

AUSTRALIAN

Citrus News

SUMMER 2020/21

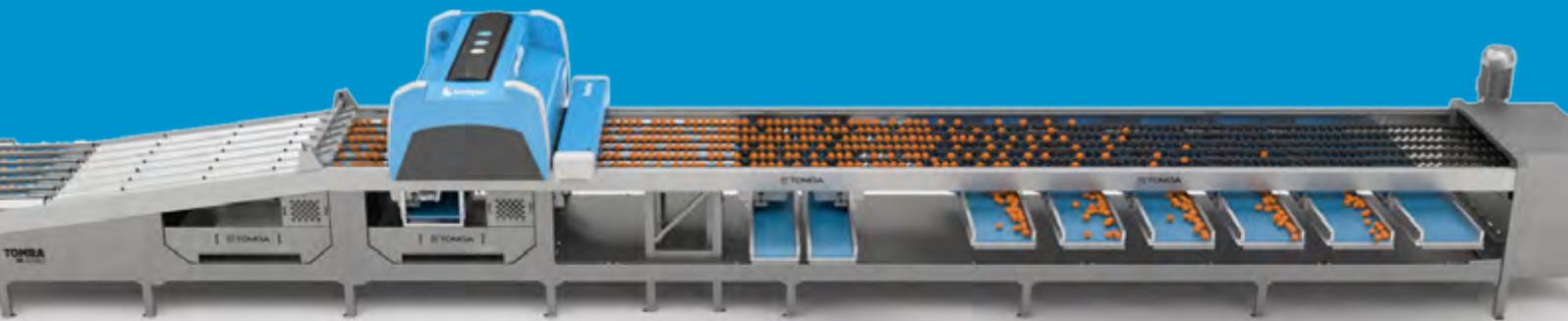


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AUSTRALIAN

Citrus News

In this issue...

CEO REPORT

- 4** Visiting growers the highlight of a tough year

NEWS

- 5** Grower help needed to fight piece rate challenge
6 Seasonal worker pathways
7 Flawed Health Star Rating system must be reviewed
8 Strong demand helps Aussie citrus exports
9 Forum photos

MANAGEMENT

- 14** Netting, pruning to improve production on Riverland farm
19 Afourer trial aims to improve long-term yields
20 Sharing farm trial knowledge

BIOSECURITY

- 22** Year-round Qfly approach

IPM

- 24** Breeding natural predators
26 Natural predators another link in biocontrol chain
28 Integrated pest management of Citrus Gall Wasp and Fuller's Rose Weevil

INNOVATION

- 31** Postharvest evaluation of a new electrolysed water sanitiser system

Cover image: Sam and Matthew Lloyd under newly installed netting on their Lyrup, SA, farm.

OUR CORPORATE PARTNERS





Visiting growers the highlight of a tough year

After a long and trying year, it felt particularly good to visit growers and members at the end of 2020 for our regional forums.

Due to border restrictions, the Citrus Australia team took part in hybrid forums with Western Australia and Queensland – where we presented the latest information via zoom to growers who were able to gather.

However, we were able to hit the road to the Riverina and the Murray Valley in late December and the Riverland in January.

As well as the forums, we were able to visit several of our members on farm to touch base and discuss their concerns.

Whether it's the Paradise Dam in Queensland, fruit fly in SA and WA, the Health Star Rating impact on the Riverina and Riverland, or other issues particular to each region, Citrus Australia is able to use its clout at a state and national level to advocate for you and seek action.

Citrus Australia members fund this advocacy work. So if you are not a member, we urge you to support us in supporting the industry and not leave it to others to pay for the work that benefits everybody.

Of concern to all growers this season is the shortage of workers due to the national border lockdown.

Citrus Australia continues to work with state government departments advocating for increasing access to seasonal worker programs for all growers.

Most states now have pathways to bring in some workers from the Pacific Islands and costs to growers vary depending on the type of pathway and the state.

Citrus Australia is updating all labour information for our members only on our website, including weekly updates on the Pacific Labour Scheme and Seasonal Worker Programme. We advise members to check this regularly.

The state departments are dealing with approved employers - whether citrus businesses or labour hire companies and are seeking applications to bring workers in.

Those citrus businesses who are not approved employers can speak with labour hire companies that are approved employers to discuss their staffing needs.

We urge all businesses to contact their labour hire companies today if they have not done so already.

There will not be enough Pacific Island workers to meet everybody's needs this harvest so all businesses will need to factor this in to their harvest planning. As you know, the number of available backpackers will not be enough to meet all requirements either.

I must also flag the current attack from the Australian Workers Union on piecework arrangements.

The AWU is actively working to introduce a 'floor' on piece rates so

that the worker must earn at least the minimum hourly rate (presently \$24.80 for casuals) regardless of productivity.

This will affect ALL citrus businesses that use piece rates, rewarding underperforming workers with the minimum hourly rate.

You can find more information on page 5 but your help is absolutely crucial to prevent this change being implemented. I urge you to read the story and contact us if you can help.

I have great concern over the series of outbreaks in South Australia which Citrus Australia understands are likely to mean that the majority of areas affected will not be reinstated until after October depending on further detections.

The Citrus Australia team has been working with industry and government to minimise disruptions to export this season.

We are lobbying the Australian Government on the importance of fast-tracking negotiations with Japan on acceptance of cold disinfestation for all varieties of citrus.

We are also providing feedback to the Department of Agriculture and Water Resources on a draft policy on Sterile Insect Technique so that we can make best use of this technology in the fight against fruit flies.

I wish all our citrus businesses a quality harvest and some fortune in finding workers to pick it. As always, we will continue to work for you behind the scenes to facilitate this. ●

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

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NATHAN HANCOCK

Chief Executive Officer,
Citrus Australia



Grower help needed to fight piece rate challenge

At a time when all the talk is about the shortage of seasonal and harvest labour the horticulture industry is being drawn in to an argument about productivity of workers and fair pay.

In December, the Australian Workers' Union (AWU) applied to the Fair Work Commission to amend what it called a "loophole" in the payment method.

It is actively working to introduce a 'floor' on piecework arrangements, so that the worker must earn at least the minimum hourly rate (presently \$24.80 for casuals) regardless of productivity.

This will affect ALL citrus businesses that use piece rates, rewarding underperforming workers with the minimum hourly rate.

About half the Australian horticulture industry used the piece rate system. With no capacity to pass additional costs on, any change would have massive ramifications for the viability of most growers.

Citrus Australia believe that the piece rate as it stands is adequately regulated and that any changes should be to bolster enforcement of the existing rules, not a change to them.

The AWU has lodged an application with the Fair Work Ombudsman to change the Horticulture Award and Citrus Australia is working with members of the NFF Hort Council to oppose the application.

Your help is absolutely crucial.

We must file evidence as to why this change should not be implemented by 14 May, 2021. That is only 3 months away.

We require:

- Statements from growers, willing to speak about the benefits of the piece rate method and go on the record about their farm, farming history and workforce. This will

involve a relatively brief discussion with the NFF who will draft the statement on their behalf.

- Evidence of workers who are supportive of piece rate arrangements because, e.g., piece rates allow them to earn well above hourly rates. Growers could forward names of workers happy to cooperate to Citrus Australia.

Citrus Australia urges growers to contact **Kerry Thompson** on **0448 213 330** if you can help and she will facilitate an introduction with Ben Rogers from the NFF.





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Seasonal worker pathways

Most states now have pathways to bring in some workers from the Pacific Islands and costs to growers vary depending on the type of pathway and the state.

It has been a slow process for states to get to this point – far slower than was initially hoped for, despite urgent protestations from Citrus Australia and other agricultural bodies from as far back as June, 2020.

However, it is hoped the pathways that have now been established will lead to increased numbers of workers as harvest progresses throughout the country.

The state departments are dealing with approved employers – whether citrus businesses or labour hire companies and are seeking applications to bring workers in.

Those citrus businesses who are not approved employers can speak with labour hire companies that are approved employers to discuss their staffing needs.

We urge all businesses to contact their labour hire companies today if they have not done so already.

There will not be enough Pacific Island workers to meet everybody's needs this harvest so all businesses will need to factor this in to their harvest planning.

Citrus Australia's work continues. Although the Department of Foreign Affairs and Trade (DFAT) has approved commercial flights into Australia and the National Cabinet approved seasonal workers to travel to Australia, outside the existing international arrivals cap, Citrus Australia has called on the Federal

Key points

- ❖ About \$2500 per head
- ❖ Contact labour firms now
- ❖ Other options needed

Government to alleviate a bottleneck.

At the moment, due to federal law requiring immigration and quarantine to take place in the port of arrival, workers from the Pacific Islands are required to complete quarantine in Brisbane, even if they are travelling to work in states outside of Queensland.

This increases pressure on Queensland health and policing resources, causing an effective cap on the number of workers that can enter Australia.

Tasmania was the first state to negotiate a transit solution and seasonal workers now arrive in Brisbane and travel to Tasmania for quarantine.

The SA Government has since announced a speciality regional quarantine facility that will be set up in the Riverland, where workers will undergo 14 days quarantine.

The facility at Paringa will cater specifically for workers arriving under the Commonwealth Seasonal Worker Programme and Pacific Labour Scheme over a 3-month period.

We have written to the Federal Government to develop a guideline for all states to work to alleviate this bottleneck, using the Tasmanian transit agreement as a precedent.

The guideline would have clearly defined roles and responsibilities for states wishing to engage with Queensland to transit incoming seasonal workers to their own state for quarantine purposes.

We have made it clear to the Federal Government that it is up to them to create a national framework so that each application from each state can effectively and efficiently meet the Queensland Government's requirements.

Citrus Australia has also written to NSW Premier Gladys Berejiklian regarding the \$3000 cost of quarantine per worker, asking her to align it with that of other states, who are charging \$2000 per head. We have told the Premier that the current cost cannot be absorbed by our industry and is hurting the NSW regional economy as a result.

We will continue to advocate to improve these systems quickly, to ensure as many willing workers can be placed on farm as possible.

Citrus Australia members can access weekly updates on all labour information on our website. It is members that pay for our advocacy work that benefits the entire industry. ●

Prime Minister has “open mind” on visas

Citrus Australia CEO Nathan Hancock was pleased to hear Prime Minister Scott Morrison say he had an open mind in how visas can play a key role in addressing workforce challenges in agriculture.

Citrus Australia has recently called for the government to implement an Agriculture Productivity Visa.

“We have tried in the past to first get Australians into these jobs and having tried to do that with any number

of incentives,” the Prime Minister said.

“It has been incredibly difficult and we have to call it as it is. And that is, when Australians won't do the jobs, the jobs still need to be done and I can't have, as is occurring, horticulturalists ploughing their produce back into their fields because they can't get the workers.

“So this is a clear area where I think we are going to have to lean more forward on.”

Nathan said Citrus Australia would use the Prime Minister's recent statement in discussions with government to advocate the Agriculture Productivity Visa, which would allow travel to Australia for the purposes of seasonal work and complement existing programs.

Industry would remain committed to a minimum number of workers from the Pacific Islands under the SWP and PLS schemes. ●

Flawed Health Star Rating system must be reviewed

The Forum on Food Regulation, comprising State and Federal Ag/or Health Ministers, met on Friday, 12 February, to consider the Health Star Rating for fresh juice.

At the request of Forum Chair, Senator Colbeck, the Australian Government Department of Health provided advice in relation to adjusting the HSR calculator for 100 per cent fruit and vegetable juices.

The Forum – comprising Ministers from all state and federal governments – agreed to maintain the decision from the 2019 review, which would see juice lose its 5-Star Rating. Furthermore, it did not support the advice from the Department of Health.

Citrus Australia believes that acceptance of this advice would have seen juice gain up to one more star. As it stands, orange juice with pulp will likely receive 3½ stars, while orange juice without pulp will receive 3 stars. Diet coke will receive 3½ stars.

The communique from the meeting stated: The Forum noted the system adequately reflects the variation in sugar content for juices which is important for consumers in assisting in their choice of beverages.

Despite intense lobbying by Citrus Australia, with support from the NFF, Australian Beverages Council, APAL and several juice companies, the suggested change was rejected by Victoria, Queensland, the NT, the ACT and New Zealand.

Key points

- ❖ Juice loses 5 Star rating
- ❖ States abandon industry
- ❖ Call for system review

CEO Nathan Hancock said: “We believe this decision was based partly on party and even factional lines.

“It’s now obvious that we have a national health propaganda instrument manipulated by anti-sugar lobbyists and a rating system not based on facts but instead voted on down party lines.

“It seems that the HSR is an anti-sugar rating, as opposed to a health star rating, so this should be advertised clearly for consumers.

“Even then, when chocolate cereal with additives can get 3 ½ Stars, and a natural product like juice only 2, primary industry is left confused what they are trying to achieve.

“Under this system, dried fruits and many cheeses will continue to be

considered less healthy than snacks such as potato chips.”

Mr Hancock said the Health Star Rating system was misleading and needed to be overhauled.

“It does not provide enough information for consumers to make educated decisions; it does not recognise the importance of fresh fruit and vegetables in the diet; and it is easily manipulated by manufacturers of highly processed goods who simply adjust their additives to beat the system.”

Citrus Australia will hold discussions with Senator Colbeck’s office and send correspondence to Minister Littleproud and Health Minister Greg Hunt this month calling for a review of the HSR. We will argue that the HSR should not target one element of a product (in this case, sugar) at the expense of all others (nutrients like Vitamin C).

We will build a solid case as to the inconsistencies in the HSR across all products and gather support from other opponents of the HSR to build support.

We will continue to promote the nutritional benefits of fresh juice through traditional and social media and amplify the messaging of juice companies.

The new formula will now be implemented, with a two-year timeframe for manufacturers to adopt the new rating for their products.

Mr Hancock said he can see juice processing businesses opting out of the voluntary HSR system based on confused decisions like this proving detrimental to certain products.

“Consumers deserve a health star system that does not focus on one element of a product at the detriment of all the others. Our industry has been unfairly compromised by this shallow system and we won’t stand for it.”

With Australians not eating enough fruit and vegetables, Citrus Australia will continue to promote the value of fresh juice as an alternate source. ●





Strong demand helps Aussie citrus exports

Australia had a ‘reasonably successful year’ of citrus exports in 2020 despite the pandemic, according to Citrus Australia CEO Nathan Hancock.

A low bearing year, which took the pressure off farmers and packing sheds, was met by good demand from both international and domestic markets.

Nathan said the biggest struggle was not faced in the orchards or packing sheds as first feared when the uncertainty of COVID struck in March, but in the logistics of sea freight components.

“There were a few logistical issues, probably the worst logistical issues the industry has ever faced in terms of shipping lines not docking or changing, and orders not always turning up as they expected,” Nathan said.

Greater China remained the largest importer for Australian oranges but took less compared to last season. Japan, Singapore, Malaysia and Vietnam made up the top 5 exporting countries for oranges.

Greater China remained the largest importer of mandarins although

Key points

- ❖ Good export growth
- ❖ China remains strong
- ❖ Mandarins growing

this was down on the previous year. Thailand, Japan, New Zealand and the Philippines made up the top 5 exporting countries for mandarins.

Total export value was almost \$9 million higher at \$459 million than in 2018 for a similar tonnage of exported citrus.

Price per kilogram for oranges was higher than 2019 while mandarins held their value.

Nathan said a combination of factors affected the drop in China trade but the rhetoric between the two governments did not help.

“I think it was that combination of not as much fruit available and probably everyone just spreading their risk a bit more broadly so that they didn’t end up with too much product in one particular market,” Mr Hancock said.

Countries such as Vietnam, the Philippines, Indonesia and Korea are growing as traders while Citrus Australia also works on strengthening export relationships with India and South Asia.

Nathan said there remains opportunity for growers to supply China whilst continuing to grow emerging markets showing genuine potential.

“I think we will have an on-year again this year and that there’ll be more fruit available,” he said.

“From what I understand the growing conditions have been very favourable for good external quality.”

Nathan said he was ‘cautiously optimistic’ for 2021’s export figures. Although there are still some logistical risks ahead, the big unknown is if Australia will be able to get their fruit out of the orchards.

“That’s our number one risk this season and it’s a national problem, it’s not just one region, it’s every region fighting for the same scarce resources, which is people to pick fruit,” he said.

“Once it’s in the supply chain and in a boat, you know, if it takes an extra two days or a week it’s not such a big deal but if you can’t get the fruit harvested in a timely manner then it disrupts everything.” ●



19.01.2021

RIVERLAND

Regional Forum



Hearing firsthand from growers at Regional Forums

COVID-19 precautions and border restrictions made it difficult to move across the country in 2020 but by the end of the year Citrus Australia was able to hold its regional forums in most centres.

The Citrus Australia team worked with the Regional Advisory Committees in each state to prepare each program, which this year included some hybrid formats.

Due to lockdown, local growers and speakers attended the forums in WA and the Wide Bay-Burnett region in

Queensland, while the Citrus Australia team presented the latest information via zoom.

We were able to physically attend the Murray Valley forum in Mildura, the Riverina forum in Griffith, the SA forum in Renmark and the Far North Queensland forum in March, 2021.

More than 400 growers attended the forums, gaining updates on agrichemicals, market export, seasonal workers, fruit fly, biosecurity and food safety.

It was announced at the SA Forum that Citrus Australia CEO Nathan Hancock will be coordinating a small working group in South Australia

to look at some of the key issues, including markets, fruit fly and seasonal workers.

“The working group will facilitate the flow of information between Citrus Australia, its members and government and I would very much welcome nominations from you for membership to that working group,” Nathan said.

As well as the forums, we were able to visit several of our members on farm whilst in each region to gain an update on the season and discuss their concerns. All this information is used for advocacy in our discussions with state governments. ●

08.12.2020

RIVERINA

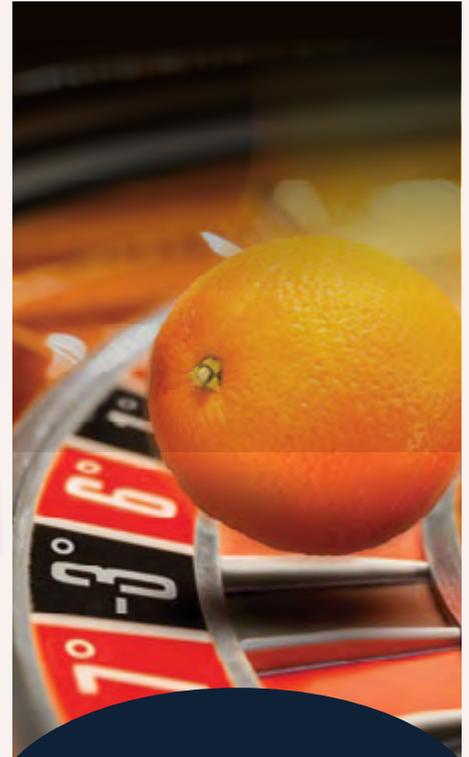
Regional Forum



09.12.2020

MURRAY VALLEY

Regional Forum



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QUEENSLAND

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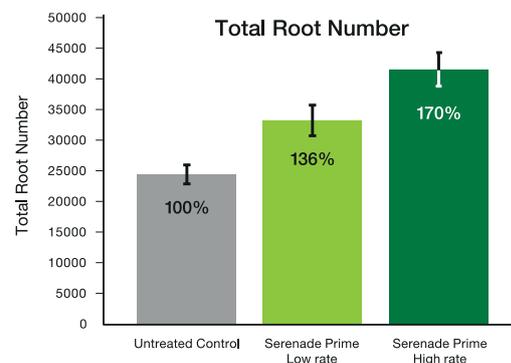
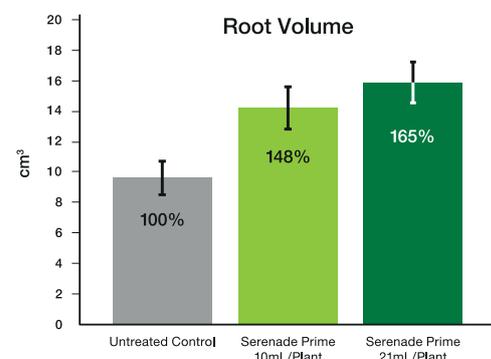
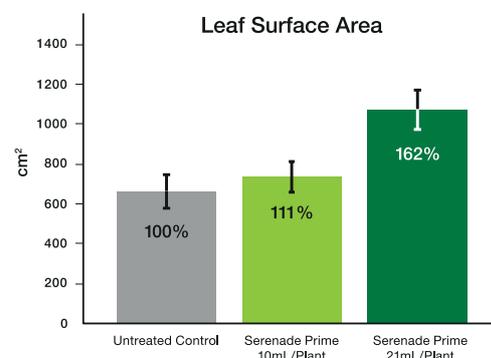


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Netting, pruning to improve production on Riverland farm

Matthew and Sam Lloyd are third-generation citrus growers at Lyrup in South Australia’s Riverland, who have invested in permanent netting.

The two brothers purchased the property in 2004 from their two uncles, Colin and Phil Lloyd, after their father Ray passed in 2003.

The home farm, developed by Ray and his brothers, in 1953 now comprises 105 hectares planted to 22 different varieties of citrus, and Matthew and Sam have also purchased and developed a new 30ha property.

They are investing in permanent netting on both the new 30ha development and 24 hectares of the existing property.

Although an investment of around \$50,000 per hectare, they said it “should well and truly pay for itself”.

“The new planting will take longer than the existing plantings, which will have almost an instant effect on return for the investment,” Matthew said.

“In saying that, over a ten-year period the new plantings will return more than the existing plantings. Young trees are predicted to grow quicker under the netting so will come into production earlier.

“They say a 3-year-old tree under the nets is equivalent to a 5 year tree outside under normal condition, and so far this is looking good.”

The new planting

Planted in early October, 2020, under full netting, the new 30ha block comprises Afourers (which are completely enclosed separately from the rest to keep them seedless), Early Sicily (C1876), Cara Cara, Villa11, Ippolito Bloods and M7s. All trees were supplied by Chislett Nurseries.

“White tree guards with black insides are fitted by Chisletts before dispatch, making our lives easier,” Matthew said.

“We prefer these Guards as the black internal colour reduces the suckering.”

Matthew noted trials being done using white external and black internal guards back in 2001 in the USA when

Key points

- ❖ Netting on new plantings
- ❖ Netting on existing plantings
- ❖ Solar Power on irrigation pumps

doing some farm visits there.

Double drip line was installed from day one to ensure more even irrigation coverage for the young trees, which currently receive one hour every day.

“We did make the mistake of moving the drip lines from the butts of the trees, as irrigation seemed to be pooling too much and we were worried that they were getting too wet.

“We got our kids to move the drip lines and some were moved slightly too far and trees started to struggle and we had to move quite a lot back closer.

“In hindsight we should have moved only one line then and did the other down the track.”

The brothers have taken a chance with the Early Sicily mandarin, with almost 8ha planted on the new development and a small patch on the home farm.

They said trial trees of this variety are looking very promising.

“If picked early they have a very distinctive flavour loved by everyone that tries them,” Matthew said. “If held later and with some chill factor they can develop an internal red pigment similar to a blood orange. Picking at the right time and cool stored also encourages this to develop further and brings out an external blush.”

Existing plantings

About 24ha on the original farm will go under nets by June 2021, mainly covering Cara Caras and Afourers, with a small portion of Tangelos, Murcotts and Summer Navels.

An internal drop-down wall will isolate the Tangelos and Murcotts from the Afourers at flowering in a bid to keep them low-seeded. They are currently using temporary netting to achieve this.

“Cara Caras are a variety that has a high blemish level, with some years up to 25% wastage, which equates to 500 bins out of the 2000 bins picked last season going to the cows,” Matthew said.

“Not only should the nets reduce this dumping fruit, it should increase the 1st and 2nd grade packout. It has been reported you can achieve better returns of \$200 -\$400 dollar per tonne.

“With Cara Caras producing regularly \$50 plus per tonne/ha, this equates to \$10,000 to \$20,000 per hectare increase in return, so we should have a pay back in 3-4 years.



Fabio Spiniello, Venus Citrus, with Sam and Matt Lloyd on their Lyrup orchard.



The solar power system and new Cara Caras under netting on Sam and Matt Lloyd's Lyrup property.

"Hail is another factor that we took into consideration, losing close to a million dollars a few years ago to a hailstorm. This at least gives us some protection even though the nets cover only part of the property."

Matthew said a 20% reduction in water usage has also been recorded around the district when using netting so this will also provide a huge benefit.

Pruning

Almost every tree on the home farm gets pruned every year.

"In the past we have done more selective pruning, smaller cuts but have found that chunk pruning almost works just as well and is done at a fraction of the cost," Sam said.

"It could be done better but it's a matter of cost efficiency. We don't like hedging as once you start you need to hedge every year, instead we try keeping tree size down by chunk pruning, either aiming for height or major windows.

"In saying that we do still hedge some patches.

"In the last three years we've taken up to 20% of the tree out by chunk pruning. If we have a heavy crop, we will back off to around 10%. Cara Caras seem to have a lot of dead wood inside of the tree. This year being an average crop we will take around 20% off after harvest."

In the past they have tried removing this dead wood by small window

pruning and one year sent the workers through by hand ripping the dead wood out but have found now after the past three years of chunk pruning it has reduced the dead wood more efficiently.

Solar Power

The power blackouts in South Australia prompted the brothers to install a 100-Kilowatt solar system with a backup diesel generator around three years ago.

"In the past we would over water in case of a shortage of power to irrigate over summer but now are confident to give the trees what they need all year round as we have the capacity to run our pumps even through a blackout."

Sam estimated they were spending \$25,000 a month before installing solar during the peak summer months.

"We are now spending closer to \$30,000 for the whole year to run our irrigation.

"Also, in the past we had to water a lot more at night and on weekends during the cheaper power rates but we now have the ability to irrigate when it suits us better, which also gives us a labour-saving cost." ●



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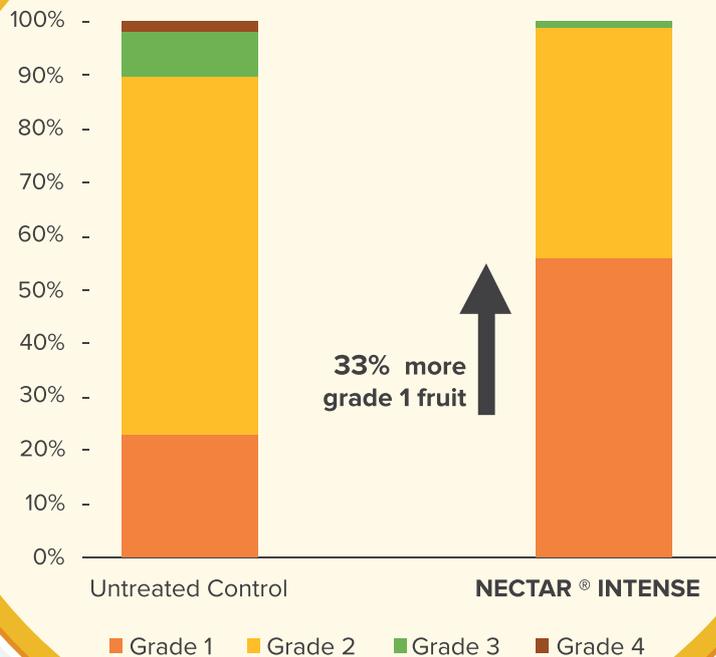


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Afourer trial aims to improve long-term yields

A new project to develop best practice canopy management techniques in Afourers aims to improve long-term yields and minimise alternate bearing.

Afourer mandarins are recognised for producing high yields (60-90 tons per hectare) during the early years of production, sometimes peaking over 100 tons per hectare.

However as the trees grow large the yield begins to decline and alternate bearing becomes more prominent. Some growers of mature trees have reported average yields of 35 to 40 tons per hectare.

Excessive vigour and unmanaged watershoot growth are thought to contribute to yield decline in Afourer trees by shading the lower canopy.

Alternate bearing contributes to yield decline because the low crop load in 'off' years reduces long-term average yields.

In the short-term alternate bearing produces low-value small fruit in high crop load years, and in low crop load years leads to oversized fruit.

The project will investigate pruning strategies through replicated trials and demonstrations to minimise vigour and water shoots with the aim of improving long term yields and reducing alternate bearing.

Most of the trials are on grower properties in Sunraysia and the Riverina.

Project lead, Steven Falivene, NSW DPI, said the project has two objectives.

“Firstly, to develop best practice canopy management techniques to improve long-term yields and minimise alternate bearing in Afourer mandarins.

“Secondly, to develop capacity of Afourer growers in Australia by collating information locally and overseas, case studying growers, implementing on-farm trials and linking growers.”

Growers from all states are participating in the project with Andrew Creek (NSW DPI) managing the Riverina and Rachelle Johnstone (WA DPIRD) managing Western Australia.

Key points

- ❖ Pruning strategies explored
- ❖ Trials on grower properties
- ❖ Mechanical hedging reviewed

“Already zoom meetings with South African researchers have been conducted and case study and background information report has been presented to the group,” Mr Falivene said.

Case studies will be conducted on most grower properties to explore the numerous management options currently being trialled by growers including hand thinning, chunk pruning, limb bending, annual limb

removal, autumn water shoot removal and mechanical hedging.

The trial treatments will investigate multiple regrowth management events aligned with best management practices currently used by some Australian Afourer growers and recommended by South African researchers.

The management of the canopy and water shoots is not limited to hand pruning and includes mechanical hedging treatments.

“It is thought that developing a good limb structure and managing regrowth in autumn are important practices.

“The case study and background information report also concluded that that water shoots dominating the canopy is a common theme amongst growers that have problems with productivity.” ●

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Steven Falivene and growers in the trial.



Sharing farm trial knowledge

A collection of Sunraysia and Riverina growers are currently exploring a number of techniques and trials on mature and young trees as part of the Afourer mandarin project.

At the Nutrano Sunwest farm, manager Thomas Braybrook has established several trials including heavy pruning and high nutrition treatments as part of the project.

“If we can help in any way that’s what we’ll do. It’s good to collaborate with the industry and some of the industry leaders and try to get to the bottom of it,” Thomas said.

“That’s probably why we got involved. We want to help the industry out and other growers.”

Established in 2004-2006, the farm is home to some of the oldest Afourer trees in the region, roughly 14 years old.

“They didn’t really have a canopy management plan throughout the first five or six years of their life, so they got a little bit out of control at the very start. Now we’re paying the price.

“You have to have control of the whole tree throughout their lifespan.”

Nutrano are also replicating some of the canopy trials on Afourer trees currently under netting to see if there’s a difference between canopy management under netting and without netting.

“We have a few different methods on the go as well as trialing different ideas to see what outcomes eventuate and to determine the best approach for us going forward.”

Other techniques being explored on mature age trees are light hedging annually, half tree hedging, 1 metre pruning after harvest, 2X pruning and regrowth management, 3X pruning and regrowth management, 1 metre centre limb pruning, centre limb pruning and regrowth management.

Young tree treatments include no pruning, centre limb pruning and intensive pruning.

“As a grower, as a bit of tongue and

cheek, we all think we’re the best, but everyone has different ideas and I’ve learnt over the years what works for me might not work for you.

“We’ve found that not only from region to region, or the other side of the world, even within our farms from Yatpool to Nangiloc, that growing conditions are different.

“We’ve done every second row in one patch in box hedges so we’re not going to get any crop off that second row,” Thomas said.

“For a patch that yields 30 tonnes per a hectare, effectively we’ve taken out every second row, we might only end up with 15 tonnes per hectare this year because we’ve taken every second row out, but we think the following year we’re going to get payback.

“Like anything, it depends on what type of situation you’re in and what works best for the individual grower.” ●

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Year-round Qfly approach

North west Victorian citrus growing operation Mansell Farms says a year-round Queensland fruit fly control strategy is saving time, effort and cost in managing the pest.

Mansell Farms is an 80-hectare family-run enterprise based at Colignan south east of Mildura.

The Mansell family has grown and packed citrus for domestic and international markets for more than 50 years but has had to step up attention on the control and management of fruit fly for the past five.

Farmers Robert and Julie Mansell say while they initially implemented a farm-wide bait-spraying and trapping strategy, in the past two years, the approach has changed.

“We were pretty hot on bait spraying across the whole property for the first couple of years because we needed to be,” Robert said.

“The spray has an attractant, so we only needed to spray every second row, but even so, it would take one of our staff between one and two days to get across the whole property, and we would do that every week or ten days.”

Although Robert found the bait spray could be hard on machinery, it allowed them to get on top of the problem and drive numbers down quickly. But as numbers were reduced, the family reconsidered its approach.

“In conjunction with the spraying program, we maintained a trapping

grid right around the property,” he said.

“So once numbers were down, we went back to monitoring through the trapping grid – but always ready to get back into the bait spraying if there’s any indicator at all that there might be numbers around or rising.”

Alison MacGregor from Citrus Australia said bait spraying was a great option for fruit fly control as it could be put out in very low quantities – placed strategically through an orchard – and the flies come to find the bait.

“With bait spraying you are also not disrupting your natural pest control because the bait is only targeted at Qfly – beneficial insects are not susceptible to the bait at all,” Alison said.

Robert and Julie’s children are all active in various roles part in the family farming enterprise, as are some of their partners, including their son Sam’s partner Judith Geyken, who is now running the farm’s fruit fly control program.

“We watch the traps very closely – I check the traps every Monday, and the results are recorded – any fruit fly we catch is recorded, the date, which trap, and whether it’s male or female,” Judith said. ●

QFLY CONTROL PLAN

In regions where Qfly is established, routine bait spraying should begin in spring and traps should be monitored to detect spikes in populations. Remember, it is critical to align with applicable protocols for Interstate Certification Assurance or export markets.

Control strategies need to be applied early and continuously after fruit set:

- Set monitoring traps out by mid-August and follow label instructions about trap recharging and replacement
- Place a trap every 400m across the orchard
- Check traps weekly for fruit fly. Check fruit for sting marks or larval damage
- If flies are found, start baiting or, if necessary, apply a cover spray



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Breeding natural predators

Biological Services insectary based at Loxton in South Australia’s Riverland celebrates its 50th anniversary this year. It was set up in 1971 by Ron George before James and Simone Altmann took the helm in 1987.

It was established to breed *Aphytis melinus*, a parasitic wasp that kills red scale as an alternative treatment to toxic pesticides on citrus trees.

The biological product range has since been diversified to control key pests including two spotted mite, aphids, whiteflies and thrips, in a wide range of both protected and outdoor horticultural crops.

To cater for this demand a second insectary site located in Muchea, WA, is run by Lachlan Chilman.

Biological Services Director James Altmann said the insectary breeds and releases more than 3000 hectares of *Aphytis melinus* wasps annually, exporting across Australia and some to South Africa.

“Quite a few citrus growers have never used them, but there wouldn’t be an

orchard in southern Australia that didn’t have them present,” James said.

“The advantage of wasps is they’re going to be working 24 hours a day, seven days a week, during spring, summer and autumn.

“Whilst the wasps stay established in orchards year-round their numbers decline over the cold winter months.

“Therefore, it is important to boost levels every spring and then they’re working there all the way through the warmer months. Parasite numbers are highest in the orchard in autumn which is when the most control is gained.”

.....

Cups of 10,000 parasites are delivered to growers, who can then release the wasps into their orchards in various locations.

Growers who regularly use the wasps generally release them at least three times a year.

Some release parasites over whole orchards, others only release on certain varieties, or boundaries, as a top up after pesticide sprays or extreme heat waves.

James said residually toxic treatments for other pests such as gall wasp can erase efforts put into establishing *Aphytis*.

“Growers need to think ahead about their treatment plans, to ensure that a blanket pesticide approach does not disrupt the whole ecosystem in their orchard,” he said.

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*The **Aphytis Melinus** wasps are placed in cups like this for growers to release in their orchards.*

“As long as you’re not spraying the whole orchard with something toxic at any one time (or every year) you can leave reservoirs for important beneficial insects and mites to survive.”

The parasites are reared in controlled atmosphere rooms on scale grown on pumpkins, which are easier to handle than oranges and do not break down as quickly. These conditions are ideal for growing healthy scale cultures.

“The larger the scale is the bigger the parasite will grow, and the bigger the parasite we get, the higher percentage of females,” James said. A high number of females at release increases the establishment rates in the orchard.

An adult wasp’s lifespan is about two weeks in which a female can lay up to 100 eggs, roughly one-to-two in each scale.

The eggs hatch and the larva feed under the scale cover. The scale is killed, the larva pupates and after 2-3 weeks another wasp emerges to continue the cycle.

At the insectary, the harvested wasps are measured in a volumetric cylinder before being transferred to cups for distribution and release. The cups contain a small amount of honey for food which allows wasps to live longer after release.

One millilitre of wasps equates to approximately 8-10 thousand wasps. We generally release 2.5ml or around 25,000 wasps per hectare, but do this several times a year.

“So, when we’re in full swing we’ve got enough wasps to inoculate 100-150 hectares a week.”

To improve the efficiency of biological control agents it is advantageous to reduce dust, wind, and ant activity.

“Increasing your plant biodiversity inside and outside the orchard environment is also beneficial by



*James Altmann releasing **Aphytis Melinus** wasps on his orchard.*

providing alternative shelter, pollen, and nectar sources for parasites and predators.

“There are many research papers and projects that give useful suggestions for this.

“However, whatever grows naturally well in your situation is useful provided it is a range of plant species rather than a monoculture.” ●



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Natural predators another link in biocontrol chain

Parasitoid wasps have been released in Victoria in a project designed to combat the spread of Queensland fruit fly.

“We’re really excited about getting this project,” research leader for invertebrate and weed sciences at Agriculture Victoria, Dr Paul Cunningham, says.

“There are two species we’re focusing on: *Diachasmimorpha kraussii*, which is native to Queensland but is also distributed right down the coast into NSW, and *Fopius arisanus*, which is used as a biocontrol agent against fruit flies all around the world. It was introduced into Australia around the 1950s and became established.”

Paul said both prey exclusively on the Tephritid family of fruit flies – Queensland fruit fly (Qfly) specifically in this case.

“The wasps lay their eggs either directly into the eggs of the Qfly or into the earliest larvae. Each parasitoid egg hatches and remains as a little first-instar larva inside the fruit fly until the host goes into pupation, then it devours the Qfly in the pupal stage and eventually emerges as an adult wasp.

“They’re called egg-pupal parasitoids or egg-larval parasitoids because they attack these early stages.

“In Queensland, depending on the time of season and climatic conditions, they can really knock out the fruit fly population – up to 80% infestation of Qfly.”

Paul said one of the questions yet to be answered is why neither species of wasp has made its own way south following the expansion of the Qfly range in the past decade.

“These fruit fly parasitoids are totally absent from Victoria as far as we know yet Victoria particularly is having a big problem with Qfly.

“The flies have moved into ‘enemy-free space’. They’ve arrived here and gone crazy because their main predators aren’t here.

“We’re asking if there’s something about the southern climate that’s not so good for these parasitoids. Is it because the winters are too cold or too long for them, being subtropical insects?”

Paul said extensive preparatory work has been done by the Queensland Department of Agriculture and Fisheries and Queensland University of Technology.

“They’ve been working on getting these insects into culture: going out and collecting *Fopius* and then trying to get it to breed and rear up in captivity. That’s been really tricky, because after all it’s a type of wild animal.

“Now we’re working together on mass-culturing methods.”

Paul’s team welcomed the first shipment of parasitoids to its facility at Tatura in northern Victoria last November.

“Our next step is to rear these up in their thousands,” he says.

“We’re looking at doing the releases any time from February 2021 until the end of the season, which will be around April.

“One of our focuses is on doing a sort of augmentative release where we’ll put large numbers of the wasp into orchards where there are known Qfly infestations.

“The other will target urban areas: ornamentals and fruit trees in gardens where fruit flies breed up.

“We’ll be doing these releases in areas where there are high numbers of fruit flies already: definitely in the Goulburn Valley and also in Sunraysia.

“In our first year we’ll be looking towards the organic farming sector and using Agriculture Victoria’s own experimental orchards because we don’t want any sprays that might affect our parasitoid populations.”

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late in the season, when many other fruit groups are no longer flowering, Paul said.

“We need to look at which plants are really good hosts for both the fruit flies and the parasitoids.

“What’s the optimal time for citrus as a host? When is it being hit hardest by

Qfly, and can it support our wasps at that time?”

The team will also study the wasps’ over-wintering behaviour.

“Fruit fly populations tend to disappear in July all over the country, regardless of the climate.

“We know that one of the species of wasp will what we call ‘diapause’ – sit in its pupa and wait out the season – but we need to understand the other one a bit more.” ●

**Hort
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Evaluating biopesticides in multi-pronged approach

The parasitoid trial, funded by Hort Innovation through grower levies, is now running in tandem with a larger national evaluation of biopesticides supported by the federal Department of Agriculture, Water and the Environment.

“These biopesticides are entomofungal diseases and nematodes,” Paul said.

“There’s been a lot of research overseas on using entomopathogenic fungi to control other fruit fly species but there really hasn’t been anything yet on Qfly so we’re looking at which strains and species of these fungi attack our own fruit fly.

“The Western Sydney University has been working for a number of years on nematodes, including a particular species which targets fruit flies.

“This bigger project is about putting it together as a program for fruit fly control and getting into what a biopesticide strategy might look like.

“Both of these are of two years’ duration, which in research terms is not very long.

“Our ambition is to have this become part of a suite of fruit fly control structures.

“We’re very strong believers in this as integrated pest management of Qfly.

It’s about sustainable fruit fly control.

“At the moment a lot of strategies involve killing off the adult flies: bait spraying, mass trapping and SIT, or sterile-insect technology.

“What we’re trying to do is put together a program that really hammers them at every stage of their lifecycle. The parasitoids will hit the eggs and the larvae and the biopesticides we’re looking at – these fungal pathogens – will attack the pupae.

“It’s much more of a holistic program of fruit fly management.” ●

In dispute? Contact the Ombudsman

The Australian Small Business and Family Enterprise Ombudsman Kate Carnell is encouraging citrus 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.

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Integrated pest management of Citrus Gall Wasp and Fuller's Rose Weevil

Citrus Gall Wasp (CGW) and Fuller's Rose Weevil (FRW) are two of the most important insect pests of citrus in Australia.

CGW is a native galling wasp. It is traditionally a pest in northern NSW and southeast QLD, but has recently become widespread in southern Australia, threatening the viability of Australia's orange production in the area.

FRW is a flightless weevil found in a range of crops in Australia including citrus. It is a pest of export quarantine concern as some important Asian export markets have a zero tolerance for this insect.

NSW DPI is currently leading a Hort Innovation funded project to improve the management of the two pests, with collaborations from the University of Queensland, University of Southern Queensland, cesar, and Riverina IPM.

The project will (1) undertake a PhD study to better understand the spread of CGW in southern Australia, (2) update the timing guide for CGW emergence, (3) develop novel monitoring tools to guide the timing of FRW control, (4) explore cultural control of CGW with Lucerne border/inter-rows, (5) investigate commercially available entomopathogens for FRW control, and (6) screen soft chemical options for CGW and FRW control.

Understanding the reasons for the recent rapid rise of CGW populations in southern Australia will help inform the management of this pest and development of appropriate strategies to contain its spread.

Suspected reasons for the sudden distribution expansion include changes in climate, movement of citrus seedlings, and agronomic practices.

The PhD study will undertake industry surveys, laboratory and field experiments, and modelling to test these hypotheses (University of Queensland).

An online timing guide for CGW emergence is currently available for

users in the Riverina, Sunraysia, and Riverland. NSW DPI will investigate if the timing guide can be used for Perth, WA and Mundubbera, QLD.

Current standard for FRW monitoring is branch beating. This method provides a reliable indication of the presence/absence of the weevil in the orchard but is difficult to quantify due to considerable variations in the size of branches selected for beating.

The project will explore two new ways to monitor FRW: a trap-based monitoring system (**Figure 2**) and a machine-vision based monitoring system (**Figure 2**) (NSW DPI and

University of Southern Queensland). The potential of using machine vision to separate current and previous-season CGW galls will also be explored.

Some citrus growers plant lucerne in their citrus orchards (**Figure 3**). It has been reported that this practice has resulted in improved CGW control.

Lucerne seeds are attacked by the lucerne seed wasp (LSW), a gall wasp closely related to CGW.

One suggested reason was that the parasitic wasps of LSW also attack CGW.



Figure 1. Citrus gall wasp (left) and Fuller's rose weevil (right)



Figure 2. A free-standing trap for trapping FRW adults (left) and a diagram showing the automated identification of FRW damaged leaves using the machine vision technology (right).



Figure 3. Lucerne interplanting (left) and a diagram showing lifecycle of the lucerne seed wasp (right).



Figure 4. An FRW adult infested with an entomopathogen

These reports require corroboration and the project will investigate if such cross-species parasitism occurs.

Entomopathogenic nematodes

and fungi are used to control many agricultural pests and some have demonstrated potential for FRW control (**Figure 4**). The project will evaluate several commercial strains of entomopathogenic nematodes and fungi for FRW control.

Loss of currently registered insecticides is a growing concern for the Australian Citrus Industry.

The project will screen new insecticides for CGW and FRW control, focusing on those that have reported efficacy against related pests, are relatively soft to beneficials, and are sold by companies with an interest in pursuing registration/label extension

for their use against CGW and/or FRW (NSW DPI and cesar). Promising insecticides will be assessed for their impacts on natural enemies.

The project is in its first year. Early results from the machine vision investigation showed encouraging results in automated counting of FRW in beat sheet and identified specific wavelengths of light for detecting old and new CGW galls.

Results from chemical bioassays identified four potential new chemicals for controlling CGW adults, two of which showed a residual activity of 14 days. New results/findings will be reported to the industry as they become available. ●

Jianhua Mo is a research entomologist with NSW DPI based at Yanco Agricultural Institute. You can contact him at Jianhua.mo@dpi.nsw.gov.au

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Postharvest evaluation of a new electrolysed water sanitiser system

Postharvest fruit washing with water containing a sanitiser is an industry standard practice to clean and sanitise the fruit.

There are many chemical sanitisers which are widely used in the citrus industry, including chlorine and peracetic acid (PAA, e.g. 'Tsunami™').

Each of these different sanitisers have their own merits and applications depending on the situation.

A relatively new sanitation system uses electrolysed water (EW) and is currently used in other industries, including vegetable washing, waste water treatment and cooling tower water treatment.

EW is produced by running the wash water through a series of cells and applying an electrical current (electrolysis).

If required, the water is automatically dosed with small amounts of dissolved table salt to increase electrical conductivity.

This process produces a range of different chemicals in the water, including hydrogen peroxide, ozone, hydroxyl radicals, hypochlorous acid and free chlorine (Cl₂).

Most are highly reactive but short-lived chemicals. EW is safe and has been shown to destroy pathogens and chemicals without compromising safety or the environment.

As part of the Hort Innovation citrus postharvest project, we examined the effect of different measurable chlorine levels in Unipolar® EW system against standard sanitation treatments on general sanitation and the development of green and blue mould in artificially inoculated oranges.

Unipolar Water Technologies Pty Ltd supplied and ran the EW system for this trial at a commercial citrus packinghouse in the Sunraysia. Unipolar is an Adelaide-based Australian company.

The trial was conducted in two

parts: (1) treatments in controlled conditions and (2) treatment in the commercial packingline.

Part 1 - Sanitiser comparison in controlled conditions

This trial examined the effect of different sanitiser treatments under controlled conditions (dipping in tubs) (**Image 1**).

The treatments were: (1) control (packinghouse water - no added chlorine), (2) Unipolar® EW system set at 5 ppm free Cl₂, (3) Unipolar® EW system set at 10 ppm free Cl₂, (4) Unipolar® EW system set at 15 ppm free Cl₂, (5) chlorine as hypochlorite (50 ppm), (6) PAA (60 ppm), (7) imazalil (fungicide), (8) control (pre-treatment sodium bicarbonate with post-treatment water wash), and (9) no treatment control from orchard.

The concentrations of sanitisers used in the trial were verified with digital measurement systems.

Results of water quality

All the sanitising treatments, Unipolar® EW system (set at 5, 10 and 15 ppm free Cl₂), chlorine as hypochlorite and PAA all had few detectable colony



Image 1. Treating oranges in different sanitisers in controlled conditions (80L tubs) (top), and green and blue mould infected fruit following treatment (bottom).

forming units (**Figure 1a**) and yeast and mould counts (**Figure 1b**) in the wash water, as compared to the control (packinghouse water).

These results demonstrate the presence of micro biologicals in the packinghouse water coming into

Continued page 32

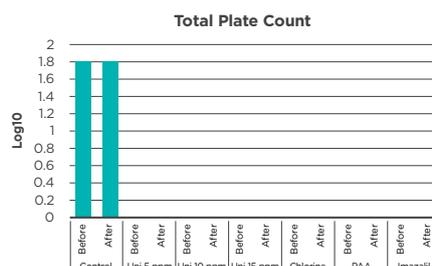


Figure 2a. Effect of the different sanitation treatments on (a) total plate count in water.

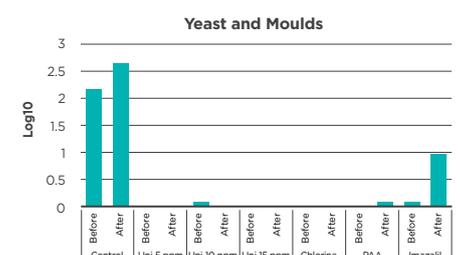


Figure 2b. Yeast and mould count in water in controlled conditions. Water samples were taken before and after fruit treatment.

From page 35

Figure 2. Effect of sanitation treatment on infection rate (%) of green and blue mould (left) in controlled conditions.

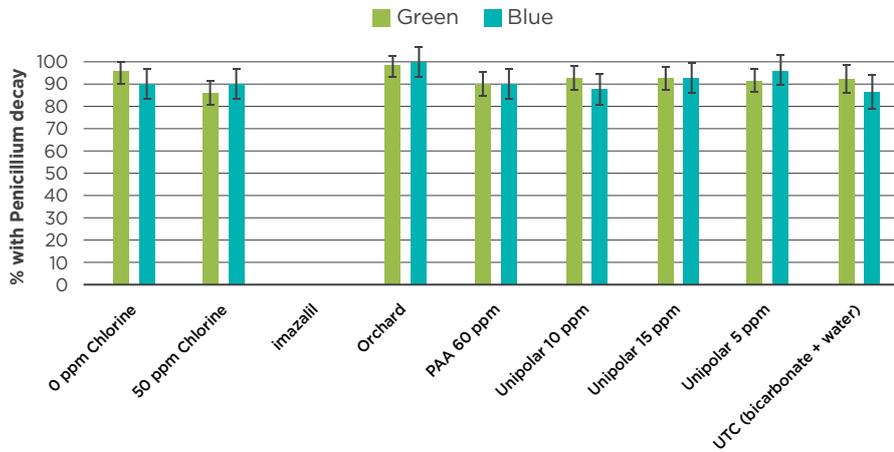


Image 2a The trial Unipolar® EW system in the commercial packinghouse



Image 2b Treatment of oranges with Unipolar® sanitiser sprayed over rolling brushes in the packingline.

the packinghouse but shows that all sanitation treatments resulted in significantly lower total bacterial plate count and yeast and mould counts. This is a good result and justifies the use of sanitisers.

Green and blue mould

Fungicides are designed to prevent postharvest pathogens and as

expected, the application of the postharvest fungicide, imazalil completely prevented green and blue mould development (**Figure 3**).

Sanitisers are not used to prevent postharvest decay and this is seen in Figure 4 which shows there was no difference between Unipolar® EW system (set at 5, 10 and 15 ppm free Cl₂), chlorine as hypochlorite and PAA

in the rate of green and blue mould infection and size of infection following artificial inoculation of the fruit (Figure 2). A follow-up of the levels of natural development of postharvest decay on fruit that had been stored for one month showed there was very natural low infection rates in the fruit and there was no effect of any of the different sanitiser treatments on postharvest decay.

Part 2. Sanitiser comparison in commercial packingline

In parallel to the controlled assessments of the sanitisers (part 1), this trial examined the different sanitising treatments when applied in a commercial packingline: (1) Unipolar® EW system set at 5 ppm free Cl₂, (2) Unipolar® EW system set at 10 ppm free Cl₂, (3) Unipolar® EW system set at 15 ppm free Cl₂ and (4) ‘Tsunami™’ at the recommended rate (60 ppm PAA). All treatments were conducted on a commercial packingline during regular packing (**Image 2a** and **Image 2b**).

Water Quality

All different levels of the Unipolar® EW system (5, 10 and 15ppm free Cl₂) resulted in lower total colony forming units and yeast and mould counts (**Figure 3**).

Water samples were measured before and after treatment of the fruit and the results showed there were low total colony forming units and yeast and mould counts before or after dipping the fruit.

In this packingline, the ‘Tsunami™’ treatment (peroxyacetic acid and hydrogen peroxide) had lower total colony counts but higher levels of yeast and mould, showing that the PAA has more difficulty in controlling yeast and moulds than bacteria.

Green and blue mould

There was no difference between the different sanitiser treatments on the incidence and growth of blue and green mould where the decay spores were artificially inoculated into the fruit before treatment.

Summary

All sanitisers, i.e. chlorine as hypochlorite, PAA and Unipolar® EW system (at 5, 10 and 15 ppm free Cl₂), were effective in reducing detectable colony forming units and yeast and mould counts in the wash water.

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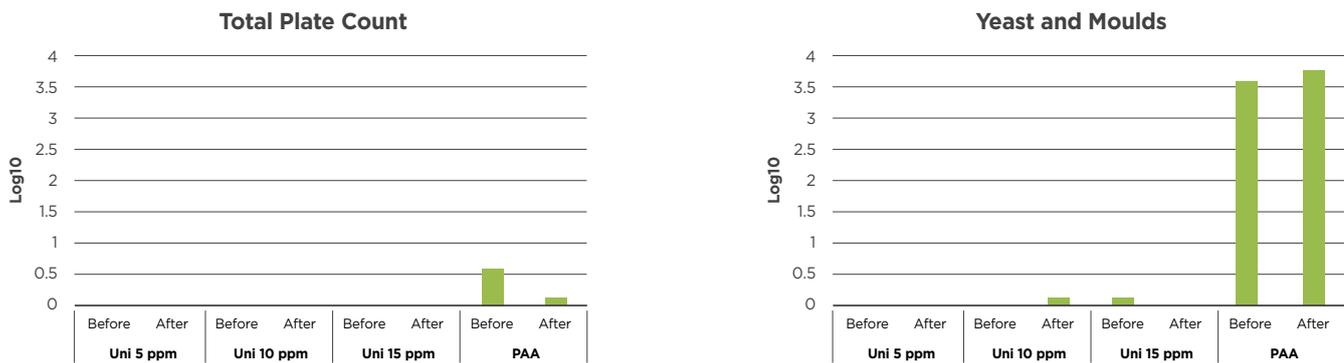


Figure 3. Effect of sanitation treatment on total plate count in water (left) and yeast and mould count in water (right) in commercial packingline. Water samples were taken before and after fruit treatment.

This action is their primary function as sanitisers and why they are used in postharvest horticulture.

In addition, the sanitisers had no effect on green and blue mould decay. These results were expected as sanitisers only clean up the wash water and do not control postharvest decay.

Postscript to Postharvest Trial

The manager at this citrus packinghouse has since installed this Unipolar® EW system this packing season (2020).

At the end of the packing season (December), the manager reflected on the use of the Unipolar® EW system and was happy with its ease of use and efficacy.

In addition to successfully sanitising the wash water, the main benefit

has been lower maintenance and running costs without the use of chemical sanitisers, i.e. no chlorine or PAA (although it does use table salt (sodium chloride) to help with the electrolysis).

In addition, the EW system was reported to have an unquantifiable benefit on fruit storage and shelf life, with lower levels of decay during shelf life.

The manager also noted that the EW system had been gentler on machinery wear and had reduced maintenance costs in the packingline.

The use of other sanitisers such as PAA which have low pH, can be corrosive to drive chains and gears in the packingline.

The manager commented that while the EW system had an initial high installation cost, it was relatively

economical to run and was happy with the decision to install this sanitation system in his packinghouse. ●

Article written by John Golding, John Archer, Stela Gkoutina and SP Singh, NSW DPI.

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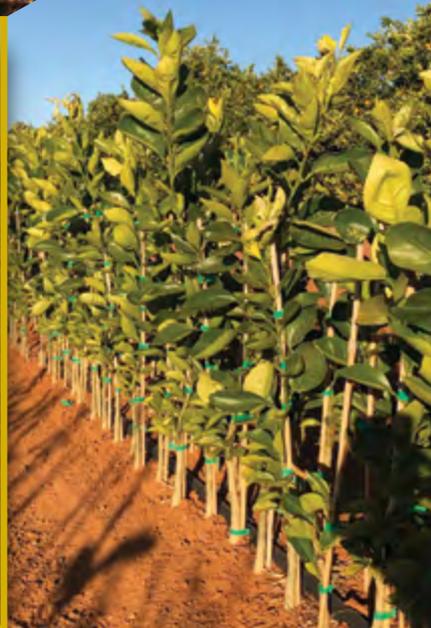


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