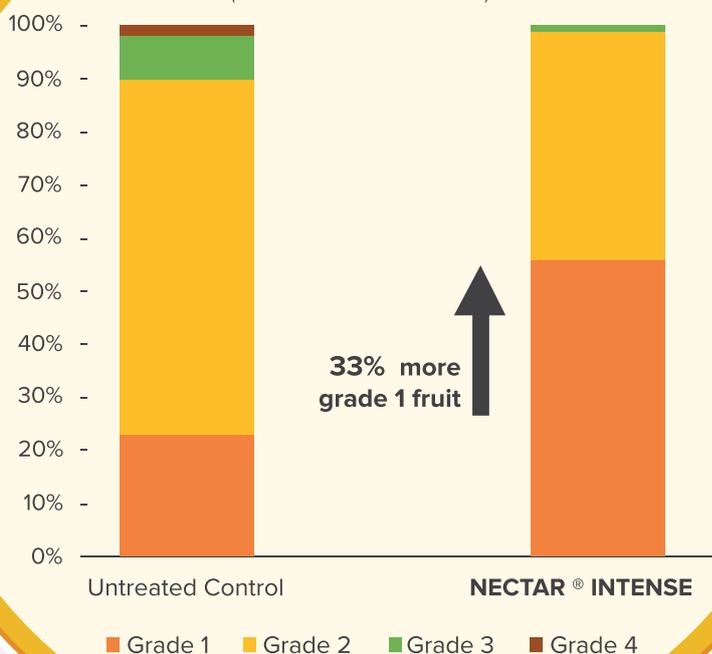
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From page 31



**Figure 1.** Lucerne planted between citrus rows.



**Figure 2.** Top - Citrus gall wasp (left) and its parasitic wasps (middle and right); Bottom – Lucerne seed wasp (left) and its parasitic wasps (middle and right).

adults and 466 un-emerged parasitic wasps, bringing the total number of CGW adults to 33,617 and that of the parasitic wasps to 4,220.

The overall parasitism level was about 11%. The parasitic wasps were exclusively *Megastigmus brevalivus*, the primary parasitic wasp species of CGW in Australia. No known parasitic wasps of LSW were recovered.

In addition to parasitic wasps, we checked CGW infestation in the 14ha Pineapple block. We found similar CGW infestation levels between citrus rows next to lucerne plantings and citrus rows not next to lucerne plantings.

We did a sweep-net sampling in the same block on a later date when the seed pods were available. We did not find any known parasitic wasps of either the LSW or CGW.

We also collected over 1500 lucerne seed pods and reared them for wasp emergence. No known parasitic wasps of LSW emerged from the seed pods.

In summary, we did not rear any parasitic wasps of LSW from CGW galls, neither did we see reduced CGW infestation in citrus rows next to lucerne plantings.

We do not rule out the possibility of parasitic wasps of LSW parasitising CGW, however, the chances of finding such cross-species parasitism are low.

Most parasitic wasps only attack their own hosts. In addition, parasitic wasps of LSW and CGW emerge at different times of the year, further reducing chances of cross-species parasitism. ●

Jianhua Mo is a research entomologist with NSW DPI. He can be contacted on [Jianhua.mo@dpi.nsw.gov.au](mailto:Jianhua.mo@dpi.nsw.gov.au)

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# ‘Seek and destroy’ the bugs in packhouses

Foodborne bacterial pathogens have recently emerged as a challenge for the tree fruit industries.

In August 2020, citrus fruit (orange, limes and lemons) were recalled in the USA for contamination due to *Listeria monocytogenes*.

Since then the citrus fruit have been scrutinised for microbial food safety risks at an international level.

The presence of pathogen on the citrus fruit due to inedible peel poses relatively lower risk to the consumers.

However, the detection of any such pathogen in the export markets surveillance could trigger a major market access issue for the Australian citrus industry.

The industry therefore needs to remain vigilant and follow a preventative approach - “End the crisis before it begins”.

Environmental pathogens, such as *Listeria monocytogenes* and *Salmonella* species, can be present in soil and water.

They can be transferred on to the citrus fruit in the field through various sources and routes such as dust storms, wildlife

activity, soil amendments, irrigation water and water used for chemical sprays (**Figure 1**).

Good agricultural practices include preventative control measures to minimise the risk of microbial contamination in the field through quality control of preharvest water, wildlife management and windbreaks etc.



**Listeriosis**, is a rare but serious disease caused by the bacteria *Listeria monocytogenes*. Some people are unaffected from eating small amounts of the bacteria whilst others who do get sick may require hospitalisation and it may lead to death.

## In dispute? Contact the Ombudsman

The Australian Small Business and Family Enterprise Ombudsman Bruce Billson is encouraging apple and pear growers and traders involved in a dispute to contact her office.

The Ombudsman can provide growers and traders with information and dispute resolution options, including access to mediation services and produce assessors.

Assessors can address issues such as whether a trader was entitled to reject produce or whether a grower has received the correct payment from the trader.

The Ombudsman’s approach is to focus on fair outcomes for growers and traders whilst maintaining good working relationships.

Our assistance team can help resolve disputes that arise over produce transportation and delivery.

Small businesses that need information or help with resolving a dispute can visit [www.asbfco.gov.au/assistance/horticulture-code](http://www.asbfco.gov.au/assistance/horticulture-code) or call the ASBFEO hotline on 1300 650 460.



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*However, despite these preventative measures, microbial contamination of fruit can still occur in the field. The pathogens can survive in soil, water or on the fruit for reasonably long durations, depending upon the environmental conditions.*

Pathogens such as *Listeria* may be introduced in the packhouse occasionally through incoming fruit.

It is essential that best practices are used to keep occasional presence under control. A contaminated fruit can cause cross-contamination of the harvest bins, conveyor belts, washing brushes and other fruit contact surfaces.

Once introduced in the packhouse and not controlled, a transient pathogen can take up residence on the fruit contact surfaces as well as non-contact surfaces such as floors, walls, cool rooms (**Figure 2**).

Resident pathogens indicate a failure in implementing best practices in

particular cleaning and sanitisation or an undiscovered niche where a pathogen has established a harbourage site.

There is a high chance that the site is continually re-contaminating the facility and increasing the potential for fruit to be contaminated.

Aggressive corrective measures need to be implemented to seek out and eliminate resident pathogens and assess the factors that allowed the site to be established.

We recommend that citrus growers and packers follow a 'Seek and Destroy' approach in managing the risk posed by environmental pathogens. There are three objectives of this approach:

- To prevent transient pathogens from becoming entrenched, forming biofilms and spreading in the facility
- To verify the effectiveness of cleaning and sanitation measures
- To determine and undertake corrective action

Most citrus growing and packing operations are compliant with the food safety certification programs.

Microbiological testing of the facility, water and fruit samples are required to achieve certification.

The general practice is to collect a swab test and hope for a negative test report.

However, packers must search for the pathogens in their facilities through appropriate testing in order to destroy them.

When a test report for a target pathogen such as *Listeria monocytogenes* is positive, a thorough investigation and re-testing can then determine whether the pathogen was transient at the time of sampling or has become a resident.

Cleaning and sanitisation of a packhouse is a critical strategy that can remove the transient pathogens.

The procedure entails two steps: 1) cleaning involves removing the soil and debris from the surfaces followed by 2) sanitising with approved reagents at recommended concentrations.

We recommend that each packhouse should have a standard operating procedure for cleaning and sanitisation to ensure these are effective.

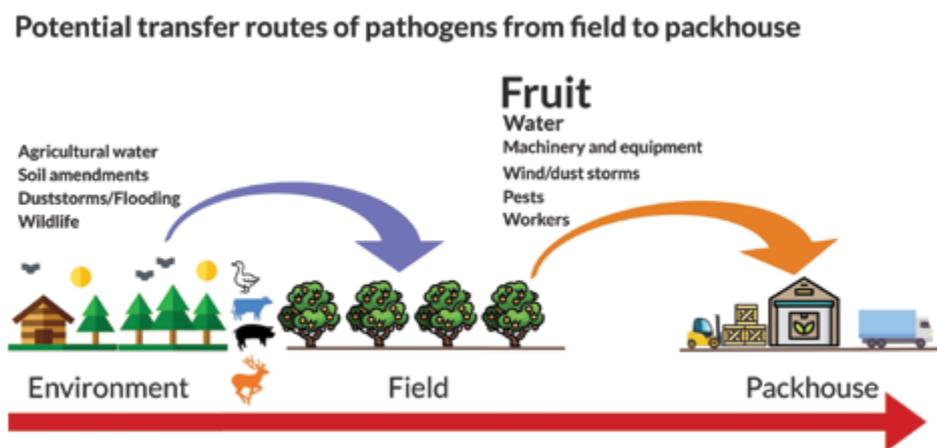
To develop and implement a packhouse environmental monitoring program (PEMP), the citrus packers must ask the following questions on microbiological testing:

1. What are the target pathogens?
2. How frequently should sampling be conducted?
3. How many samples and from where?
4. When to sample and how to sample?
5. What will a response to a positive test result be?

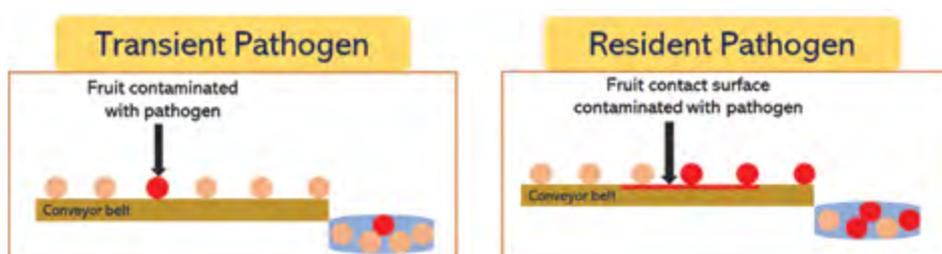
The Horticulture Food Safety Team of the NSW Department of Primary Industries has developed practical resources for PEMP.

The team can assist you in developing and implementing the PEMP plan for your citrus packhouse while maintaining your commercial-in-confidence and privacy. ●

**Figure 1.** Potential sources and routes of microbial contamination in the citrus fruit



**Figure 2.** A transient pathogen enters the packhouse with a contaminated fruit and can become a resident pathogen if cleaning and sanitisation schedules are not effective.



**Dr SP Singh** is Research Horticulturist-Food Safety with NSW DPI. You can contact Dr Singh on 0420 593 129 or email [sp.singh@dpi.nsw.gov.au](mailto:sp.singh@dpi.nsw.gov.au)

This article is a contribution from NSW DPI's 'Safe Citrus' initiative.

# Safe food additives for the control of postharvest decay

Fungicides are a well-accepted and safe treatment to stop postharvest fungal decay.

However, there is growing consumer demand for alternate fungicide-free treatments to control postharvest decay.

Recent studies at NSW Department of Primary Industries have investigated the potential of food additives such as salts, as food-safe alternatives. Some food additives are generally regarded as safe to use in food production.

Many of these food additives have been evaluated by the European Food Safety Authority and when considered safe carry an 'E' number / designation which allows them to be used within the European Union.

Salts are a food additive of particular interest for horticultural products as they have been shown to control citrus blue and green mould and may have some commercial applications in the packinghouse.

This article will highlight some of the promising food additives that are already used such as sodium bicarbonate, and newer additives which could have some future benefit in Australian citrus packinghouses.

Sodium bicarbonate has the European food additive code E500 and is already used in many packinghouses

## Key points

- ❖ New consumer demand
- ❖ Salt potential alternative
- ❖ Research on efficacy

around Australia to help control postharvest decay. This is a very useful treatment to help minimize green and blue mould and also sour rot.

Potassium sorbate (E202) is widely used as a broad-spectrum food preservative in the food industry. It is used within cheese and wine production to inhibit moulds.

Research has shown that potassium sorbate reduces postharvest decay in citrus and is effective when used in combination with fungicides and hot water.

International studies have shown that the addition of potassium sorbate to edible films (coatings) provided strong antimicrobial effects. However, the drawback was that potassium sorbate treatment resulted in increased water loss from the fruit.

Sodium benzoate (E215) is another salt which has been found to be an effective control measure for both green and blue mould in citrus. The results presented in **Graph 1** show that even 0.5% sodium benzoate is highly effective against green and blue mould.

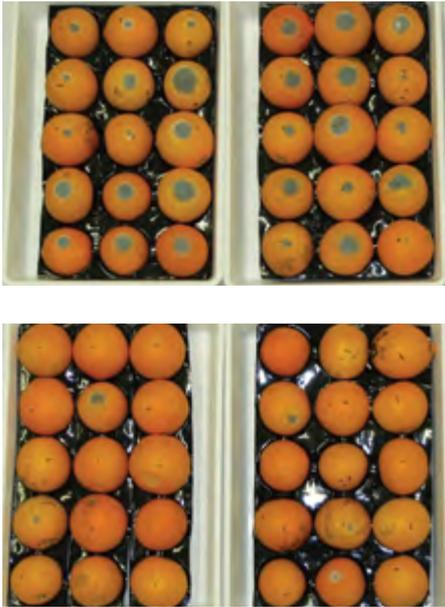
Sodium dehydroacetate (E266) is also used as a food preservative because of its strong antimicrobial activity. Overseas research has shown that sodium dehydroacetate has been shown to have good control of blue and green mould in citrus.

In addition the application of sodium silicate to the sodium dehydroacetate solution reduced sour rot growth and spore germination without impairing fruit quality.

However at this stage, the cost of sodium dehydroacetate is very expensive for commercial applications.

Natamycin (E235) has broad antifungal activity which is used in the food industry as a preservative. It has been used for decades on dairy products and is extensively used worldwide including in Australia, especially in the cheese and sausage industries.





Top trays of Navel oranges are untreated (control) and lower trays were treated with natamycin – note lower levels of postharvest decay.

It has Food Standards Australia New Zealand (FSANZ) approval for use as a food additive in the cheese and meat industries.

The previous Hort Innovation Citrus Postharvest Project showed that this treatment was effective at reducing postharvest decay in oranges (**Graph 2**). More work is continuing on this treatment.

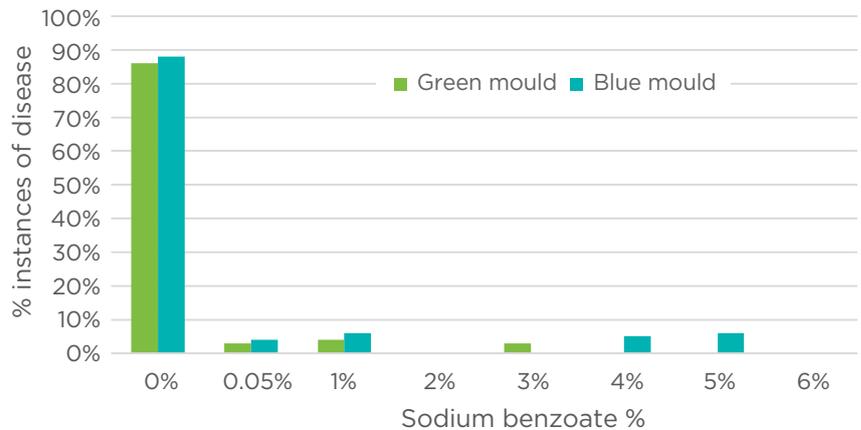
Further evaluation of these additives (and other treatments) are continuing at the NSW Department of Primary Industries in the Horticulture Innovation Citrus Postharvest Program (CT19030).

These studies are looking at how effective these treatments are on decay and fruit quality and also looking at practicalities and cost-effectiveness of these treatments.

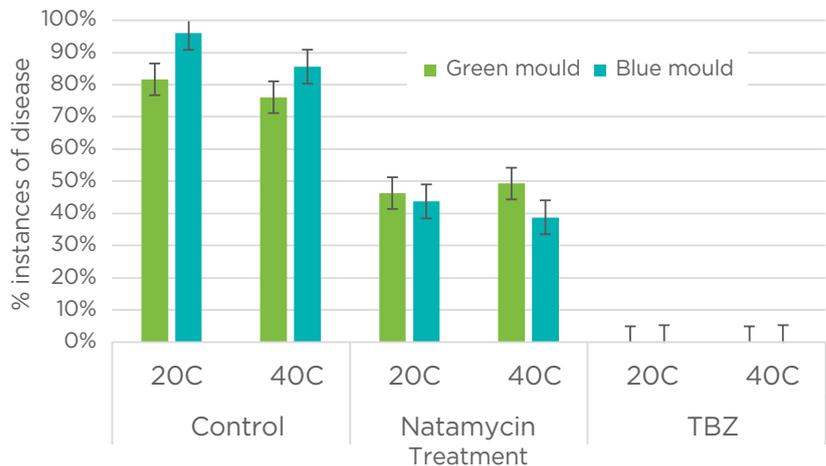
**John Golding** is a Research Horticulturist and **John Archer** a Technical Officer with NSW DPI.

This article is a contribution from the Citrus Postharvest Program (CT19003) funded by Hort Innovation and NSW Department of Primary Industries.

**Graph 1.** Effect of increasing sodium benzoate concentrations on levels of green and blue mould infection in Navel oranges.



**Graph 2.** Comparative effects of natamycin treatment and thiabendazole (TBZ) fungicide on the levels of green and blue mould in Navel oranges.



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