


Māori horticulture wins

A photograph of Norm Carter, a man with grey hair and glasses, wearing a black polo shirt with orange accents and a 'Te Kaha' logo. He is standing in a kiwifruit orchard, reaching out to touch a cluster of ripe, golden kiwifruit hanging from a vine. The background shows more rows of kiwifruit vines under a clear blue sky.

Norm Carter, Chairman of Te Kaha 15B Hineora Orchard, which won the Ahuwhenua Trophy Excellence in Māori Horticulture Award 2020, inspects their finest product. See page 36

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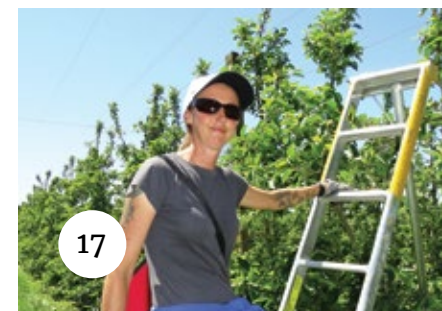
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*A regular advertorial section of new products
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the products or services featured here.*

- NuFarm
- Landini REX4 Electra
- BA Pumps and Sprayers
- Vantage NZ

Cover photo courtesy of alphapix.nz

Congratulations to Jacinda Ardern and our new government

New Zealanders have well and truly determined who will govern New Zealand for the next three years with Jacinda Ardern's Labour Party absolutely smashing predictions regarding the election outcome.

By Barry O'Neil
President : Horticulture New Zealand



My congratulations to the Prime Minister and her Labour team as they begin the process of governing New Zealand for another term. I wish them all the very best in leading the people and country to future prosperity. It will be one of the most challenging three-year terms of any government, needing to keep people safe while we have economic woes forced by huge borrowing due to Covid-19. With our border closed to tourism as well as the world's economies grinding to a halt under further waves of Covid restrictions, it's not hard to see how tough it will be!

Tough times call for strong leadership, focusing on what really matters, and one thing about this government with its strong mandate and majority is they will be able to cut through the political malaise that normally slows down good policy making. And put simply, what matters most is the people of New Zealand and their communities and rebuilding a sustainable national economy.

HortNZ recently released our post-election brief to the incoming government which highlights the areas on which we ask the government to focus its efforts. It is titled "Backing horticulture's success and growing out of Covid," and I encourage you to read it (<https://www.hortnz.co.nz/assets/Uploads/2020-07-17-HortNZ-election-manifesto-2020-.pdf>).

I was delighted to see that pre-election the Labour party had a specific policy on horticulture – the first time I can remember a political party having such an explicit focus on our sector – to back the horticulture sector to seize new opportunities for growth and stay ahead of international competitors. We look forward to working with the Minister and his officials in realising this commitment.

And I welcome back Damien O'Connor as Agriculture and Biosecurity Minister as he knows us and our sector very well and we are very pleased that he has also been given the Trade and Export Growth portfolio.

Minister O'Connor has a priority in realising the primary sector roadmap *Fit for a Better World* to accelerate the productivity, sustainability and inclusiveness of the primary sector to deliver more value for all New Zealanders. The Prime Minister highlighted this priority in announcing Damien O'Connor as Minister, and as I have written already in the annual report, this roadmap aligns well with horticulture.

The initiative is about adding \$44 billion in export earnings over the next decade, through a focus on creating value – we need to be donkey deep in leveraging off this initiative.

Horticulture growth and its opportunities for more sustainable use of our valuable land resources cannot be ignored, as previous governments have often done as they focused on the pastoral sectors; policy settings and a framework for horticulture growth must be delivered for the benefit of all New Zealanders.

“**Horticulture growth and its opportunities for more sustainable use of our valuable land resources cannot be ignored**”

I have just returned from attending the Kerikeri Fruit Growers' Annual General Meeting and while I was up, took the opportunity to visit growers and also to look at the future growth prospects for horticulture there. Both our two Board directors who come from Northland, are active in the future growth areas, and Kathryn De Bruin is also a Trustee on Te Tai Tokerau Water Trust, which is charged with delivering one of the largest infrastructure projects seen in the province in decades.

Up to four reservoirs are to be constructed which will collectively have the capacity to store up to 20 million cubic metres of water, a much-needed boost for the region's horticulture growth opportunities. Driving from prosperous Kerikeri it's like chalk and cheese when you get to Kaikohe. But now that community has been given a lifeline with one of these water schemes, horticulture developments will hopefully soon become the major employers of choice!

“**Up to four reservoirs are to be constructed which will collectively have the capacity to store up to 20 million cubic metres of water, a much-needed boost for the region's horticulture growth opportunities**”

Our other Northland based director Dr Bruce Campbell has been actively working with a number of Northland Māori agribusiness groups as they diversify into horticulture, and fantastic to see firsthand what is happening. Bruce Campbell also chairs the Northland Horticulture Careers Progression Governance Group, promoting horticulture careers and doing everything possible to find the future workforce. He works closely Maria Fathollahi, the Northland career progression manager who – like all our career progression managers – is very able, energetic and well-connected to the community she is serving.

Finding labour is already a critical challenge, and in areas like Northland where growth is happening not only in horticulture but in other sectors as well, we are competing for the limited resource with others.

We need the immediate fix while we focus on the longer-term solution. The only immediate fix I can see is allowing Recognised Seasonal Employer (RSE) scheme workers to enter New Zealand, exactly as Australia is doing right now. Labour committed to open up travel bubbles when it is safe to do so, and we have argued it has been safe to do so since before the election, so this to us is the immediate priority. Our sector's RSE workers in Covid-free Pacific Islands present absolutely no risk at all to our people, but without allowing them entry, our seasonal work including harvest is being put at significant risk.

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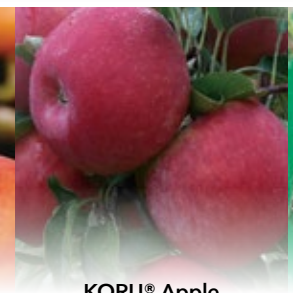
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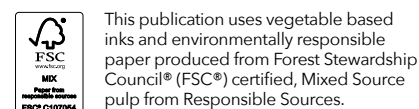
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...but rather than using a stick approach, let's work together to find the carrots that will drive the changes needed

A longer-term fix everyone is already actively engaged on is how to attract more New Zealand workers into hopefully permanent jobs in the horticulture sector.

Trade and market access is another priority where our industry and Labour's policies align. We welcome the continued pursuit of high-quality trade agreements that diversify our trade relationships, such as the recently signed RCEP (Regional Comprehensive Economic Partnership) agreement, and hopefully soon to be trade arrangements with the European Union and the United Kingdom.

Labour has committed to repeal the Resource Management Act (RMA) 1991 and replace it with a Natural and Built Environments Act and a Strategic Planning Act. We agree the RMA needs a major overhaul to cut through red tape that is strangling our industry,

but also to enable sustainable economic development activities such as water storage proposals agreed within reasonable timeframes, and without the huge costs currently involved.

I do have some advice for the green team, we are wanting to do our absolute best to address a changing climate, we also want our children swimming in clean rivers, and we really want sustainable production systems. But rather than using a stick approach, let's work together to find the carrots that will drive the changes needed. And to the blue team, how did you get it so wrong. You will rebuild. Please work with us to understand our issues in doing that.

I'm looking forward to working with this government to realise the potential that both they and we see is desirable and achievable to get more growing happening in New Zealand. Bring it on! ●

Mike to step down as HortNZ CE

HortNZ Chief Executive Mike Chapman will stand down in 2021.

Mike has given the HortNZ Board notice of his intention to finish as Chief Executive during the course of 2021. Mike will continue his duties until his successor takes office, likely to be sometime towards the middle of the year. The Board has now begun the recruitment process.

'By the time Mike leaves, he will have been our Chief Executive for more than five years. He's made a significant contribution to the organisation and our industry during this period,' says HortNZ President, Barry O'Neil.

'While the Board respects Mike's decision, he will be sorely missed and appropriate arrangements will be made to formally recognise his achievements around his departure.' ●

The coming season

The government has announced that it will permit some Recognised Seasonal Employer (RSE) scheme worker movement from the Pacific. This was achieved after a concerted programme involving NZ Apples and Pears, NZ Kiwifruit Growers Incorporated and Summerfruit NZ – supported by Horticulture New Zealand, with HortNZ also representing the rest of horticulture.

By Mike Chapman
Chief Executive : Horticulture New Zealand



Efforts to get visa flexibility for stranded RSE workers, working holiday scheme backpackers and other visitors started back during the first lockdown in March. These efforts were quickly expanded to the creation of a Pacific bubble, so RSE workers could return for the harvest and travel home again.

All this has been a seven-month campaign. At the same time, other problems caused by the Covid-19 lockdown have been raised with the government and Ministers. To name but a few: closure of independent fruit and vegetable retailers; border issues when Auckland was put in lockdown; and extending the one-year recognition of home-country driver licences for people stranded in New Zealand.

The horticulture industry collective of chief executives and business managers has worked as one to address these issues, first with daily meetings and now with weekly meetings together and with key government officials. This group also developed the Horticulture post-Covid Recovery Strategy and is identifying what needs to be done for the coming season and seeking government support for what is required.

We have all had to learn how to manage Covid-19 in real time. Added to this has been the concern about keeping New Zealand safe, which has slowed decision making. We argued for quicker decisions, but keeping New Zealand safe has been the paramount consideration. We are strongly advocating for that approach to be tempered with the need to enable New Zealand's economic recovery, and the important role that horticulture can undertake.

Making sure there is an adequate supply of seasonal labour is but one of the many roadblocks to horticulture continuing to grow and significantly contribute to New Zealand's recovery, along with the rest of the primary sector. During the year we pursued the need for water

collection and storage for both urban and rural New Zealand. We pushed hard and we will continue to push hard for compliance to be reduced to what is needed, especially when it comes to Farm Environment Plans and the implementation of climate and freshwater mitigations.

To highlight these and the other impediments facing horticulture, we produced a briefing for incoming Ministers. This is traditionally done by government ministries for the new Ministers after each election. Go to the HortNZ website to see a copy of this briefing.

As well as providing the briefing to our Minister, the Minister of Agriculture Damien O'Connor, and key officials, we also met the Minister to discuss it. One of the lessons from Covid-19 that we are now applying is that we all need to be more active with Ministers, Members of Parliament and the officials. The political environment is now different and getting action on horticulture's issues has become harder.

I therefore think it is time for a fresh approach. I believe that will come out of horticulture's post-Covid recovery strategy and the new cohesion we have across the product groups. We need that unity to make the difference with government.

That said, my time at HortNZ is coming to an end after what will be a term of more than five years as chief executive. I will remain fully committed and in the role until my successor is appointed, which is not likely to be until the middle of 2021. In my final days, I will continue to do my best to further develop horticulture's new framework for engaging and succeeding with government.



Go to www.hortnz.co.nz to see HortNZ's full Briefing for Incoming Ministers. ●

YOUR LEVY AT WORK

INDUSTRY WIDE ISSUES FOR INDUSTRY GOOD

Natural resources and environment



Air

NZS 8409:2004 – Management of Agrichemicals Submission

NZS 8409:2004 provides practical and specific guidance on the safe, responsible and effective management of agrichemicals. This includes plant protection products such as herbicides, insecticides, and fungicides.

NZS 8409:2004 is referred to within Regional Plans. It is often a permitted activity standard for managing the environmental effects of agrichemical spraying.

HortNZ will engage with product groups and growers to seek feedback on the draft guidance, and on HortNZ's own submission. The closing date for submissions is 1 February 2021.



Water

Ngaruroro Water Conservation Order Mediation

In 2019 the special tribunal granted a Water Conservation Order (WCO) for the upper Ngaruroro river. The WCO required the upper river to be managed in its natural state.

HortNZ did not appeal the decision. But the decision was appealed by a number of parties. White Water Rafting NZ and Forest and Bird's appeal sought that a Water Conservation Order also apply to the lower river.

HortNZ joined the appeal in support of Hawke's Bay Regional Council. HortNZ's primary concern is that we do not support a Water Conservation Order being applied to the lower river.

In October, HortNZ attended Environment Court Mediation. Constructive conversations were held between parties, but matters were not resolved.

Hawke's Bay Outstanding Water Bodies Hearing

HortNZ has developed evidence on the Hawke's Bay Regional Council's proposed Outstanding Water Bodies Plan Change. HortNZ presented at the hearing in Hawke's Bay in November.

The proposed Outstanding Water Bodies Plan Change identifies 38 water bodies as outstanding. This includes the Heretaunga and Ruataniwha Aquifers. HortNZ's view is the Plan Change should focus on those water bodies that are truly remarkable.

HortNZ disagrees with the hierarchy of values proposed in the proposed Plan Change. The Plan Change proposes outstanding values are prioritised above significant values. The Plan Change also determines that economic and consumptive values cannot be classified as outstanding.

Horizons Plan Change 2 Hearing

In October HortNZ presented evidence at the Horizons Plan Change 2 hearing. Plan Change 2 is an interim plan change. The purpose of the Plan Change is to correct issues with the One Plan. Horizons will still need to develop another Plan Change before 2024 to implement the National Policy Statement for Freshwater 2020.

The focus of Plan Change 2 is to get all growers and farmers within the target catchments consented with robust conditions. The consent conditions will drive the uptake of good and best management practices over time.

On the whole, HortNZ supported the changes that were made to the Plan Change 2, that were presented by the Council's Planner within the Section 42a report.

The exception to this was technical evidence that Council relied on to estimate the percentage reduction in nitrogen leaching that could be achieved by growers.

HortNZ's preferred approach is that Plan Change 2 should focus on ensuring growers are implementing good and best management practice.

Seven growers presented evidence at the Hearing. The growers described the work they are doing to manage environmental effects. They talked about their crops and markets and the specific requirements of vegetable growing. Growers highlighted the importance of vegetable growing for New Zealanders' health and the valued history of vegetable growing in the region.



Land

Timaru District Plan Submission

Timaru District Council has notified the Proposed Timaru District Plan for public consultation. Key matters that are managed by the District Plan include:

- Land zoning and subdivision – managing how land use change can occur and where urban growth is located.
- Reverse sensitivity issues for managing conflict between land uses (including things such as noise, light, standards for sensitive activities).
- Provisions for buildings and structures such as glasshouses, packhouses, worker accommodation and crop protection structures.
- Storage and management of hazardous substances.
- Protection of special features and landscapes.

HortNZ held a grower meeting in Temuka to discuss growers' key concerns and issues. HortNZ will review the proposed Plan, undertake further consultation with growers and prepare a submission in the best interests of growers.



Climate Change

He Waka Eke Noa – Grower Reference Group

HortNZ is facilitating a grower reference group. The growers include kiwifruit, avocado, berryfruit, process vegetable and fresh vegetable growers.

The grower reference group has discussed farm planning, emissions reporting and emissions pricing.

HortNZ is also facilitating product group reference groups, to keep product groups up to date with the progress of He Waka Eke Noa. HortNZ and product groups are working together to help growers meet the He Waka Eke Noa emissions reporting milestones. These milestones require a quarter of farms in New Zealand to hold a documented annual total of on farm greenhouse gas emissions by December 2021, and that all farms hold a documented annual total of on farm greenhouse gas emissions by December 2022.





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2020 biosecurity wrap up

Despite 2020 being a tough year for many reasons, there have been some great wins in the world of biosecurity.

By Anna Rathé

The pea weevil incursion in the Wairarapa was declared eradicated in February this year, an achievement that is believed to be a world first. As well as this, operations in response to an incursion of Queensland Fruit Fly in Northcote, Auckland, came to a successful conclusion in January after six months with no detections, which meant that New Zealand was once again able to declare country freedom from the tiny but devastating fly.

The closure of New Zealand's borders in response to the Covid-19 pandemic has potentially had one small silver lining – reduced biosecurity risk via passenger pathways. New Zealand has strict biosecurity measures in place on all pathways to reduce the risk of new pests and diseases entering the country, but the reduced number of people arriving by air, private vessels and cruise ships is likely to have diminished the biosecurity risk even further.

It was heartening to see funding allocated in this year's central government budget for new interim Level 3B

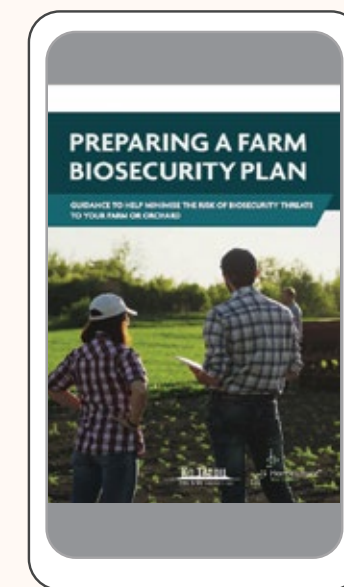
Post Entry Quarantine greenhouse units. The additional capacity provided by the units should make some progress towards easing the bottleneck that is currently limiting importation of new breeding material. New plant varieties and germplasm must be held in secure containment in quarantine while undergoing testing for high-impact pests. The additional quarantine capacity should help with the horticulture sector's desire to access new breeding material while appropriately managing biosecurity risk.

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It was heartening to see funding allocated in this year's central government budget for new interim Level 3B Post Entry Quarantine greenhouse units

This year has been an opportunity to review some important parts of the biosecurity system to ensure that they are fit for purpose. This includes continuation of the Biosecurity Act 1993 review which was instigated in 2019 and will continue into 2021, and the Government Industry Agreement for Biosecurity readiness and response (GIA) Deed is being reviewed by the partners. The Ministry for Primary Industries (MPI) also reviewed and updated a number of import health standards this year to make sure that we are keeping up with and managing the evolving risk from brown marmorated stink bug.

Industry, government and scientists continue to scan for emerging risks offshore. Currently we are keeping our eye on fall armyworm which has recently arrived in Australia, and spotted wing drosophila which is proving tough to manage in Europe and the United States. Readiness activities for brown marmorated stink bug, fruit flies of economic importance and *Xylella fastidiosa* are ongoing under the Government Industry Agreement framework.



Commit to the preparation of an on farm/orchard biosecurity plan. Guidance is available at hortnz.co.nz

Looking forward into 2021, we would like to encourage all growers to play your (very important!) part in New Zealand's biosecurity system. You can do this by:

- ✓ Committing to the preparation of an on farm/orchard biosecurity plan. Guidance that steps you through how to prepare a plan is available from your industry body and on the HortNZ website.
- ✓ Making yourself familiar with the most unwanted pests, pathogens and weeds for your crop(s).
- ✓ Downloading the new Find-A-Pest app and reporting anything unusual. You can use the app or the MPI pest and disease hotline (0800 80 99 66) to report, whichever you prefer.
- ✓ Remaining vigilant when you open packages, mail or freight from overseas (including Christmas presents!) Unpack imported goods in an enclosed space and inspect them carefully for any unwanted hitchhikers. ●

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Industry, government and scientists continue to scan for emerging risks offshore

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The new Standard is now available for public comment. Find it at www.standards.govt.nz

Have your say on agrchemical management

NZS 8409:2004 is the New Zealand Standard for the Management of Agrichemicals and informs the use of agricultural chemicals including plant protection products (herbicides, insecticides etc) and veterinary medicines. It has been more than 15 years since this standard was reviewed and updated.

By Jane Lamb

The New Zealand Agrichemical Education Trust (NZAET) is leading this review and the new Standard is now available for public comment. The process, key changes and some important questions for industry to consider are set out here.

The process

A Standards Development Committee (SDC), with representatives from industry, central and local government and agrichemical users, was established in November 2019. In addition, five Working Groups were formed to look at specific elements of the Standard. That is, application technology; notification, signage and spray drift; off-label use; dairy detergents; and drones (and aerial application). Every section of the NZS 8409:2004 Standard has been

thoroughly reviewed with input from numerous experts. This final draft has been reviewed and approved to go out for public comment by the SDC.

Shall and should

The Standard includes both 'shall' and 'should' statements. Many but not all of the 'shall' statements are regulatory requirements. Compliance with all 'shall' statements is required to comply with the Standard. Industry quality assurance programmes such as NZGAP (Good Agricultural Practice) or regional plans may require compliance with part or all of the Standard, so it is important that agrichemical users review the proposed 'shall' statements to ensure they are all workable in their industry or particular situation. 'Should' statements reflect recommended or 'best' practice.

Key changes and questions to consider

While there are proposed changes to all sections of the Standard, the following reflects those sections and/or topics where more extensive change has been made.		
Scope of NZS 8409	<p>A key change to the scope of the Standard is to limit its application to the workplace. The Hazardous Substances Regulations 2017 are a significant determinant of the rules applying to hazardous substances and these regulations only apply to the workplace.</p> <p>The proposed Standard has been expanded to include dairy detergents. Fumigants, on the other hand, have been excluded from the new Standard due their very specific requirements and low number of users. Vertebrate Toxic Agents (VTAs) remain outside the scope of the Standard. In order to distinguish herbicides, fungicides etc from other agrichemicals such as dairy detergents, the term 'plant protection products' has been introduced. This is in line with usage overseas. Many plant protection products are sprayed onto the target plant, which introduces particular risks to be managed.</p> <p>The new scope also recognises that agrichemicals, particularly plant protection products, are used well beyond agricultural and horticultural activities. For example, the conservation sector is a big user of herbicides, as are the amenity and recreation sectors.</p> <p>The challenge for the proposed Standard is to ensure it is appropriate for all users of agrichemicals in the workplace, and all types of agrichemicals.</p>	<p>Question: Does the proposed Standard reflect your use of agrichemicals? Does it work for your particular situation?</p>
Storage	<p>Most changes in this section reflect regulatory changes, such as the requirement to obtain a Location Compliance Certificate if threshold volumes are exceeded. Some of the new regulations are very specific to classes and quantities of agrichemicals. To try to minimise complexity, the Standard is limited to quantities and hazard classes usually stored by agrichemical users. Those storing higher than usual volumes or more hazardous substances may need to consult the regulations directly to find the applicable controls for their situation. In particular, fumigants are not included in the scope of this Standard and the application to flammables is restricted to smaller quantities and assumes most stored agrichemicals are not highly flammable in nature.</p> <p>Another change to storage in the proposed Standard is the removal of the distinction between retailers and users. The Hazardous Substances Regulations apply controls based on the quantities and classes of hazardous substances, so a small retail supplier and a large user store may need to implement similar controls.</p>	<p>Question: Does the Standard clearly explain the regulatory requirements for agrichemical storage in a way you can understand? Do the quantity limits on flammables mean you will have to seek guidance beyond the proposed Standard?</p>
Notification and signage	<p>The current Standard has some gaps in relation to notification and signage. In most regions, these gaps have been filled through regional plan rules. However, this means there is significant variation between regions. Appendix C of the proposed Standard includes requirements for the preparation of a spray plan, notification of affected parties and signage when spraying. The concept of an 'on-site risk assessment' to be undertaken immediately prior to spraying is also introduced. This risk assessment is an opportunity to consider whether the job can be done safely and effectively given the conditions on-site on the day.</p>	<p>Question: Are the proposed requirements for planning, notification and signage workable for you?</p>

Competency and training	<p>There are requirements for competency and training set out in the Hazardous Substances Regulations 2017 and the Environmental Protection Authority (EPA) Hazardous Property Controls Notice. There are often also requirements in regional plans. Appendix F of the proposed Standards has been substantially rewritten to reflect new rules and also provide a recommended approach for regional councils and agrichemical users that meets the regulatory requirements.</p> <p>The type of equipment used, hazard classification of the agrichemical, nature of the location and degree of supervision influence the recommended or required level of training. Direct supervision and indirect supervision have been defined to assist with interpretation. As always, experience and on-job training are important alongside formal training or certification.</p>	<p>Question: Are the recommended qualifications and degree of supervision reasonable and workable for your industry and your particular situation?</p>
Global Harmonised System of hazard classification	<p>The EPA has advised a move from our current system of classification of hazards to the GHS (Globally Harmonized System of Classification and Labelling of Chemicals). This is being progressively introduced onto agrichemical labels and product data.</p> <p>The proposed Standard provides both the new and the old classifications when discussing hazard classifications, including a translation table in Appendix A. For ease of understanding, new terms such as 'high human toxicity', 'high ecotoxicity' and 'very high human toxicity' have been introduced to reflect common groupings of classes subject to particular controls under Hazardous Substances Regulations or the EPA.</p>	<p>Question: Does the Standard accurately reflect the transition from the current system of hazard classification to GHS? Is the introduction of the terms 'high human toxicity' and 'very high human toxicity' useful?</p>
PPE	<p>Appendix R covering personal protective equipment (PPE) has been rewritten to reflect the changes to technology and the regulatory environment. A new subsection has been added on the assessment of risk factors along with a table of risk factors similar to the widely used spray drift table of risk factors.</p> <p>There is also a new section on the use of enclosed vehicle cabs and procedures for avoiding contamination. More detail has also been provided on the selection of gloves.</p>	<p>Question: Does the new PPE risk factor table cover all risks appropriately? Is it a useful tool for assessing PPE requirements (alongside product information)?</p>
Disposal	<p>The disposal section (and Appendix M) has been updated to reflect current practice and higher environmental standards. Recycling of empty containers has been prioritised against other disposal options and the option for burning empty containers has been removed. More detail has been provided on how to dispose of contaminated water, for example from sprayer washings, and contaminated absorbent material used to clean up spills.</p>	<p>Question: Are all the 'shall' statements relating to disposal achievable in your industry or situation?</p>

Feedback

A copy of the proposed Standard and submission documents can be found at: www.standards.govt.nz. Feedback is required by 1 February 2021.

Feedback can be provided directly via the StandardsNZ website or provided to your representative industry organisation to consolidate on behalf of those they represent.

If you would like to seek clarification on any point prior to making a submission, please email your enquiry to the project manager (mel.dingle@growsafe.co.nz) or check the website (www.growsafe.co.nz > news and updates) for updates and FAQs. ●



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Leander Archer, Hawke's Bay AgFirst Horticultural Consultant, and Women in Horticulture member

NZ growers well placed to meet European Green Deal

New Zealand growers can make the most of their competitive advantages when it comes to meeting proposed new standards like the European Green Deal, says Hawke's Bay AgFirst Horticultural Consultant, Leander Archer, who has just completed a report on the topic.

By Elaine Fisher

"The Green Deal is the EU's plan to be climate neutral by 2050 and make the supply chain more eco-friendly. That will impact on our exports to Europe."

The EU plans to carry out a series of initiatives aimed to protect the environment and boost the green economy and will expect countries exporting food to the union to move in the same direction.

Leander's report was for New Zealand Apples and Pears Inc and investigated what changes would be needed to meet the EU Green Deal requirements.

"Actually our growers are well ahead in this space, but there are things the industry will need to do to not only meet EU requirements but also new standards in this country," says Leander who is a member of Women in Horticulture. "I'm excited that the world is moving towards an eco-friendly

future and I want New Zealand industries to lead in this space - the unfortunate part is then having to prove it to everyone, which means a lot of administration for growers.

"Jobs are in some of the best regions in terms of climate"

"The usual carbon, energy, water use and chemistry use topics are all there, but there's also focus on biodiversity, food waste, nutrient loss and the very exciting one - reducing non-circular packaging."

When Leander joined AgFirst five years ago, after completing a Bachelor of AgriScience majoring in Horticulture at

Massey University in 2015, she encountered an industry vastly different from that 15 to 20 years earlier.

The industry she knows today is focused on beneficial insects, and targeted use of soft sprays. "When I heard about what used to happen with calendar spraying and the harsh chemicals applied in the past I was surprised," says Leander who is impressed at how growers now manage their orchards.

"I hold the environment very close to my heart and support management techniques which protect it. However, I have studied chemistry and understand that there are soft, targeted synthetic sprays which break down after use into non-harmful substrates. These are important to protect growers' crops and I would not like to see the industry lose the right to use them or lose the ability to register new ones. There's a new book on the topic called *Farewell Silent Spring* by Howard Wearing, published by the NZ Plant Protection Society."

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The very exciting one – reducing non-circular packaging

Horticulture has proved to be perfect for Leander, who as a senior student at Tawa College in Wellington, had no idea what career she wanted.

"People were telling me to find my passion and follow that, but I wasn't sure what it was. I asked friends and family and they said 'avocados' and 'eating fruit'. I am good at science, care for the environment and enjoy interacting with people, but being a chef didn't quite fit."

When a family friend suggested horticulture, Leander took a look at the Massey degree and became convinced that was for her - for many reasons. "It was a cool degree which led to a career in the fresh food industry, with a strong potential for job security; much of the work is outdoors and it's also about helping feed people, and the environment.

"Because horticulture is about growing food it means jobs are in some of the best regions in terms of climate and I enjoy regional areas and the small-town feel."

Another unplanned advantage was that house prices were more affordable in the regions. As a result, she and fiancé Connor have bought their own home. "It's very much a doer-upper but we are loving it."

While studying for her degree Leander had the chance to attend horticulture conferences and meet people from a diverse range of occupations. "This showed there are so many opportunities within horticulture."

Leander began with Hawke's Bay AgFirst as a technician and is now a consultant. She has a strong focus on environmental

sustainability across all horticultural crops and is a specialist in the growing of apples and pears. Her roles include a mix of data analysis and reporting, environmental projects, orchard assessment and grower consultancy.

"I enjoy working with growers, helping them make sometimes small changes which can significantly increase their returns."

Assessing land for horticultural production and putting together orchard development budgets are some of Leander's favourite jobs. She also enjoys helping growers with orchard planning and crop estimation and sees a wave of Farm Environment Plans coming her way.

"Fruitgrowing and the environment are both extremely complex, linked systems and I love working with both. I don't think I'll stop learning for the rest of my career, which is just fine with me."



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Regional updates

Page 17



Left: Assistant Block Manager, Tam Cole-Holt, working on tip defining. Above: Motueka Fruitgrowers' Chairman, Richard Clarkson.

Tasman apple and kiwifruit season speed bumps

REGIONAL
UPDATE

A series of speed bumps summarises 2020 for Nelson fruitgrowers who faced Covid-19 challenges through the last harvest and then the stress of a potential labour shortage for the 2021 harvest.

By Anne Hardie

Motueka Fruitgrowers' Association chairman Richard Clarkson took on the role in the midst of a challenging year and says pipfruit growers are buoyant about their industry, but it hasn't been smooth sailing this year.

Tackling a harvest in a pandemic and trying to keep people safe put pressure on employers and staff, especially when the concept of lockdown was hard to grasp among many of the RSE (Recognised Seasonal Employer) scheme workers. Then there was the worry about sufficient containers and shipping to get their crop to market.

"We were lucky - we could pick, pack and ship fruit to market."

It all worked out in the end, and though he says it wasn't a stellar apple crop, the volume and value turned it into

a good season. Since then, more Braeburn variety has been removed on those orchards not connected to marketers with better returns, and replaced with varieties such as Envy, Dazzle, Jazz, Royal Gala and Lady in Red.

"Dazzle has been increasing in planting and most growers have been redeveloping and replanting their ground in the past 12 months," he says. "Growers are quite positive about where they are going."

Now they have had a good fruit set for this season's crop and have been using various strategies, including chemical thinning, to get the best quantity of fruit left on the trees in case labour was short through the apple thinning period.



The music was playing and the sun was shining when Sitai Feula (left) and Mack Kapeli were tip defining on a Birdhurst orchard



Paepaega Lafaitale taking the tips out of the flowering kiwifruit vines

"Labour and the ability to pick the crop is our biggest challenge going forward. Growers have been pretty stressed about harvest – their biggest fear is that they will not be able to pick their crops and get them to market. That's their only opportunity to recover money spent in the past 12 months and it would have an impact not just on growers, but the flow on into the communities as well. And it is going to be interesting shifting fruit with the world increasingly going into a recession."

On the plus side, he says customers around the world are eating more fresh fruit for the health benefits because they are worried about Covid-19, which led to increased sales of apples to Vietnam this year.

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On the plus side, he says customers around the world are eating more fresh fruit for the health benefits because they are worried about Covid-19, which led to increased sales of apples to Vietnam this year

Kiwifruit's high vitamin C content put the industry in a good position this year and New Zealand Kiwifruit Growers' Inc. (NZKGI) representative for the South Island, Paul Thomas, says "it isn't the worst thing to try and peddle through a pandemic".

A dry autumn set last season's crop up well for harvest and most growers harvested a good crop of gold kiwifruit that stored well through to the last fruit loaded out at the end of October. The green crop was down slightly but also stored well, which he says is most likely due to that dry autumn and good weather through harvest.

The pandemic created challenges, with lockdown coinciding with the gold kiwifruit harvest. It primarily affected the packhouses where the focus turned to keeping people safe through social distancing, physical screens and masks. It resulted in some productivity loss, but he says growers were able to adapt and get the job done.

Going into this season's crop, the region has had a good bud burst and resulting flower numbers. That's despite 200mm of rain in one week at the beginning of November. Though growers would have preferred the rain spread out a bit more, Paul says it helped set up the soil and the dams well for summer.

Looking ahead to harvest, labour is again the biggest challenge facing the industry. The majority of kiwifruit growers in the region also grow apples, and Paul says the Thomas Brothers family orchard will need a further 200 seasonal staff for harvest. They always need to find that number, but this year there are fewer RSE workers on orchards, few backpackers and so it is a daunting challenge to find people to get the crop harvested.

Leading up to the November rain, much of the region was 40% short of its usual rainfall, reinforcing the need for the



Christopher Alick working his way through the block



David Tabi working under flowering kiwifruit vines in mid-November

Waimea Community Dam which is now halfway through its construction programme. It's due for completion at the end of summer 2021-2022, with the reservoir to be filled over the 2022 winter. The concrete-face rockfill dam will be about 53m high, 220m long and contain about 13 billion litres of water. The cost has risen by \$25 million since construction began due to unforeseen geological

conditions discovered in February, taking the estimated cost to \$129.4 million. Delays including the Covid-19 lockdown have also had an impact, pushing the completion date back by six months.

For those growers who will benefit from the dam, the end is in sight and Richard says it will benefit not just horticulture and agriculture, but the urban community as well. ●

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Satsuma mandarins

Northland's fruit sectors find new ways to move forward

REGIONAL
UPDATE

Northland fruit growers have responded to this exceptional year with resourcefulness and adaptability consistent with our Kiwi number-8 wire reputation. While the drought had the biggest impact early in the year, it was overtaken by the impact of Covid-19 coinciding with the first harvests. As with other regions, this has subsequently pointed up the need to rethink labour sources and supply.

By Wendy Laurenson

Kiwifruit

Kiwifruit's big production area around Kerikeri is well served by the Kerikeri irrigation scheme so crops came through the drought in good condition according to Todd Jackson, general manager of Orangewood Ltd, a post-harvest and orchard management company in Kerikeri. "The drought provided good growing conditions resulting in high dry matter and brix, so while fruit size was smaller, the yield was good and the quality excellent, with a low reject rate. The irrigation infrastructure was under load because growers and domestic users were drawing off all at the same time, so this is something we need to be careful with going forward, but it held up under this season's intense pressure."

Then Covid-19 arrived literally as the first kiwifruit were being harvested. "We had to get our heads around that fast," Todd says, "but growers are great at coming up with solutions, so we only lost about a day as we brainstormed how to tackle things. We managed to get protocols in place on orchard and in the packhouse then fine-tuned operations as issues presented. The collaboration between post-harvest operators, Zespri and NZ Kiwifruit Growers Inc. was exceptional and some of our growers came in and built screens for worker protection and separation. We all learned how to look after each other. Some of our permanent staff opted out for family reasons and others

stepped up, so we got through even under the increase in fruit volume as the new gold fruit comes on-stream."

"Zespri needs to be congratulated for what they've put in place to get the huge volume of kiwifruit away in this global Covid environment. They shipped a lot of fruit early and negotiated delays in container availability and movement, especially in and out of China, which takes a large portion of our export kiwifruit."

Todd says the focus is now on adapting growing and post-harvest protocols to meet China's more stringent pest control requirements, and to come up with creative solutions to sourcing labour. Orangewood relies on Recognised Seasonal Employer (RSE) scheme workers from Vanuatu for harvest and pruning, and they normally return home at the end of September, but couldn't this year. "Most are now going home, but some have chosen to stay with us," Todd says. "We probably can't get the others back so we're rethinking our labour source and are looking at creating worker teams similar to RSE teams but made up of New Zealanders and backpackers. We're collaborating with orchard product groups like pipfruit, citrus, berries to co-ordinate seasonal timing for harvest and pruning teams."

“

Focus is now on adapting growing and post-harvest protocols to meet China's more stringent pest control requirements, and to come up with creative solutions to sourcing labour

Avocados

Avocados in the Far North are under aquifer sourced irrigation so although the drought wasn't a big issue, it meant more draw-off sooner and for longer. Gordon Collett, Seeka client relationship manager Northland, says fruit set had been good but fruit size profile was generally smaller. "Most avocado irrigation uses micro-sprinklers and this year, because the spread is not broad enough to cover the whole root area on some older orchard trees, this resulted in some water stress and lower yields due to smaller fruit. The newer developments with younger trees were not so affected, but some of the old orchards have now doubled the number of micro-sprinklers, which in some cases meant installing bigger laterals. The drought and all the new developments have raised concerns in the Far North about aquifer levels, but new water use consents are conditional on draw-off being less than replenishment, so councils required growers to record and send in bore levels to monitor this."

Because avocado harvest is later than kiwifruit, most of the Covid-19 harvest and post-harvest protocols had been worked through before the harvest season started, and labour availability was more stable. "A lot of casual workers and backpackers were still around so we were lucky this

year," Gordon says, "but in the future some of the new big orchards will be rethinking their labour sources. Older orchards using hydraladas need experienced locals rather than casual labour, but the newer higher density orchards that pick from the ground will have more options. These plantings are now just coming into production and last year most of those first harvests went onto the local market. This year they started exporting, and yields will double and treble in the next year or two as more blocks come on stream, so growers, packers and exporters are planning for changes in logistics and infrastructure for this new era."

Most avocados are sea freighted but Covid-19 and industrial related issues caused some delays in and out of overseas ports, which in a few cases affected fruit quality on arrival. "However, more fruit is being directed into Australia this year because prices are good there and fortunately delays are less significant," Gordon adds.

Citrus

Northland's citrus size, quality, and volume were impacted by the drought, but access to Kerikeri Irrigation helped mitigate that impact. Tom Chamberlain, regional manager of T&G Fresh, explains that while dam levels did get low, they were built to withstand back-to-back droughts and they're now back up to capacity with Northland's heavy rain this winter. And while pest pressure increased in the dry months, especially with thrips and citrus flower moth, disease pressure was reduced with less rain to spread infection. The drought also delayed harvest, with acid levels remaining higher particularly in the navel orange crop at T&G's Taipa orchard.

Covid-19 significantly impacted Northland's main citrus harvest which runs from mid-April to August. "The biggest challenge was maintaining quality control while the QC kept the two-metre distance when fruit was unloaded from the picking bag into the bin," Tom says. "Access to contractors was reduced during Level 3 and 4 and only essential services for our orchards were used during this time. We were privileged to operate as an essential business right through, and our people did everything possible to keep each other and our communities safe."

"Air freight, which is used at the start of the citrus season, was limited by Covid and therefore was more costly, but fortunately container shipping of our lemons into Japan was not significantly impacted."

As with all of horticulture, sourcing labour is a big issue for the Northland citrus sector. "With fewer overseas workers, we're working closely with the local community and government ministries to recruit for the forthcoming season and train local people to fill positions which will be critical to the ongoing success of the citrus industry," Tom explains. "We've launched our biggest recruitment campaign ever, FRESHWORX 20/21, to attract students, school and University leavers, and anyone looking for a job. Upskilling a new horticulture workforce is a key focus for 2021 to not only provide seasonal opportunities but longer-term career paths for Kiwis." ●



Ian Broadhurst, General Manager of Mapua

Mapua Avocado Orchards introduce fresh labour initiatives



The new era of avocado plantings in the far north in recent years is on a scale unprecedented in New Zealand. Mapua Avocado Orchards are one of the biggest and newest of these and they're introducing some outside-the-box employment initiatives to best serve their size and these changing times. These include Mums' crews, a four-day work week, training for every permanent worker, free annual medicals and workplace gardens.

By Wendy Laurenson

Ian Broadhurst is the general manager of Mapua, which is the privately owned umbrella organisation for three avocado orchards and one beekeeping operation in Pukenui and Waiharara. "We started developing all three orchards from ex dairy farms in 2017 and now have a total of just over 400 hectares in close planted avocados plus 4,000 beehives in our Mapua Bees operation. We've just had our first avocado harvest totalling about 110,000 trays this season, and when we're fully planted, we estimate we'll be producing around 400,000 trays next season increasing to 1,000,000 trays in full production."

And that needs staff. Ian is very familiar with avocados and with employing staff. "I've been growing avocados myself for 35 years, have been full-time in the avocado industry in the Far North since 2006, and was trained initially as a forester. As we set up here, I wanted to use best practices noted from previous work experiences to create a workplace environment and culture that would allow staff to have a job for life. We're structuring the work round the worker rather than trying to fit the worker into the work, and work-life balance underpins this. So the first thing we introduced after completing the development phase, was a four-day, 40-hour week."



We're structuring the work round the worker rather than trying to fit the worker into the work, and work-life balance underpins this



Mapua Bees Workplace garden

Each of the three orchards has its own manager and Ian deliberately selected orchard managers with no prior avocado industry experience. "I chose them on their people skills, and organisational and logistical capabilities because we can easily teach them the finer points of managing intensively run avocado orchards. We've then put experienced avocado industry people in place as solid technical support for them, and we're using the same model throughout the organisation."

Another priority is to employ as many locals as possible. "Ninety percent of our staff are local," Ian says. "We haven't employed RSE (Recognised Seasonal Employer) scheme workers to date, so the rest of the staff are currently backpackers, both from New Zealand and overseas, who in these post-Covid days are harder to source. To suit the local workforce, I was keen to initiate a Mums' crew with work hours from 9am to 2pm and a half-hour break. We realised mums were a massive untapped workforce and we had been figuring how best to fit the work around what they need. Since Covid, lots of families are keen to add to their household income, so we brought the timing forward and started it early November, before we were quite ready. We've had an enormous response so we'll now fine-tune the details, including flexibility for school holidays."

The shorter work days of the Mums' crews will necessitate twice as many people per shift, so Ian says there are also logistical issues to sort out like on-orchard transportation. "We're hoping to get the mix right so that some of the mums will become full-time permanent workers as their kids get older."

To provide career opportunities at Mapua Orchards, another initiative is to train all permanent staff with horticulture qualifications to level 4. "Already all our orchard permanents have level 1 and 2 and are enrolled for levels 3 and 4, and our beekeeping people are all progressing to formal qualifications. As an incentive, we have pay reviews every November and these are linked to efforts in training."

Mapua is also encouraging a safe and healthy workforce with some novel initiatives. "My time in forestry management gave us a model for robust testing to provide a drug and alcohol-free workplace, and for providing a free medical each year that covers the basic checks."

We've also started running a three-month 'Biggest Loser' competition for weight loss to win generous grocery vouchers in time for Christmas. To encourage people to eat well, each orchard has set up a food garden growing healthy vegetables, and because the bee guys are on leased land their gardens are in raised beds."

Physical safety is also encouraged with Growsafe training and licences for forklift, tractor and quad driving. "We've now started gathering info on how to help our staff to get drivers' licences," Ian explains, "because a lot of people up here have no licence which really restricts their life or saddles them with a criminal conviction if they drive regardless."

With Mapua Avocado Orchards just completing its first production season, Ian says the focus now is to ensure the next crop is of high export percentage and top quality. "An organisation of this size needs quality to be the priority so we'll be doing everything to reduce tree stress events by keeping up with nutrition, water management, and our IPM (Integrated Pest Management) systems, and to drive costs down and returns up. The aquifer water-use issues up here are now being resolved as we realise as a community that we're all after the same thing - a sustainable water resource for us and future generations that can also provide employment. It's all about communication." ●

"I wanted to ... create a workplace environment and culture that would allow staff to have a job for life"





Students from Te Kura Kaupapa Māori o Te Matai in Te Puke take part in the one-day Tiakina Taiao programme organised by the Tauranga Moana Biosecurity Capital network

Plenty on the go in BOP

Water, biosecurity, the passing seasons and the human pandemic that won't go away in a hurry have all been top of mind for the orcharding industry in the Bay of Plenty this year.

By Jackie Bedford

Extended dry in the Bay prompts new measures

As 2020 winds up and we head into summer of 2020-21 the Bay of Plenty is still dry, following the dry summer of 2018-19 and drought in summer of 2019-20. This is underlining the importance of work by the kiwifruit industry on a Water Strategy.

Kiwifruit is very dependent on water at certain times of year, such as during spring when there's a lot of cell division taking place, Sandy Scarrow, managing director of the Bay of Plenty Fruition Horticulture consultancy points out.

"A technical paper in the 1980s said kiwifruit doesn't really need a lot of water. But at that time they were producing 6,000 to 7,000 trays per hectare and a fruit count of 46 could be harvested and marketed. Now yields have doubled, and we've got new varieties and there is kiwifruit being grown on more pumice or sandy soils. Strategic use of water is crucial now."

Fruition Horticulture has offered a soil moisture monitoring service for several years, and over the past couple of years growers have been taking up the option of constant monitoring that is being provided through the Sentek range of tools. "Growers can receive these results through telemetry or bluetooth probes. It shows them the soil moisture levels relative to rainfall, irrigation or plant use."

The summer of 2019/2020 saw some of the lowest-ever recorded rainfall and stream flows in the Bay of Plenty. There are reports of many unirrigated kiwifruit orchards producing half their typical yield and more lower value small fruit.

The kiwifruit industry established a Water Strategy in 2019 to look at how to improve water quality and management on orchards. This was against a backdrop of new regulation, unpredictability brought on by climate change and changing land use (the kiwifruit industry growth is



Juliet Gerrard, the Prime Minister's Chief Science Advisor, speaks at the third annual Tauranga Moana Biosecurity Excellence Symposium in November

expected to reach an additional 2800 ha by 2027). One of the areas the strategy is exploring is ways for growers to be more efficient with their water use on orchard as well as looking at water storage solutions.

It's a good idea for fruitgrowers to look more closely at how they are using water, says Steve Pickles, water shortage event manager for Bay of Plenty Regional Council.

“

It's a good idea for fruitgrowers to look more closely at how they are using water

The Council has been reviewing its own management and preparations, and in March councillors approved a process for issuing Water Shortage Directions (WSD) under the Resource Management Act. If water flows in a particular river or stream get too low, the Bay of Plenty Regional Council (BOPRC) can now put in temporary extra water use restrictions to protect the waterway from harm. This could take various forms – a temporary ban on taking water or reducing the amount, or restricting the purposes for which people like orchardists may take water.

If users install water meters and telemetry, shifting to staggered water takes might be possible Steve says.

"[BOPRC] were really close to implementing water take restrictions last summer – which would have affected horticulture and agriculture in particular," he says.

"So it's really important that [growers] are prepared for future restrictions and start thinking about how [they] can manage operations with much lower water use, as well as install telemetry to better monitor their actual use."

Busy times with Covid-19

The Covid-19 pandemic overshadowed much of the year in the Bay of Plenty, as in other regions.

The 1,500 workers at Trevelyan's packhouse in Te Puke found themselves designated as "essential workers" as New Zealand went into lockdown in March to contain the spread of Covid-19. It was the beginning of the kiwifruit harvest, a peak time for Trevelyan's, which processes 10% each of the national kiwifruit and avocado crops.

Managing director James Trevelyan had a warning of what was coming after a casual chat with a staff member who has family in a province near Wuhan in China. He then had video conferences with kiwifruit industry peers in Italy, another country that got hit early and hard by Covid-19.

James says a lot of effort went into guiding and mentoring staff through the complex process changes being made to meet the Ministry for Primary Industries' requirements for screening, social distancing and hygiene.

"We re-jigged the site. We have 135 people on the line and we had to sort out the process for them to get to the smoko room without crossing paths. We put holes in the walls to make that possible. With those 135 people washing their hands eight times a day, the washing machine didn't cope so we had to get that re-engineered. We couldn't fit more than 50 in the smoko room with social distancing so we put up tents as well."

He says listening to staff concerns was important, and even so some left in frustration at the upheaval. "We explained to them why we were doing things and the science behind it. We relied heavily on Ministry information for that."

Things got a lot busier for Katikati-based online produce store Growlink in March 2020 too.

Growlink started more than 50 years ago as a local market gardening business with a roadside shop, founded by Alan Noble. In 2014 an online facility was added. Growlink's lines include avocados, strawberries, apples, lemons and bananas along with fresh vegetables and eggs, jams and chutneys and local honey and olive oils.

"We had big queues outside the store just before lockdown – I've never seen anything like it," says manager Karin Du Plessis. "And then we were a bit overwhelmed when the online orders started coming through in their hundreds. We went from doing 50 online orders a week to 100 a day."

"Customers were doing group orders – for parents, neighbours and so on – so there would be three or four boxes for every order. Many of our existing customers are older people so we took their orders on the phone, as we wanted to help everybody who has supported us over the years."



Sandy Scarrow

Growlink's four permanent staff and one delivery driver were helped by three extra staff and two more delivery drivers during lockdown. "We started at 5am and all we did all day long was pack boxes. Our computer set-up and systems were all good.

"Two guys with delivery vans who had lost their usual work started helping us, and my daughter helped with planning the new routes, and by the third week we had it sorted. It was a great team effort and although we were all working long hours, it was very rewarding in the end."

Growlink delivered from Katikati all the way through to Tauranga and Waihi in the other direction, and the Whangamata courier took deliveries back to Whangamata where he lives. The business grows most of the fresh produce itself, Karin explains, gets about 30% from other local suppliers, and buys some from the market.

Tauranga Moana Biosecurity Capital (TMBC) held its third day-long Symposium in November 2020 with a theme of Covid-19 and new thinking for biosecurity.

Launched in October 2018, this regional biosecurity network is focused on raising awareness, building capability and taking collaborative action.

"It was clear that we needed to do more to protect the things we love about this region and get more savvy about working alongside mana whenua," says co-chair Graeme Marshall. Among its current diverse membership are Kiwifruit Vine Health, NZ Avocado Growers, Plant & Food Research and packhouses.

Earlier in 2020 TMBC signed a memorandum of understanding (MOU) with Biosecurity New Zealand to provide local expertise during a biosecurity response. As part of this, they are keen to ensure that mana whenua are recognised and acknowledged for the significant role they play in a response.

"As part of this, they are keen to ensure that mana whenua are recognised and acknowledged for the significant role they play in a response"

Other activities include a one-day programme for schools called Tiakina Taiao, a networking event, workshops and a kaitiakitanga wānanga aimed at increasing cultural competency across the network. Tiakina Taiao is being delivered specifically to Year 8 & 9 Kura Kaupapa Māori students, infusing mātauranga Māori with science and giving kids the tools they need to protect the environment.

A simple online quiz about the brown marmorated stink bug proved popular as an awareness-raising campaign during the month of September. "We worked with communications professionals across the region to develop an online campaign. The weekly prizes consisted mostly of local tourism experiences in our region, which showcases what it is that we're trying to protect from pests and disease."

A SIMPLE ONLINE QUIZ ABOUT THE BROWN MARMORATED STINK BUG PROVED POPULAR AS AN AWARENESS-RAISING CAMPAIGN

New Level 6 training

On the training front: Fruition Horticulture is inviting participation in a senior-level cluster based in Tauranga, having just got approval to deliver its new Level 6 Fruition Diploma in Horticultural Management with a strand on Process Improvement. This will be six papers delivered over two years, starting in January 2021. It's suitable for senior management or people in technical roles Sandy Scarrow says. They also plan to set up clusters in Nelson and Hawke's Bay and to deliver to others online. ●

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Additionally, the Government has announced an 'Apprenticeship Boost', which promises to pay employers up to \$16,000 per apprentice to either employ or retain apprentices over two years.

The Free Trades Training is open from now until the end of 2022, which is why there will never be a better time to train.

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Kiwifruit industry reflects on 10 years of Psa

The 10th anniversary of the detection of Psa in New Zealand kiwifruit was marked with an event in the Bay of Plenty in early November.

By Jackie Bedford

The vine wilt and die-back disease, regarded as one of the most serious kiwifruit diseases, was detected on a Te Puke orchard on 5 November 2010. Within a week two strains of Psa had been identified on 75 orchards.

Ten years later the industry is taking a moment to "recognise and remember just what we went through", says Paul Jones, a grower, packhouse owner and industry leader.

The New Zealand industry knew Psa had been spreading overseas but had not prepared for it arriving here, he recalls. Initially, when people "saw Gold dying in front of their eyes", there was a lot of uncertainty and people felt fear and some anger. It became clear during the following year that Hort16A, the main Gold kiwifruit variety, "was not going to make it," and with the help of the storm that contributed to the sinking of the cargo ship the Rena on the reef off the coast near Tauranga, "Psa was pretty much everywhere". Paul's own orchard at Paengaroa was hit in the second half of 2011. The industry set up Kiwifruit Vine Health (KVH) to lead its response.

In the early days of the infection, researchers encouraged the use of an ages-old treatment – low rates of copper – as a preventative and cure, while the search started for alternatives. Today a fairly standard crop protection programme will include low rates of copper for Psa prevention (applying a total of 1.5k of copper per ha in a year, well below the New Zealand Crop Protection Standard of 8kg maximum a year).

Attention turned to the three new Gold varieties developed by Plant & Food Research, which were just entering pre-commercial trials and were still largely unproven. Paul, who was on the KVH board, was one of several who spoke up in favour of Gold3 as a possible "pathway forward... The level of certainty about that was much lower than ideal, but it gave hope and helped with the mental state."



Zespri Director Paul Jones at an event on 5 November 2020 commemorating 10 years since Psa detection in New Zealand kiwifruit

As it turned out, Gold3 – named "SunGold" by the marketers – proved to be highly tolerant to Psa and is also in many ways a superior Gold variety. "I can vividly recall the first time I saw a G3 vine with fruit on it. It was visually stunning – the number of fruit, how big, shiny and clean they were. I wasn't a particularly keen 16A grower – I hadn't figured it out. But when I saw SunGold I thought, 'This is for me.'"

Strangely, Psa acted as a circuit breaker, forcing a wholesale shift to this new variety rather than some kind of "untidy transition." For example, the Plant Variety Rights on Hort16A were due to expire in 2016 and the industry had not yet planned how to manage that.

At its peak, New Zealand marketed 32 million trays of Hort16A a year at an OGR (Orchard Gate Return) of \$6.80. SunGold this year will account for 85 million trays at \$11.50. "We're on a totally different trajectory now – we're going up by 10 million trays a year and the price has been increasing year on year too. Thinking back on the Psa journey is a reminder of how good a place we are in now."

"We're on a totally different trajectory now – we're going up by 10 million trays a year and the price has been increasing year on year too. Thinking back on the Psa journey is a reminder of how good a place we are in now."

The 10th anniversary event was organised by kiwifruit researcher Dave Tanner. ●

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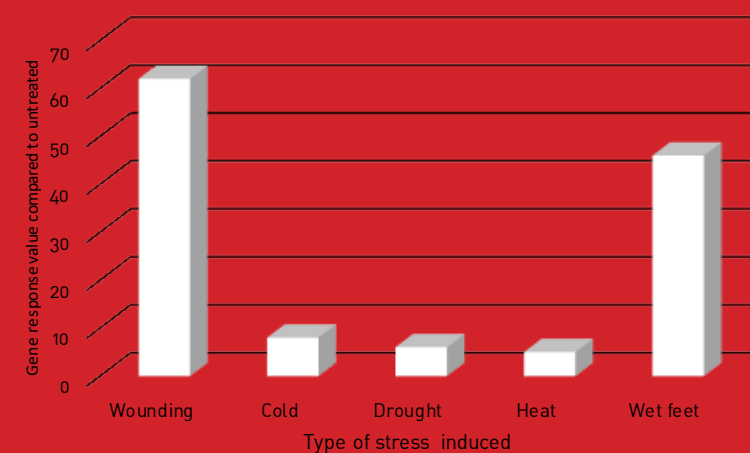


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MP for Tūkituki Anna Lork talks to Irrigation Services Orchards Assistant Manager Chief Nepe at the Employment Expo

Labour Expo draws crowds

Hastings Mayor Sandra Hazlehurst set an audacious goal of “not one apple on the ground” at an Expo to help ease pressing horticulture labour shortages in the region.

From Rose Mannering

About 500 potential job seekers poured through the doors of the ToiToi: Hawke's Bay Arts and Events Centre in November, eager to find out more about job opportunities in the horticulture and viticulture industries at the Pick the Bay Employment Expo.

Hastings District Council partnered with New Zealand Apples and Pears Inc, local government colleagues, the Ministry for Social Development (MSD), the Ministry for Primary Industries (MPI), the Ministry of Business, Innovation & Employment (MBIE), industry trainers and representative groups as well as over 20 growers to hold the expo, to help support the sectors with the current shortage of workers for this harvest season.

The stands at the event had information about summer work opportunities in the industry – from picking to forklift driving and working in the packhouse – to longer-term career opportunities.

Representatives from the Eastern Institute of Technology (EIT) also attended, giving people training advice, and



information about pastoral care with He Poutama Rangatahi providers.

Hastings mayor Sandra Hazlehurst said she was astounded by the number of people who dropped into the event that ran from 4pm to 6pm, and that it showed the value of all the agencies working

together to promote the industry to local workers. “Hawke's Bay is the food bowl to New Zealand and the world – let us show everyone career pathways for Hastings Heretaunga. It is a great turnout – we are looking for local solutions to this problem.”

“We produce the best apples in the world, this Covid problem has bought us all together.”

Event attendees ranged in age from high school students to retirees, and Sandra Hazlehurst said local growers who needed reliable teams were keen to offer conditions that worked for everyone.

New Zealand Apples and Pears' Gary Jones said that it was the biggest turn-out he had ever seen for an industry event.



Hastings Mayor Sandra Hazlehurst (centre, in green shirt) leads the way at the opening karakia

“In difficult times our community has shown real confidence in the plants industry and they see the opportunities it has to offer. There are hundreds of permanent and seasonal jobs on offer here in an industry and region that will continue to grow well into the future. That resilience is hard to find and we are so fortunate to have it here in Hawke's Bay.

The 20 grower organisations manning their stalls were competing for a limited number of work-ready people. Enticements to draw workers included a chance to win a Magpies rugby jersey, a shot at a basketball hoop, and other giveaways.

Smaller family-owned business operator Marian Hirst said she was thrilled to gather 50 names of potential workers at the expo. However, the conversion rate to workers on the ground was low. “Our hit rate was low, a lot of

people we contacted had already been secured by other organisations,” she says.

On their own initiative, they have put together a group of mums of school age children. Despite all of their efforts, they are still short of workers. “We have full-time vacancies we have been trying to fill for some time, we have tried various avenues including MSD, but to no avail.” ●

“

Enticements to draw workers included a chance to win a Magpies rugby jersey, a shot at a basketball hoop, and other giveaways

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Tough but rewarding nut to crack

Macadamias are a tough but rewarding nut to crack for lifestyle orchardists Phillip and Sue Bearsley.

By Helena O'Neill



Phillip Bearsley

The couple owns a four-hectare macadamia orchard at Karaka, just south of Auckland. When they first bought the property in the early 2000s, they ran a small number of beef cattle before planting a trial plot of 150 macadamia trees in 2003.



The property has red-clay soil underneath the topsoil and is prone to high winds, which present challenges for trees, Phillip says.

"No trees really like the high winds, but macadamia trees would probably be able to handle it the best. We hadn't considered macadamias – I thought avocados, but they don't like the winds.

"At that point in time we only knew of one macadamia tree nursery ... he [the owner] came out and said we would plant 12 or 13 cultivars and see which ones were best."

In 2014 they planted another 300 of the best performing macadamia trees, with enough room for another 350 trees. Because the orchard is small, they can be hands-on and spray-free, resulting in very low insect damage and high-quality nuts.

With one final section to be planted, the orchard now has 650 trees of varying levels of maturity.

The Bearsleys' trees start dropping nuts at the end of April or early May. Only around 5% of the mature trees are pickers that require them to use a tripod-style orchard ladder to harvest the nuts. The droppers are easier to harvest from the ground, as long as the nuts are picked up regularly and the grass is kept short in the orchard.

"The different cultivars come and go, and we're still harvesting at the end of October.

"We get about 40 kilograms of nut-and-shell off each tree, the commercial [mature] trees."

The crack-out rate for the macadamia nuts is about 30 to 33%, he says.

"Some of the trees, the H741s, have actually got a 33% crack-out rate, so we've planted a whole lot more of those ones. But they do suffer from the wind really badly. So we've planted them closer together."

The H741 macadamia trees drop about 75% of their fruit for easy harvesting.

The macadamias are processed on-site as their previous nut processor in Napier sold the business earlier in the year. It's a lot of hard work and long days, Sue says.

"This year has been different. We're trying to do everything, so every day it's work on the farm.

"We're just taking it week by week at the moment, to see how much each crack that I process and see what's left. It all seems to be selling still at the moment, so we'll just do it again next week."

Sue roasts macadamias to order, to make the most of the nuts.

"I have the kernel natural and then if people want them roasted then I roast them straight away. It's better to have the options there to have them roasted when I need to. At the end of the cracking season when the nuts are getting a little bit older, then we do our batches of oil.

"The people that have tried it, they rave about it, they can't believe how good it is and they keep coming back."

When they first made the pure macadamia oil Phillip was surprised by the lack of colour in the oil. As far as he's aware, no one else makes pure macadamia nut oil, preferring to blend it with other oils which also changes the appearance to a yellow, brown, or green hue.

"The macadamia oil is really, really good because it has no flavour of its own. It's more like salt in that it brings the flavour of other things out," he says.

"We get about 40 kilograms of nut-and-shell off each tree, the commercial [mature] trees"

Demand for their pressed oil is increasing, with the Bearsleys making more volume each time they make a batch. Each batch needs four weeks to settle, allowing the fine bits of nut kernels to sink to the bottom leaving the oil clear.

Lockdown did not impact the orchard too much other than being unable to deliver their orders, Sue says.

"We just kept harvesting and processing the nuts, and built up a bit of a stock in the fridge. As soon as lockdown eased, we contacted our customers awaiting orders and as soon as we could we were out delivering."

Meanwhile, a lot of the development work the Bearsleys are doing now won't be realised by them.

"Even though we're still planting trees now, they're going to be 20 years before they're at their commercial stage.

"For anyone who is going to start a macadamia nut farm, I would just buy an established one. We've realised that by the time we grow older, much older, this will be too much for us." ●



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Is it going to be okay?

Ian Proudfoot : KPMG Global Head of Agribusiness

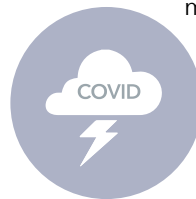
A common question in recent weeks has been how much I think things have really changed since March. Not an easy question to answer from the bottom of the South Pacific, unable to see for ourselves what has changed and assess what has become embedded into everyday life.

Cutting to the chase, the question really being asked is, things are going to be okay, aren't they? The simple answer to this question is yes. People still need food and the challenges food supply chains around the world have faced this year mean people now recognise the role food plays in their lives more than they have done for decades.

The focus on health and safety that has dominated global media all year also plays into our hands. We have always been a high integrity producer of food products and our 'success' in the initial phase of the Covid-19 response has reinforced this perception amongst the premium consumers we seek to sell to.

One thing that 2020 has demonstrated is that life is not simple. The global food system is complex and therefore there is not a simple answer to the question, are we going to be okay. What has become very apparent in recent months, as second waves of infection wash around the world, is that Covid-19 is not a battle we win and emerge from, it is a virus that is with us for the long-term and one the global community will need to adapt to. This means some of the behaviours adopted this year will become embedded, and my belief is that these will impact many aspects of how people access and consume food into the future.

Insights from colleagues around the world suggest that 2021 will likely be more challenging for the food system than 2020. Rolling lockdowns and Covid scares will continue to impact the hospitality sector and global food service supply chains, making it difficult for growers and processors to connect their products with consumers, who will continue to source food digitally and eat at home. Labour constraints are unlikely to ease, as borders remain closed or highly restricted, making it challenging not only to harvest produce but ensure it is graded to maximise its value. The quest for sustainable, packaging solutions involving less plastic is being questioned as people seek confidence their food has been subjected to



minimal human handling. Freight product around the world will remain difficult and expensive as shipping lines and airlines continue to limit schedules to ensure their financial viability.

Responding to these challenges with a 'business as usual' mindset will add cost at a time when economic recession means there are fewer people with the purchasing power to pay the price premiums we seek for our products. That is why we have reached the point in time when we need to think beyond riding the storm out and start to take the steps needed to pivot our businesses and our sectors to operate in the now normal future, that of a world that is learning to adapt to the virus.

We have no idea when (or even if) the Covid storm will blow out, and one of the clearest signals we are getting internationally is that people are recognising that life must go on. Yes, it will be different (working from home, wearing masks, sanitising continuously, more conscious choices about where you go, who you socialise with and what and how you choose to eat), but communities around the world are learning to keep living while the virus circulates around them. The challenge for us in New Zealand, behind our border and with a government committed to eradicating the virus, is how do we adapt to the new world that our consumers are living in and maintain our relevance to them?

Now is the time for leaders to stand up and recognise that we need to rethink how and where we grow our produce and the technology we use to pick, sort and pack it. Now is the time to put the consumer at the centre of everything we do and pivot our supply chains to ensure we are positioned to consistently and reliably meet their needs. Now is the time to redesign our consumer experiences to provide confidence about the safety of the products that we grow. Now is the time to pivot towards the future food system. This means going beyond the tactical moves taken to date and making fundamental shifts in strategy and redeploying investment to equip ourselves to thrive in the future.

Returning to the original question, is everything going to be okay? For those who are prepared to be bold and see the world in front of them as it is today, not how it was last year or how they think it should be, the answer is undoubtedly yes. It will possibly be better than before. For the rest, my guess is life is only likely to get harder. The key is that the decision to be bold rests entirely with you. ●



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Norm Carter and Her Excellency, the Rt Hon. Dame Patsy Reddy

Ahuwhenua Trophy 2020 winner announced

The winner of the inaugural Ahuwhenua Trophy Excellence in Māori Horticulture Award 2020 is Te Kaha 15B Hineora Orchard.

Hineora Orchard is a Māori freehold land block located in the Eastern Bay of Plenty township of Te Kaha, 65km east of Ōpōtiki.

The announcement was made on 20 November by Her Excellency, the Rt Hon. Dame Patsy Reddy at a special awards function in Rotorua attended by 750 people, including Ministers, other politicians and dignitaries, agribusiness leaders and whānau.

The two other finalists were Otama Marere in Paengaroa near the Bay of Plenty town of Te Puke, who grow a mixture of Green, SunGold and organic kiwifruit as well as avocados; and Ngāi Tukairangi Trust, which is very large kiwifruit operation with one of its orchards based at Matapihi,

just a few kilometres from the centre of Tauranga city.

Dame Patsy presented the Ahuwhenua Trophy to Norm Carter, the Chairman of Hineora Orchard, while Ahuwhenua Trustees the Hon Willie Jackson, Hon Damien O'Connor and Dave Samuels presented the replica trophy, as well as winners medal, historic certificate and cash prize to the Trust.

'I'd like to congratulate Norm Carter and the Te Kaha 15B team, as well as all the finalists. The awards function was a powerful statement about Māori commitment to the whenua (land) and horticulture,' said HortNZ President, Barry O'Neil.

'Every finalist had something to say about the importance of the

whenua, their struggle to take back control and develop profitable horticulture businesses.

'These horticulture ventures epitomise the Māori concept of Kaitiakitanga (guardianship). They have become assets of which the whole iwi is proud and shares in, providing employment and careers now and for future generations.

'Horticulture New Zealand was privileged to be a sponsor of the inaugural awards. We look forward to continuing our support of Māori horticulture. In 2023, it would be great to be overwhelmed by deserving entries from across the fast-developing Māori horticulture sector.'



Mike Crossan, Dr Charlotte Severne, Brandon Cross, winner Maatutaera Akonga, Finnisha Tuhiwai, Dave Samuels and Barry O'Neil

Te Kaha 15B, Hineora Orchard comprises of 11.5 hectares, on which the Trust runs a kiwifruit joint venture operation, a commercial pack-house facility housing the local kiwifruit spray company (in which the Trust holds shares), and a four-bedroom home for accommodation at the block. Prior to the Trust's creation in 1970, the land was largely occupied by different whānau who farmed the block maintaining a subsistence living growing a range of fruit and vegetables for the local community.

“Māori are significant players in the horticultural sector

Kingi Smiler, Chairman of the Ahuwhenua Trophy Management Committee said Te Kaha 15B Hineora Orchard was a worthy winner of the trophy.

'The Trustees have shown great vision, persistence and resilience to establish their operation and to achieve some impressive results. Their operation, like the other finalists, is something that must make their whānau feel proud of their efforts,' he said.

'This is the first time in the 87-year history of the competition that the trophy has been open to Māori horticulturalists and says this is not before time. Māori are significant players in the horticultural sector and we must recognise their contribution to the New Zealand economy.'

Ahuwhenua Young Māori Grower Award also announced

The winner of the inaugural Ahuwhenua Young Māori Grower Award is 26-year-old Maatutaera Akonga.

Maatutaera is of Ngāi Tahu, Ngāti Porou, Ngāti Kahungunu descent and is senior leading hand at Llewellyn Horticulture based in Hastings.

The two other finalists in the competition were 24-year-old Brandon Cross of Tauranga, who works as trainee orchard manager for the large kiwifruit orchard management and post-harvest company Seeka; and 25-year-old Finnisha Tuhiwai, who is packhouse manager for Maungatapere Berries located west of Whangarei in a rural town ship of Maungatapere.

Award judge Aaron Hunt from Te Tumu Paeroa said the standard of entrants was very high, reflecting the number of young Māori who are making successful careers in horticulture. ●



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Biosecurity Award recipient Linda Peacock, of Kiwifruit Vine Health, with Hon. Damien O'Connor, Biosecurity Minister

Kiwifruit industry champions celebrated at national awards

Representatives from the kiwifruit industry have been awarded in recognition of their outstanding contributions towards protecting New Zealand from pests and diseases.

At the annual New Zealand Biosecurity Awards held in Wellington in mid-November, Linda Peacock was awarded the Biosecurity Minister's Biosecurity Award for services to the kiwifruit industry, while Kiwifruit Vine Health (KVH) accepted the New Zealand Biosecurity Special Award for outstanding commitment to biosecurity on behalf of the kiwifruit industry.

In making the award to Linda – a long-standing industry liaison and technical specialist at KVH – Biosecurity Minister Damien O'Connor said Linda has worked tirelessly with growers and technical teams from across the regions for more than 30 years, taking science-based lessons and turning them into easily understood, practical solutions to help kiwifruit growers.



"Highly regarded across industry, Linda has been an incredible mentor who always puts the needs of growers first, with passion and empathy. She's also an active contributor to regional biosecurity networks KiwiNet and Tauranga Moana Biosecurity Capital, and a member of the Psa research steering group and the Zespri crop protection steering group.

"Linda's leadership, expertise and unwavering commitment to guarding against unwanted pests and diseases has been an asset to the industry and our communities across Aotearoa."

In presenting the Special Award to KVH, Minister O'Connor said the New Zealand kiwifruit industry has demonstrated exceptional leadership in the face of biosecurity incursions,

driving research and managing the impacts, while also ensuring the welfare of our growers.

"The industry, alongside the Ministry for Primary Industries, laid the foundations for a new era of biosecurity partnership, with the first signing of the Government Industry Agreement for Biosecurity Readiness and Response Deed – a commitment to working together on preparing for pests and disease and on managing them if an incursion occurs.

"The resilience demonstrated by this industry during earlier responses has carried through to today. It continues to pride itself on driving a collaborative approach to biosecurity and is an early adopter of new and innovative ways to managing this on behalf of its growers and the wider New Zealand food and fibre sectors."

“

The New Zealand kiwifruit industry has demonstrated exceptional leadership in the face of biosecurity incursions, driving research and managing the impacts, while also ensuring the welfare of our growers

KVH chairman Dr David Tanner said the awards recognise the pivotal role people from within the kiwifruit industry, and KVH, have had in managing Psa since the initial outbreak of the disease, and in developing robust biosecurity processes and resources to boost the industry's biosecurity integrity.

"This is recognition for the industry as a whole," Dr Tanner said.

"KVH was formed 10 years ago as the industry reeled from the discovery of Psa. Over the decade since, KVH – including Linda – has worked alongside industry and government to help growers recover and prosper. The team is dedicated to its role in helping protect the livelihoods of New Zealand kiwifruit growers from all pests and diseases, through monitoring, education, technology, and partnerships with government and biosecurity agencies."

KVH chief executive Stu Hutchings said the awards celebrate the partnership approach which has ensured the industry is better placed for any future biosecurity event.

"There is no doubt that by working in partnership, we can achieve better biosecurity outcomes. The entire industry has embraced a collaborative approach for many years and it was an honour to accept this award on behalf of all our growers and those across the kiwifruit industry who support our work and come together as one committed team," Stu Hutchings said.

"We've worked hard in the biosecurity space to ensure a resilient and united voice for the kiwifruit industry, and it's great that our efforts – and those of the people who have worked with us over the years – have been recognised with this award."

Head of Biosecurity New Zealand, Penny Nelson, said this mahi is fundamental to keeping our biosecurity system strong, and every day the award winners are putting in the hard yards to ensure we continue to have a world-leading biosecurity system.

"These awards give us a chance to take a moment and honour the important achievements happening within our biosecurity system by individuals and organisations from all over New Zealand." ●

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The future is now, Sir Peter says

By Kristine Walsh

The great thing about the internet is that, from somewhere as out of the way as Gisborne, you can get online, contact an illustrious Knight of the Realm and invite him to come and visit ... and he just might. So says NZ Food Innovation Network Business Development Manager Nicky Solomon who, from her base in Gisborne, did just that.

Sir Peter Gluckman said yes, travelling to the East Coast to share the findings of his discussion paper *The Future of Food and The Primary Sector: The Journey to Sustainability*.

The audience was all ears as he asked how they, as food producers, could help New Zealand capitalise on its rising reputation with a strategy that supports sustainability, while adapting to new technologies and consumer demands.

Sir Peter advocates for Government agencies to step up to create a "co-ordinated partnership approach with scientists, producers and manufacturers to support and encourage the food and production industries' journey towards a resilient future".

But he says individual producers must do their bit too, both on their own farms and in working collaboratively to make sector powerhouses that strengthen them all.

For the food sector, the Covid-19 pandemic showed that more than ever New Zealand is reliant on a robust, vibrant food sector "and without it we would be in real trouble," he says.

"But it also raised a number of issues, among them the changing global supply chains, the challenges of a long journey out of economic downturn, and the importance of domestic food security.

"All this comes against the background of two fundamental changes that will dictate the future of food over the next 20 or 30 years – the biggest technological advances we have ever seen, and of course, the issue of climate change."

In terms of the first, Sir Peter says the raft of new technologies – from robotics to genetic engineering – can offer new ways of solving problems "but are not without philosophical discomfort."

And for the second, with around 22% of global climate change emissions coming from food production, growers



"New Zealand food producers need to collaborate if they are to 'play well' on the global stage", says Sir Peter Gluckman

must play their part in being good environmental citizens ... if only because consumers will demand it.

A passionate advocate with a PhD in food science, Nicky says she was keen for producers to hear Sir Peter's ideas partly because, while Gisborne grows wonderful food, much of it leaves the region without added value. "I think the pandemic reminded us of just how important food is to our economy, and our people. But it also raised issues like how we feed our people sustainably and equitably, and how we address problems around supply chains."

"Covid-19 has not changed how important the food industry is, but it has increased people's understanding of it"

And her view was supported by Trust Tairāwhiti general manager (commercial), Richard Searle. "Here in Gisborne we grow a huge amount of high-quality fruit and vegetables. We can all explore what consumers are looking for; how we can add value; how we address challenges from our changing climate; and how we can strategically use precious resources to best effect."

The final word went to Sir Peter, who said that as a nation largely made up of small-to-medium enterprises, we need to collaborate if we are to play well on the global stage: "Covid-19 has not changed how important the food industry is, but it has increased people's understanding of it, and now it is your time to build on that in a sustainable way. If we only capture a tiny percentage of the world market we are onto a winner, so while New Zealand is small, if we work together we become so much bigger." ●



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NZGAP Year in Review

In what has been an incredibly disruptive and challenging year, NZGAP has managed to operate successfully while continuing to develop and improve the certification system which provides assurance for the safe and sustainable production of fruit and vegetables in New Zealand.



By Damien Farrelly : NZGAP Manager

Covid-19 response

Many NZGAP (Good Agricultural Practice) certification processes and systems have been digitised in recent years, however the swift move to Covid Level 4 meant that a complete move online was required and attained within days. This ensured that registrations and certifications could be processed remotely, so growers could continue to produce and supply to market while operating as an essential service during lockdown.

NZGAP developed temporary rules and processes for off-site audit (record checks) and remote audits (interview and visual evidence of implementation), to ensure the continued credibility in certification where on-site audits were not possible. These rules are only applicable above alert Level 1, and have had limited uptake by growers to date, however NZGAP is now considering the long-term benefits and potential of remote and off-site audits, with the main benefit being reduced auditor time on-site meaning growers can get on with growing.

GLOBALG.A.P.

NZGAP continues to partner with GLOBALG.A.P. as a fully benchmarked scheme. GLOBALG.A.P. has launched a new version this year (v5.3) with another on the way (v5.4) to maintain their Global Food Safety Initiative (GFSI) recognition. As NZGAP is not currently GFSI recognised, there has been no need to re-benchmark to GLOBALG.A.P. at this stage. NZGAP GLOBALG.A.P. Equivalent will however be benchmarked to GLOBALG.A.P. version 6, which is due to be published in September 2021.

Food Act add-on

The Food Act 2014 continues to be implemented as an add-on to NZGAP and NZGAP GLOBALG.A.P. Equivalent certification. Many growers who are GLOBALG.A.P. certified have availed themselves of NZGAP's 'mutual recognition' certification option as an effective way to comply with registration, verification and reporting requirements via their existing GLOBALG.A.P. system.

Food Act registrations will be up for renewal in 2021 (and every 2 years), and NZGAP seeks to make this process as seamless as possible for growers who will be notified two months in advance of their renewal date.

Environment Management System (EMS) add-on

The EMS is being adopted by growers across New Zealand with over 14,000ha currently registered and over 4,000ha already audited and certified. NZGAP is formally recognised by Environment Canterbury, and also aims to be recognised by central government via the Freshwater farm plan regulations which are expected to be developed soon as a result of the recent Resource Management Act amendment. NZGAP is also developing a climate change management area to support growers to meet He Waka Eke Noa commitments for management and measurement of their nitrous oxide emissions from fertiliser use. For growers, this will mean multiple outcomes will be met via the one integrated EMS in a similar way to how NZGAP currently meets the Food Act 2014 requirements. In addition, the EMS is currently being reviewed and improved based on feedback from growers and audits to date, as well as to incorporate improved practices from the latest research and industry guidelines (e.g. nutrient management).

OVER 4,000HA
ALREADY AUDITED
AND CERTIFIED

“
For growers, this will mean multiple outcomes will be met via the one integrated EMS in a similar way to how NZGAP currently meets the Food Act 2014 requirements

Social Practice add-on

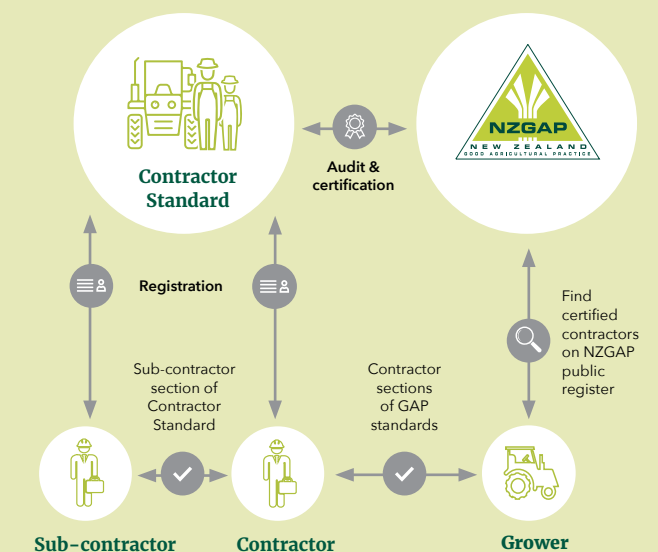
NZGAP launched version 2.0 of the Social Practice add-on in November, meaning audits and certifications have now commenced. Version 1.0 of the Social Practice add-on was an interim registration and self-assessment process implemented in 2019 which enabled growers to get started and to improve their processes, policies and systems. There have been some minor changes due to feedback from growers and pilot audits, as well as incorporating measures to manage privacy risks associated with auditors reviewing employee records. With over 300 registrations to date, the Social Practice add-on will soon provide assurance of best practice for over 20,000 workers across the horticulture industry. Registered businesses can expect Social Practice to be audited as part of their next NZGAP audit.

Contractor Standard

NZGAP launched the newly developed Contractor Standard in November. It has been developed specifically for contractors providing services to NZGAP, Social Practice add-on, GLOBALG.A.P. and GRASP (GLOBALG.A.P. Risk Assessment on Social Practice) certified growers or supply chain operators.

Using NZGAP certified contractors is a means for growers and other supply chain operators to demonstrate the contractors they engage have met the requirements of these standards at both a production and social practice level. This will reduce the burden of growers having to check a contractor's compliance to Social Practice requirements themselves and enable them to check the status of contractors on the new NZGAP public register for contractors (e.g. registered, approved, suspended, cancelled). ●

Contractor Certification



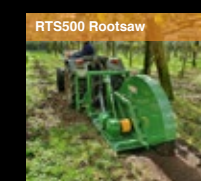
The newly developed Contractor Standard can be found at www.nzgap.co.nz

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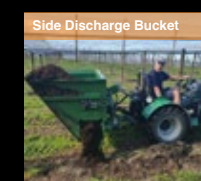
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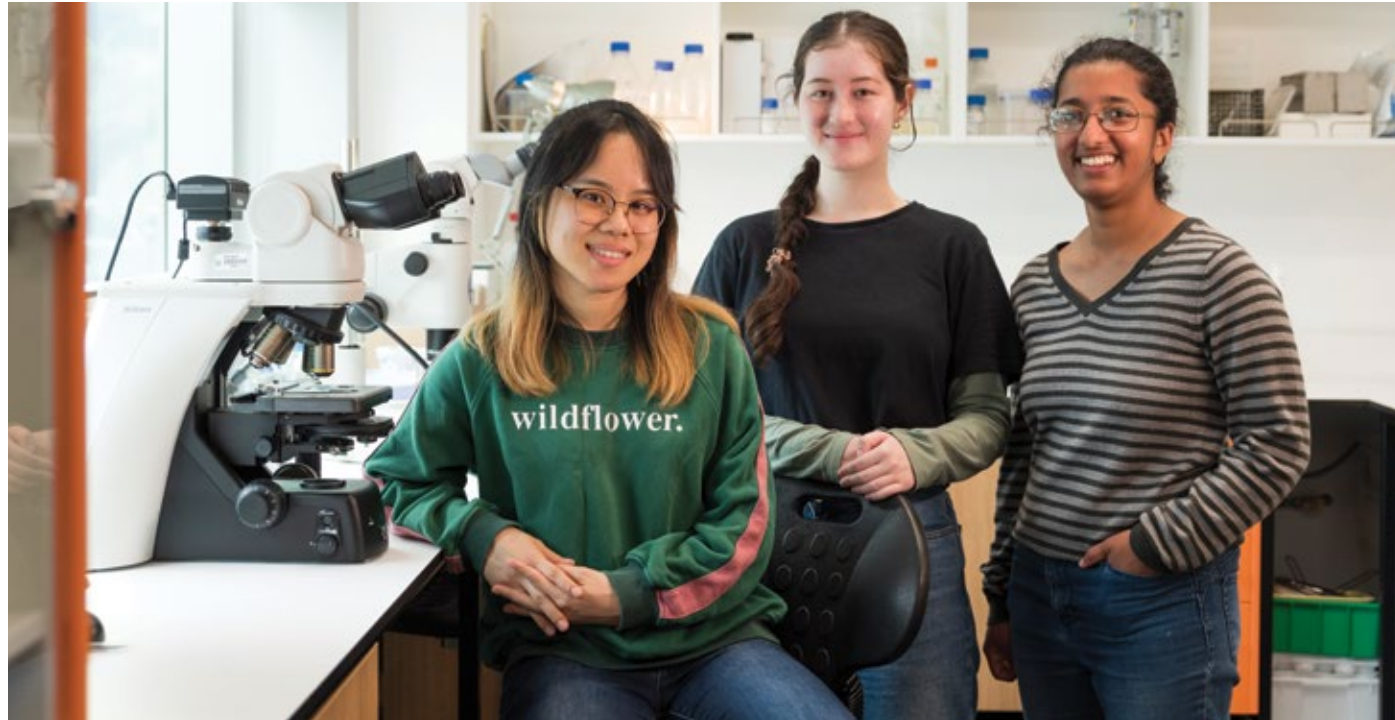


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MADE IN NEW ZEALAND



Summer Students (left to right): Alex Nguyen, Charlotte Sun and Kesia Kurian

Getting young people started in horticulture

Every year, young people across the country are introduced to the horticulture and wider food industry through Plant & Food Research's Summer Studentship programme. This year, the organisation has welcomed 36 students who will conduct their own research project over the next three months and learn more about how science can create impact in the real world.

The programme has also reached a milestone this year for having the most students identifying as Māori since its inception. In a pilot initiative called Māori Career Cohort, 19 of the students will be paired with Māori mentors within the organisation, who will provide them with pastoral care, based on the tuakana/tēina mentoring model, and guidance to build intentional pathways for rangatahi into science.

The vast majority of the summer students are undergraduate or postgraduate students from New Zealand universities (with the exception of one recent high school graduate). These students major in a broad range of subjects, from biological sciences to construction engineering, from marketing to anthropology, and from finance to Māori & indigenous studies.

In addition to receiving leadership training and help with career planning, they are each assigned an individual project, some science-based and some to support science. The students will be part of a wide range of projects, including creating tools that support breeding programmes, looking at

ways to control disease in orchards, analysing new methods for postharvest quality testing, and studying the chemistry of native plants. Those students with an interest outside of science will be looking at more business-oriented topics, such as the impact of Covid on horticulture and food industries and the experience of entrepreneurial growers.

Philippa Stevens, Plant & Food Research Group General Manager Science Services says, "We're really excited to have this fantastic group of talented students joining us. They've all been through the rigorous selection process to be here. We want to give them a head start in their science career or a career supporting science with this experience."

Plant & Food Research has been running the Summer Studentship programme since 2008, and more than 350 students have now spent their summer as part of the organisation. Some have continued on to postgraduate research or careers within Plant & Food Research, while others have directly joined the horticulture industry.

Education key to reducing waste

Shoppers need more education about why the fresh fruit and vegetables they buy are packaged the way they are, according to Professor Karli Verghese, the REDUCE programme leader in Australia's Fight Food Waste Cooperative Research Centre (CRC).

By Glenys Christian

She told the post-harvest webinar series in mid-November that consumers need an explanation about why certain packaging is used for the food they buy.

"With cucumbers the plastic wrapping extends the shelf life," she said. "But consumers don't know that."

There are a number of ways to get such information out to shoppers, as it can be printed on the paper or plastic packaging, along with details about suitable storage. An example is the use of solid coloured plastic bags, which Woolworths uses for potatoes to protect them from sunlight, and this is clearly explained on the packaging.

Karli, who is also a principal research fellow in the industrial design programme of the School of Design at the Melbourne Polytechnic, said packaging is often viewed as having a negative impact on the environment as it is left over once a product is consumed. But it protects food and prolongs its shelf-life, which leads to an overall reduction in environmental impact by minimising food waste.

The Fight Food Waste CRC was set up two years ago. It now has 60 participants, from growers to state governments, all working collaboratively on 80 different projects over the next eight years with 30 PhD students involved in the research.

"It all starts with understanding why waste is occurring from harvest through retail sale to households," she said.

A survey conducted last year showed that up to 60% of fruit and vegetables are wasted in some form, so there is an opportunity to understand what each of these groups are doing. Waste was ranked number eight out of 14 when consumers were asked about their priorities when it comes to purchasing decisions with price, quality, taste and shelf life taking out the top spots.



“Waste was ranked number eight out of 14 when consumers were asked about their priorities when it comes to purchasing decisions

"There's a real opportunity to focus on packaging," Karli said.

Some 64% of respondents thought fruit packaging wasn't required but 42% believed there is less wastage if food is packaged. And just over half of those questioned (55%) kept fruit and vegetables in its original packaging.

Asked whether the arrival of Covid-19 had affected consumer behavior she said there is increased consciousness of purchasing loose produce at the start.

"Then with all the home food deliveries, packaging was filling up recycling bins," she said.

It is estimated that Australia's food chain wastage totals A\$20 billion a year, with up to A\$2 billion of losses occurring in agriculture, up to A\$1.2 billion in the post-harvest sector, a similar amount in processing, up to A\$1.7 billion in distribution, A\$3.5 billion in food services and over A\$10 billion in households. ●

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Stephen Kenna and Phillipa Wright of KWKiwi Orchard let the sward grow long to benefit their kiwifruit vines

Economic benefits of Farm Environment Plans

Orchard management practices which enhance the natural environment can bring economic benefit, ensure growers meet new legal requirements and also the demands of international consumers, say Phillipa Wright and Stephen Kenna of KWKiwi Orchard.

By Elaine Fisher

"It's vital that consumers have confidence in how we grow our fruit. Our underlying philosophy is we want to be good custodians of the land, the environment and implement sustainable management practices."

The couple have been doing just that since the 1980s and now, as part of the work of the Project Parore catchment group to improve water quality in the northern Tauranga Harbour region, are preparing a Farm Environment Plan (FEP) for their Ongare Point kiwifruit orchards.

While the plan will formally record the years of work that has gone into enhancing the Ongare Point orchard's environment, having a FEP is also in line with the government's Essential Freshwater Strategy and Zespri's new standards.

The orchard near Katikati is challenging when it comes to managing water run-off and nutrient leaching.

The 10 hectares includes flat land close to the road, very steep southern facing blocks leading to a stream in the middle and steep north facing blocks on the other side.

"This is one of the steepest kiwifruit orchards around, which means we have to think about how we manage it properly," Phillipa says.

Stephen's family bought the bare land in 1980 and over time developed it into an orchard. Stephen and Phillipa took over in 1989. After growing a variety of fruit including Hayward, Hort16A and Tomua kiwifruit, persimmons, nashi and tamarillos, today it produces SunGold kiwifruit.

One of their management decisions was to allow the grass sward under the vines to grow long, and as a result they haven't applied fungicides or weed sprays for 25 years.



To help reduce run-off & leaching, grassed areas 10 meters wide flank both sides of the stream



KWKiwi Orchard includes very steep southern facing blocks leading to a stream in the middle and steep north facing blocks on the other side

"The effect of long grass is to reduce fungal loading, *sclerotinia* in particular," says Stephen. "If weed plants are not causing an economic problem in the canopy, or health and safety issues for people, you are better off to leave the sward to grow."



The effect of long grass is to reduce fungal loading, *sclerotinia* in particular

"A bare weed sprayed strip has reduced soil biology but is also affecting some of the most important soils in the orchard, as it is directly under the feeder root zone for the vines. If it is not compacted by tractors, mowers and sprayers that area has the highest water infiltration effect."

Phillipa is of the belief that having good soil biology and micro-organisms has the potential to improve the taste and flavour of their fruit. "That makes sense if you look at the grape analogy where different soils produce different flavours." More than that, the longer sward (which does get cut occasionally) slows run-off of both water and nutrients.

Around 25 years ago Stephen and Phillipa began planting a mix of native plants along the banks of the drain which runs through their property to the Tauranga Harbour. "It arises as a spring near the start of Ongare Point Road and we refer to it as the Ongare Point waterway," says Phillipa.

The canopy of trees on both sides of the waterway has increased birdlife, served to protect the stream banks, reduced water and nutrient run-off, and has also lowered the water temperature, enhancing life in the stream.

"We have measured the temperature coming in and going out and there's a one-degree drop. Cooler water has more oxygen than warmer, benefiting stream life including native kōura, (freshwater crayfish)," Stephen says.

The plants also help mitigate run-off and protect the soil. "Plants, especially those with large root systems, will sequester carbon, improve the soil structure and hold back run-off of sediment and fertiliser. It is a more natural recycling process." To further reduce run-off and leaching, grassed areas 10 meters wide flank both sides of the stream.

The Bay of Plenty Regional Council has donated plants, and neighbours in the catchment have now begun planting the stream banks too. When it comes to preparing a FEP, Phillipa advises starting with a map of the orchard or farm and identifying critical source areas for water, sediment and nutrient run-off. "Even if there is no permanent waterway on the property, with the usually high rainfall in the Bay of Plenty, there will always be leaching and run-off."



Project Parore has government funding to support water quality improvements within the Northern Tauranga Harbour catchment. If growers in the catchment would like to get involved please contact Christina Robinson at christina.robinson@zespri.com or Braden Rowson at braden.rowson@boprc.govt.nz ●

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PASSIONFRUIT UPDATE



The field day included visiting blueberry and passionfruit orchards that use high crop tunnels

Passionfruit growers get back to basics

The New Zealand Passionfruit Growers Association Annual Conference, Annual General Meeting and Field Day held in mid-November in Tauranga was a weekend for reconnecting, learning new things and making decisions. About 30 growers attended the two days, the first face-to-face meeting of the group since September 2019, due to Covid-19.

The conference theme was Changing Times, which was designed to inform growers of the impact of the current environment on markets, and to introduce growers to different growing systems and methods of growing passionfruit.

Some of the conference was spent talking about post-Covid impacts on local and export markets. Three wholesalers talked of their experience of trading during these challenging times. Exporters Fresh Produce Group and Pole to Pole noted the move of fruit back to the domestic market, which in Pole to Pole's case, led to an increase in export-quality fruit being sold via its FreshStore website, delivered directly to consumers.

The Fresh Produce Group noted that freight costs had sharply increased while flight availability had reduced significantly, which made getting passionfruit to the United States very challenging. However, the outlook for the 2021 season is improving as more flight space is becoming available, although there are still challenges ahead as airlines negotiate with the government about access to New Zealand.

“...freight costs had sharply increased while flight availability had reduced significantly



- 2 How to do a soil check
- 3 Doing a bud, flower and fruit count within a 1m square to work out crop estimates
- 4 Young passionfruit

Domestic market supplier MG Marketing told the conference that fruit perceived to have good health benefits like citrus sold well, as did produce that was pre-packaged as this addressed consumers' fears about food safety and cleanliness. With the market conditions changing, the conference discussed changing pricing models and packaging options, and the impact that could have on post-harvest processing.

Back to basics

The back to basics theme for the weekend started with a presentation about the soil food web and an interesting discussion about soil, and how what does or doesn't live in it affects the health of our plants, including the ratio of fungi to bacteria and what might be ideal for passionfruit plants.

The theory was followed by a practical field day held at a passionfruit orchard the following day. Here growers were shown how to do a visual check on the soil, and were provided with a checklist for future reference.

The field day included visiting blueberry and passionfruit orchards that use high crop tunnels. This type of setup is not common among passionfruit growers, with many of the indoor growers opting for fully-enclosed, temperature regulated polyhouse setups.

A teaching session on how to do crop estimations was held to help growers provide information to wholesalers about the volumes of fruit to expect. As passionfruit plants have buds, flowers and fruit on at the same time, plus sometimes having a second flush of flowers later in the year, estimating crop yield can be tricky.

The formal part of the weekend was the Annual General Meeting. President Rebekah Vlaanderen provided a season review, summarising that it had been a year of more challenges but with plenty of opportunities. In the face of lower returns through conventional selling methods, growers are innovating and heading online to successfully sell fruit directly to consumers.

The hot dry summer provided less disease pressure, although many growers reported that this truncated their season as fruit ripened and dropped quicker. An overview of projects highlighted the work that was done to renew the Commodity Levy, with the new Levy Order coming into effect on 11 August 2020.

“

growers are innovating and heading online to successfully sell fruit directly to consumers

A new committee was elected with Rebekah being voted in as President for another two years, plus two new committee members. The levy rate was set for the coming season, and membership fees were voted on.

Overall, the weekend had a good vibe to it and feedback from growers was that they got a lot out of the two days. The new committee wants to build on this and has ongoing grower education, industry involvement and grower engagement high on its priority list. ●



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Levy Notice

The NZPGA hereby advises that in accordance with the Commodity Levies Order 2020, the rate of levy on passionfruit from January 2021 is 2.5%.

For further information contact:
Peter Baxter, treasurer@passionfruit.org.nz

love the goodness taste the goodness

AVO UPDATE

In the running

By Jen Scoular : Chief Executive, NZ Avocado



Jen Scoular, Chief Executive NZ Avocado takes to the streets alongside runners in the NZ Avocado 5km event during the ASB Auckland Marathon, early November

There is always a question of how much marketing you should do, and the return on investment of that marketing. We know sharing the message works, and we look at the big brands and they still promote like crazy so that tells us that branding and promotional activity raises the visibility needed to sell your product.

Then it is about getting the right type of promotional event. We've tried a few, each with their own benefits and challenges, many creating a real hype around avocados, or creating the perfect fun team environment that has a terrific spill-over of being a team activity as well as a promotional event.

Our sponsorship of the 5km run at the ASB Auckland marathon certainly ticked that box, what an amazing endorsement of our product it was. As sponsors of the 5km run, the team set up a tent and shared over 2,000 pieces of avocado on Vogel's for runners and spectators. Avocados most certainly team superbly with healthy activity, and runners talked about the ease with which avocado on toast was consumed after a run. We had runners queueing for up to 15 minutes, after they had run 5km, 11km, 21km or 42km races, to thank us for their slice of delicious creamy avocados on toast. Thanks for your patience we said, "oh no, this is amazing, the perfect post run food, thank you!" responded many of the athletes.

The event itself was superbly organised with nearly 14,000 runners, and over 20,000 supporters, heading to Victoria Park to run through the finish line or cheer on their active family and friends. The preceding two days allowed NZ Avocado to share information about avocados, to give out avocado tattoos and to build up an appetite amongst runners and supporters for the avocados on toast shared on race day.

On the day of the 5km race, NZ Avocado team member Bevan Jelley dressed as a green avocado to take the 400 or more runners through their warm-up, before they headed off from Wynyard Quarter along the waterfront and back to Victoria Park. I ran the 5km in an avocado suit, letting my daughter Rebecca head off at a much faster pace. Although, I did come in 39th out of 479, and 2nd in my age group - the power of avocado strikes again!

The disrupted world we are all living in meant the build-up to the event was never relaxed, knowing it could be cancelled or postponed if Covid-19 happened to show its ugly head in the community. We mitigated that risk as best we could, but were very happy not to have to go to plan B or C.

That uncertainty continues to impact our logistics to export market. Shipping delays and disruptions mean avocados are waiting for a ship, sitting too long on a ship, or being on a ship bound for a port that is omitted from the shipping schedule after the container is on the water.

Growers will face some of the costs of this, although the quality this season is strong, and the output from delays is not nearly as hard as it might have been.

As a team we are also all noticing the weight of Covid-19, everything is just a little bit harder, just a little bit more challenging. We cannot plan too far ahead, we need alternative options and we need to switch or cancel activity at a moment's notice. We are looking forward to a team event out of the office in a few weeks to strengthen our resilience as a well performing team.

With new lockdowns being implemented across Europe, I certainly appreciate New Zealand's relative freedom, but recognise the need to stay agile, open and willing to take on a marathon or 5km race in such a way to support our growers and industry as an essential food producer through this pandemic. ●



FEIJOA UPDATE

Year ends positively

By Ian Turk : Manager, Feijoa Growers Association



Prior to the start of our season we were concerned about the impact of the widespread drought conditions on our harvest. Very dry conditions during January and February was already showing slow fruit development in many areas.

At our March meeting we consequently revised production estimates downwards by 10%, and this was just a few weeks before the Covid-19 lockdown. The timing of the lockdown had a big impact on our industry, with the main harvest months being March into May. And a significant percentage of our fruit is sold through independent retailers - so having them out of action was a further concern.

As it turned out, across the industry the value of our production at season end was exactly where we were forecasting immediately prior to the March lockdown. I'm aware however, that there is a significant amount of fruit that just did not get to market and will have impacted some individual growers quite significantly.

Our marketers told us that the New Zealand domestic market was very strong and able to take as much volume of Tag1 as could be provided. Lower grades did not fare so well, as retailers were apparently (and understandably?) being very risk averse. Across all fruit groups the strength of online sales was very noticeable - it will be interesting to see if this is a trend for future years.

Unfortunately for our research programmes, the Covid-19 lockdown did impact two field trials that we had in place. Lockdown meant that our scientists could not get into the orchards at all prior to harvest, and were unable to complete trial work planned for this year. We have time left in the anthracnose project to catch up on missed data from that trial. We are discussing with Sustainable Food & Fibre Futures (SFFF) extension of the Guava Moth project for another season to repeat the 2020 Guava Moth trial which was abandoned.

Early in the year the Executive commenced development of a strategic plan using members' input which will lead to action plans focused on:



- Market access, pests and diseases
- Fruit processing
- Cultivar development and selection
- Consumer education.

One clear impact of Covid-19 is that this year we held our Annual General Meeting on 6 November by Zoom. While travel and event restrictions were removed, the AGM had to be put in place at a time when Auckland was at a Level 2 Covid response and community cases were still being detected. We considered the format of this year's AGM to be responsible and prudent. While it enabled growers to get together from around the country, the social aspect and field trip was certainly missed and I'm hopeful the annual NZ Feijoa Growers Association field trip will be back in 2021.

And to finish on a positive note - the feijoa commodity levy referendum returned a strong vote in favour of its renewal, although on low vote numbers. The new Order in Council has been drafted and I am expecting to see this finish the parliamentary processes in the next few weeks, so industry funding is assured for another six years. ●

“

I'm aware however, that there is a significant amount of fruit that just did not get to market and will have impacted some individual growers quite significantly

SUMMERFRUIT UPDATE



"December overall seems to be covered, but it is January where there is a quite a big hole", says Summerfruit NZ Chief Executive, Richard Palmer

Summerfruit NZ addresses seasonal labour shortage

Summerfruit NZ has pulled out all the stops to ensure there are enough people to harvest this year's bumper crop.

by Claire Ashton

Summerfruit NZ chief executive, Richard Palmer, said most people are reasonably happy with the numbers for December. "The main thing to identify is where are the shortages and where are the surfeits. December overall seems to be covered, but it is January where there is a quite a big hole."

Palmer and other industry representatives have met with government Ministers to discuss solutions and have identified three key factors:

- 1** The need to work with the Ministry of Social Development to focus on employing New Zealanders in seasonal horticulture roles.
- 2** The process to allow entry to New Zealand for Recognised Seasonal Employer (RSE) scheme workers
- 3** The necessity to improve immigration processes.

At a national level, the horticulture industry is well-engaged with government Ministers and officials, and there is significant cooperation at play. Being united at this level builds confidence, and shows the government that the horticulture sector is doing all it can to mitigate seasonal labour shortages.

Immigration and working holiday visas are hot topics, with all parties working on streamlining the application process to speed up the obtainment of visas for work purposes.

Vanuatu is one country the horticulture industry has been reliant on for workers. The possibility of charter flights with a guarantee that workers can return from New Zealand to Vanuatu at the end of the season is being investigated. The other issue, however, is that Managed Isolation and Quarantine (MIQ) facilities are full to the end of December.

Alternatives to MIQ on the table for discussion are to have specific quarantine facilities for RSE workers, and the creation of Pacific 'bubbles' with Covid-free countries who have locked borders.

Ministry for Social Development (MSD) Southern regional labour market advisor Chelsea Wong said MSD is fully behind supporting job seekers into seasonal work. To help support this, there is a newly created Grant to Work scheme of \$5,000 available to workers for the relocation, transport and accommodation costs associated with commencing seasonal work outside of the region in which the worker lives. To be eligible, the employer must be able to offer 91 days or more of employment.

Employers are encouraged to utilise the Work the Seasons website, managed by MSD, which is a recruitment portal that lists industry opportunities. The RSE section of the site aims to be user friendly, and show who needs what, when, where, and for how long.



\$5,000
GRANT TO WORK
SCHEME FOR WORKERS
SO THEY CAN START
SEASONAL WORK OUTSIDE
THEIR REGION

The various job fairs or expos around the country have been real success stories, with the Hawke's Bay hosting a particularly well attended event of more than 500 people with lines out the door. It's important to remember that all summerfruit growing regions need workers, not just Otago.

Tracey Mansfield, the newly appointed Central Otago seasonal labour coordinator, is working from a base at the Otago Polytechnic. She said a prevailing focus for the industry is the cherry season in Central Otago, as it is the first fruit to harvest.



Employers are encouraged to utilise the Work the Seasons website
www.worktheseasons.co.nz

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TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

Crop grooming

Page 55



TECHNICAL



Often there is a difference in fruit maturity between the lower tree and the upper tree. Figure ① shows the lower tree SPI (starch pattern index) stage. Figure ② shows the upper tree fruit on the same day. Note the over maturity in the lower tree fruit. There should have already been a selective pick of fruit in the lower tree.



There is value in sampling upper tree fruit for SPI separately. This will indicate if there is a maturity difference. If upper tree fruit is lagging behind in maturity, there is no need to pick the upper tree fruit on the first pick, even though it may look ready due to its improved fruit colour.

Preparing for harvest

January and early February are critical times for crop grooming to make the harvest run smoothly.

By John Wilton : Deciduous Fruit Specialist, AgFirst

Although bud break and flowering were late, spring weather warmed up very quickly with long periods of above average temperatures with sunny days and cool nights. As a consequence, the blossom period, except where dormancy breakers were applied too early, was compressed. By the end of flowering, timing had become normal, or even slightly ahead of normal.

In the case of the Royal Gala group it has been shown that there is a strong inverse relationship between the number of heat units base 10°C accumulated over the first 42 days after full bloom (DAFB) and harvest. The way things are heading this year it's probable that the period between full bloom and harvest will be less than normal. This means we can expect the Royal Gala crop to begin harvest early in February, rather than mid-February.

Retain® Applications

Retain® will be an important harvest management tool this year to assist with our labour shortage problems. Because the harvest is likely to be running early, it's probable that Retain® applications will need to be brought forward, possibly to mid-January rather than end of January.

In recent years we have seen some use of double shots of Retain® to extend harvest delay further than the usual 10 to 14-day result.

Later application has also been useful for delaying fruit ripening rate in later pick fruit. This use pattern tends to allow early pick fruit to colour normally, so its harvest is not delayed to any extent.

Maturity Testing

Starch iodine, fruit pressure and brix testing are vital tools for getting harvest timing correct. Now that a lot of our orchard plantings are on precocious low vigour rootstocks, well thinned fruit on these rootstocks tends to accumulate high levels of starch which may not give a starch iodine pattern until well through the ripening process. When this happens the remaining starch pattern clears rapidly.

Maturity testing should commence three to four weeks out from expected harvest date. If brix levels begin to rise and there is little starch movement, this indicates that ripening has commenced. Fruit pressure may also begin to drop ahead of any starch pattern emerging. When this happens, harvest needs to commence.

We have also detected quite a separation in maturity between lower tree and upper tree fruit. Although fruit colour is better in the upper tree due to its good light exposure, maturity often lags behind lower tree fruit by about a week. This is particularly so on younger blocks. No need to put people on ladders for the first pick.

Crop Grooming

The slack period prior to harvest from late December through to commencement of harvest is a good time for grooming the crop by taking off obvious reject fruit provided this can be done without increasing sun tinting and sunburn injury.

With high value crops needing good fruit colour, tying up any branches that have lodged on other branches is time well spent to improve colour development. A bit of well supervised summer pruning to cut out unwanted vertical shoot growth, as well as some leaf plucking, is an option for high value varieties.

For partial coloured varieties, which includes most of the varieties we grow, obtaining good fruit colour ahead of internal maturity is the key to an efficient harvest.

Irrigation Management

In recent years we have found that forcing tree roots to tap deep soil water tends to restrict growing season nitrogen uptake, leading to much improved fruit colour.

Good soil moisture monitoring and an understanding of how to interpret the data is an important tool for irrigation management.

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Good soil moisture monitoring and an understanding of how to interpret the data is an important tool for irrigation management

With established trees on deep soils, irrigation can be held off until into the new year provided there is moisture at depth.

As most of the soil organic matter is found in the topsoil, this is where the nitrogen will be, so keeping this zone dry through a large proportion of the growing season limits nitrogen uptake.

It has also been shown that nitrogen taken up in the immediate pre-harvest period does not usually influence fruit nitrogen content, so irrigating within a few weeks of harvest commencing will not have a huge influence on fruit nitrogen content.

It is important not to have the trees under water stress as harvest approaches.

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It is important not to have the trees under water stress as harvest approaches



These Kiku® Fuji were well thinned with an aggressive chemical thinner, so are large size with good colour due to their relatively light crop.



These Kiku® Fuji have excessive crop, poor colour & small fruit. Crop load is an important determinate of fruit colour & quality. Avoid overcropping.

Crop Loads

Excess crop loads delay fruit maturity and particularly fruit colour development, so checking crop load levels after natural fruit drop and the main hand thinning is completed is necessary to determine if the tree is capable of handling the crop.

Where crop loads are found to be excessive, a re-thin is necessary. This re-thin should target fruit in shady positions that is unlikely to colour well.

In trees which have not had much hand thinning, there may be a problem with bunchy fruit in the upper tree.

Bunchy fruit does not colour well because of the shading caused by fruit within the bunches. Because of sunburn risk it is not possible to break exposed bunches down to singles and doubles, so the best solution is to take out whole bunches to give the remaining fruit more room to spread out.

Reflective Mulch

This is a very important tool for harvest management. Its impact on colour development in the lower tree is often spectacular. It needs to go down four to six weeks ahead of harvest for best effect.

Shifting reflective mulch can be labour intensive so working out smart ways to do it will be well worthwhile in improving efficient use of labour.

A key to reflective mulch is to make sure it is well anchored to minimise it blowing around in the wind.

Alternative row placement covering only half the row length in each row is a more efficient use of reflective mulch than every row placement at the same time. With alternative row placement, moving the mulch to the other end of the row about halfway through the mulching period ensures that both sides of the tree row have some exposure to reflected light. It's fairly easy to make this happen. Simply unhitch the mulch and drag it through with a light tractor or four-wheeler, then hitch it up again.

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Reflective mulch is an important tool for maximising fruit colour. It needs to be put out about six weeks prior to harvest.

Calcium Disorders

The December, January, February period is when focus needs to be given to bitter pit and lenticel blotch pit control.

There are some recent reports coming from Washington where there are big problems with bitter pit in Honey Crisp®, that calcium is very slow moving in the tree so it takes four or five years after planting for root uptake calcium to reach the upper tree.

“

it will be important to maintain good, broad spectrum fungicide cover, including over the harvest period

Now in a balanced, mature tree which has settled into a good vigour crop balance, about 50% of fruit calcium content enters the fruit from the tree. This is usually over the first six to seven weeks after full bloom. For particularly pit prone varieties such as Scifresh, tree sourced calcium needs to be supplemented by an intensive foliar calcium

programme. For lenticel blotch pit it's the later season calcium sprays that do the most good.

Because calcium is slow moving in young trees, pit can be a real problem with fruit from younger trees even in varieties such as Fuji, Scilate and the Royal Gala groups that generally have low incidence of these disorders in well settled mature trees.

At present, we have a lot of young orchards coming into production so to minimise the calcium disorders, robust foliar calcium spray programmes should be applied to younger orchard blocks.

Disease Control

The early part of the growing season was relatively dry, leading to lower than normal fungal disease incidence, apart from powdery mildew which the dry conditions suited.

Long term summer weather predictions are indicating a La Niña weather pattern, which may mean higher humidity and weather conditions much more favourable to summer and pre-harvest rot problems, so it will be important to maintain good, broad spectrum fungicide cover, including over the harvest period. ●

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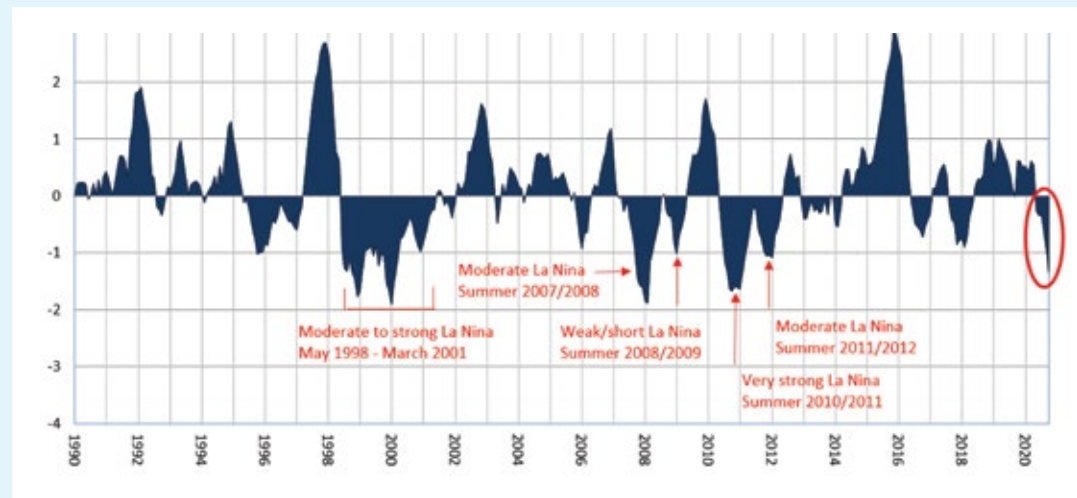
Strong La Niña to dominate NZ summer

By Georgina Griffiths : Meteorologist, MetService

During November, La Niña conditions in the tropical Pacific Ocean continued to intensify. This event has now strayed into 'strong' territory, meaning that this is the first decent (strong) La Niña event in a decade. The last time we saw La Niña unfold at this intensity, was the summer of 2010–2011 (Figure 1).



Figure 1:
The NINO3.4 Index
This is one of several El Niño/Southern Oscillation (ENSO) indicators based on sea surface temperatures. NINO3.4 is the average sea surface temperature anomaly in the region bounded by 5°N to 5°S, from 170°W to 120°W. The current La Niña event is circled.



November: fairly typical La Niña weather patterns

After intense, prevailing Highs produced extreme dryness during October across most of New Zealand (with the exception of Westland, Fiordland and Southland), the start of November saw a rapid change in weather patterns.

Humid northeasterlies and Tasman Lows became cyclical visitors to the north of the country, producing decent rainfall across the North Island. As per normal under humid and unsettled northeasterly conditions, there were some winners and losers in the rainfall stakes.

The Auckland water catchments rose by nearly 6% in a week, which was welcome rainfall for the region.

In contrast, Napier saw deluge rainfall on 9 November, with the highest intensity downpours focused in a narrow convective band over the CBD (central business district) area. This brought severe flooding and multiple land slips, power cuts and evacuations, resulting in a local State of Emergency being declared in Napier. Further rainfall also occurred on the following evening (10 November).

Napier Airport recorded a daily rainfall total of **120.2mm** in the 24 hours up until 9am on 10 November. This tally ranks as the seventh wettest daily total since records began at the Airport in 1950.

Chronologically, the last time that Napier Airport recorded a daily rainfall total of more than 120mm was in April 2011 (125.2mm, recorded in the 24 hours to 9am on 27 April 2011). This event occurred at the tail end of the very strong 2010–2011 La Niña event, which then went on to reinvestigate for summer of 2011–2012.

The Napier rainfall accumulation in Figure 2 clearly shows this drought-breaking rainfall event.

Recent heat across New Zealand

One of the trademark signals of La Niña is warmth over New Zealand: Widespread warmth, related to above average sea temperatures in the Tasman Sea and areas surrounding New Zealand, and the increased frequency of mild northeasterly wind flows over the country.

Figure 2: Napier annual rainfall accumulation (mm)
For the last five years (2016 – 2020). The average is shown in black.

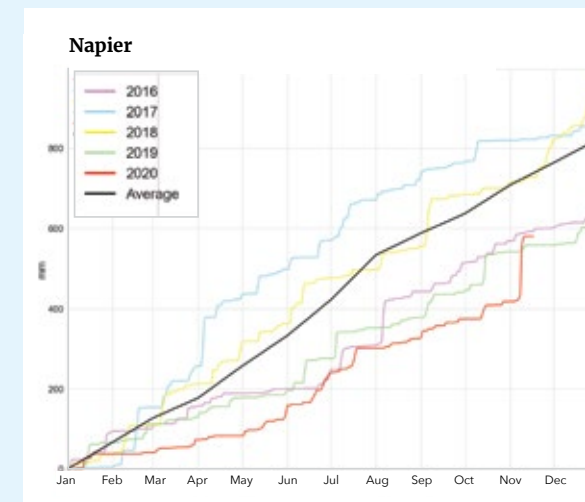


Figure 3 showcase the temperature anomalies recorded in two important growing regions, Napier and Blenheim.

The heatwaves in late January to early February, and again at the end of October, stand out quite clearly.

No change to the La Niña summer predictions

There have been no changes in the MetService thinking around this La Niña.

La Niña conditions are forecast to peak in intensity around Christmas time, or possibly early in the New Year. La Niña is then expected to continue through into early autumn 2021, albeit gradually weakening.

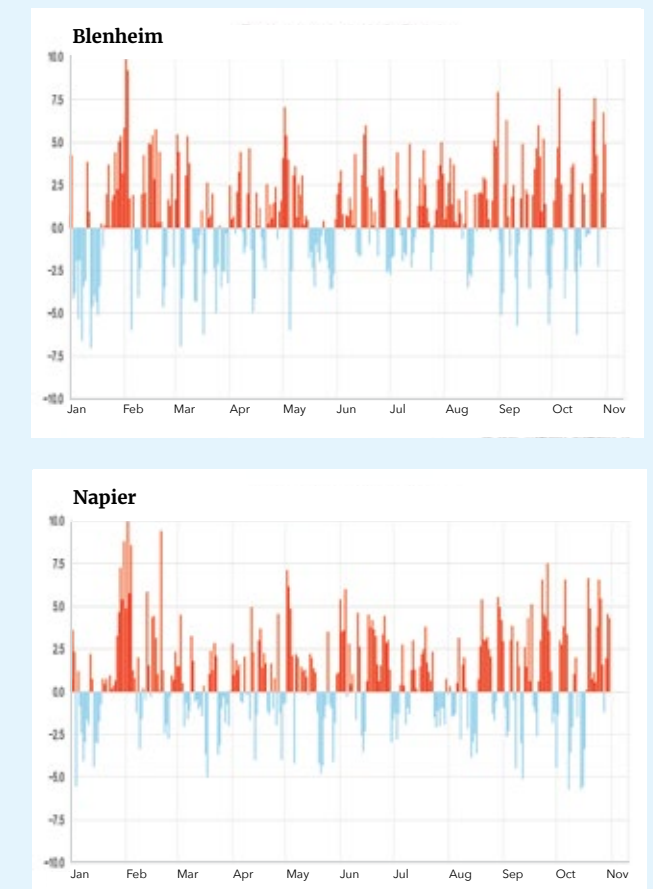
Although every La Niña event is different, you can plan for certain types of weather patterns to play out more frequently than usual.

MetService expect a fairly typical La Niña summer (December to February) weather pattern. While we should still see a wide variety of weather maps over New Zealand, there is the expectation that the weather maps that show up *most frequently* will be La Niña-like.

From a planning point of view, we should work on the principal of more frequent Highs than usual across the South Island, with a clear signal for drier-than-normal conditions in western and inland regions of the South Island.

Similarly, an 'active tropics' to the north of New Zealand is strongly indicated, with frequent easterly winds across the upper North Island, and an increased risk of a wetter than normal summer over the north and east of the North Island.

Figure 3: Temperature anomalies
Daily temperature deviations from the annual cycle, degrees Celsius for the period 1 January – 1 November 2020



As always, keep up to date at with our latest thinking via the MetService long-range commentary at <http://metservice.com/rural/monthly-outlook>. ●

Rain or shine, stay informed on the MetService Rural Weather App.



MetService



Avocados thrive in warm temperatures (15–30°C) with prolonged daily sunlight

Approaches to the husbandry and production of an avocado crop

If you love a plate of guacamole then you have the avocado tree at heart. Avocado is considered a super food because it is packed with nutritional benefits. A slice of avocado contains more than 20 vitamins and minerals. Did you know it is one of the few fruit with beneficial fat and is an excellent source of potassium and fibre?

By Joachim Nachmansohn

Originally from south central Mexico, it has taken the New Zealand industry by storm with thousands of hectares being planted in the Bay of Plenty and Northland to meet not only local and domestic demand but for export as well. Five varieties are planted in these regions but Hass avocados account for 95% of production. The only variety used for export, Hass is loved for its sumptuous taste, has a prolonged shelf life and is high yielding. Other varieties include Reed, Fuerte, Zunato and Maluma. It is important to understand what avocados need for optimal production and how to manage these requirements.



What is important to manage in the husbandry and production of the crop and how to go about it

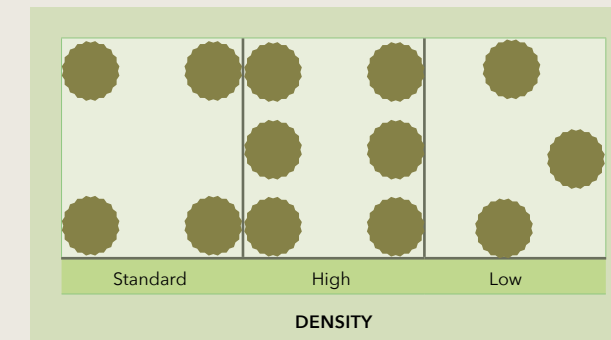
Just like any other crop, growing avocados is an investment that requires proper planning. In most cases, it's advisable to start with a feasibility study to determine if the crop will do well on your farm. This can include GIS (Geographic Information Systems) tools which utilise satellite imagery to identify the existing land qualities that can then be matched with the crop's land use requirements to determine if avocados are suitable for your area.

Figure ① Size of tree & fertilizer recommendation



The older the trees, the more fertilizers they need for fruit production

Figure ② Planting density



A higher planting density results into more trees but with lower yields since the trees are overcrowded in a small space making them compete for resources amongst themselves and also expansion of roots is restricted. A lower planting density results into a smaller number of trees, therefore resulting into lower yields. There is a golden Aristotelian mean to aim for when aiming for maximum yield levels.

The climate of your locality is critical for the establishment of an avocado orchard. Is your area hot or cold? Avocados thrive in warm temperatures (15–30°C) with prolonged daily sunlight. Avoid planting the crop in areas prone to frost or areas that are too hot, dry and windy as this will cause fruit damage as a result of premature fruit drop. However, in the Bay of Plenty, Northland, Auckland, Marlborough, Nelson, Hawke's Bay and Gisborne, planting avocados is a viable option due to the favorable climate.

“

Avoid planting the crop in areas prone to frost or areas that are too hot, dry and windy as this will cause fruit damage as a result of premature fruit drop

The second most important thing is your soil. How well do you know your soil? Does it drain well? What about its texture? Can it hold nutrients? What's the pH status (acidity or alkalinity)? What's the fertility status? Soil is a critical component as it is the medium for growth. Soil analysis will show what needs to be corrected before planting. Avocados do not like heavy soils (with clay content >40%), but prefer soil that drains freely such as sandy, loamy or soils with a clay content of <25%. Heavy clay easily gets waterlogged, creating an environment for pathogens to thrive, which can lead to root death and almost complete loss of production.

Water is life. For crop production water from rainfall is balanced by irrigation. Avocados are very sensitive to water stress, and striking a balance between excess and deficiency is important. A moisture probe is a useful tool for monitoring soil moisture levels so that irrigation is used only when necessary.

Additionally, land preparation is key for good avocado establishment. Is the soil of good tilth? Is the land sloping or level? It is far preferable for an avocado orchard to be on fairly level land.

Establishment of the orchard layout is also critical in the management of avocado production. GIS can be used to produce the layout of the field with measurable attributes such as the percentage slope in form of a map. This information can then be used to make decisions on the orchard layout, to determine planting density and what variety to grow. Ensure that you follow the recommended spacing standard required for each variety. Here GPS (global positioning systems) technology is one of those innovations we take for granted that has really rationalised modern plant production, in particular to obtain accurate spacing. Spacing regulates so many aspects of crop performance, from the space each tree has to grow, to competition, to weed management. See figure ② for illustration.

Setting up the nursery and its management is obviously another critical factor. Having a productive nursery starts by acquiring certified planting materials: Seed that is good quality, free from pests, diseases, weeds and foreign matter,

and is high yielding. It is important to identify a plant with these desired attributes as the seed source. Seedlings and clones are the rootstocks available in New Zealand. Before transplanting them to the orchard, they need to first be raised in the nurseries for about two years. Nursery production is governed by tight protocols, aimed to ensure that the end product is as good as the planting material. Only a few nurseries have been licensed to produce avocado seedlings and clones.

For a bumper harvest of avocados that are healthy and with prolonged shelf life, a central aspect of crop production is a plant nutrition plan. Devise a fertiliser regime that will meet the nutritional demands of the crop, based on an assessment of soil fertility through soil analysis. The rates of fertiliser application largely depend on the age of the trees and the yield potential. The older the tree, the more nutrients it will demand – as illustrated in figure ① (previous page). An avocado tree that is well maintained through proper fertilisation bears healthy fruit with good taste. The flavour, taste and general quality of the fruit can be determined by using brix hygrometers.

It is also important to consider the potential for pests and diseases, which can cause massive losses in crop production, making avocado orchards one of the most difficult to manage. Leafrollers, trips and mites are the common pests of avocado while algal leaf spot, sun blotch, anthracnose, black streak, scab and phytophthora root rot are the common diseases. Routine scouting for these pests and diseases is important for prompt identification and monitoring of the degree of infestation and infection. Currently there are digital apps, plant wise data collection apps and stress detection glasses that can help with identification of some of these problems. Still consultation with the area agronomist on the accuracy of identification is recommended. GIS enabled drones are of course one of the more recent wonders to assist in this arena. Once accurate identification is obtained, treatment recommendations can be provided by a local agronomist or consultant.

To have a well and easy managed orchard, pruning is essential. It should however be done only when its necessary, and in a timely manner. Pruning helps to prevent wind damage, enables more effective control of pests and diseases, allows for more coverage while spraying, and for more effective irrigation.

“every aspect of avocado production ... depends initially on the soil

The harvest and storage of avocados must also be carefully managed to avoid fruit losses. Harvesting is timed to occur when the mature fruit has started to drop, but also depends on the time of the year and/or the weight of the fruit. One cannot be in a hurry to pick the avocados; when picked too early, the fruit will not ripen, and will have a tough elastic texture. Avocados can be stored at room temperature, but fridge storage is common. Then to prolong the shelf life of the fruit, there are packaging inserts like Avolast to delay ripening. Avolast regulates the atmosphere of the storage space by blocking ethylene gas which is responsible for fruit ripening.

In summary, every aspect of avocado production from the inception of an orchard, to production, to post-harvest depends initially on the soil. More in-depth knowledge about soil and the nutritional qualities of avocados will come from future research, but soil is the very foundation, and the key to further enhancing production. ●



Effective planning to improve ReTain[®] results



For many apple growers, ReTain is a valuable tool for manipulating crop maturity dates for different blocks and varieties, smoothing out harvest peaks and optimising the available picking and post-harvest workforce.

The naturally occurring plant growth regulator (PGR) temporarily inhibits production of ethylene in developing fruit, slowing maturation, ripening and development of abscission tissue while allowing continued fruit growth.

This in turn extends the harvest by seven to ten days in the main cultivars without affecting fruit quality.

Nufarm Technical Specialist Cynthia Christie says ReTain has been providing benefits to apple growers for over 20 years, however users should still refamiliarise themselves with the product label each year to ensure use is optimised and benefits are maximised.

For best results this season, now is the time to start reviewing not only your schedule for ReTain applications, but other key factors like temperature data and planned calcium treatments.

Reviewing historical harvest dates is a useful planning tool, along with closely tracking current growth conditions.

Best results with ReTain depend heavily on correct timing. Applications need to be made 21 to 28 days before harvest for varieties other than Braeburn and Cox's Orange Pippin, which are 14 to 21 days.

Monitoring temperature conditions around the planned time of application is critical. This is because ReTain has to be used with Freeway[®] organosilicone adjuvant at the correct rate for the variety being sprayed to work properly, and applying the adjuvant to hot fruit is not advised.

“On the sunny side of the tree, on a hot sunny day, the interior temperature of apples can reach 40 degrees C just under the skin. And in those conditions, fruit stays hot into the evening,” Cynthia says.

Spraying adjuvant onto hot fruit increases the risk of lenticel damage, which affects fruit quality.

“ReTain should not be mixed with any horticultural product other than the specified adjuvant or Dipel[®] DF

The schedule of planned calcium applications pre-harvest also needs to be factored into planning for ReTain. Growers need to allow for a minimum seven-day interval between calcium sprays and ReTain, and it should not be applied if calcium residues are present or if previous calcium use has damaged lenticels.

Cynthia says these guidelines are designed to maximise ReTain's performance and minimise the risk of fruit spotting.

After ReTain, there needs to be a 24-hour interval before any other sprayed horticultural product or any irrigation is applied. Where foil mulch or reflective films are used, ReTain should be applied before these are laid down, and growers should not spray ReTain if rain is expected within six hours. ●

Nufarm
Grow a better tomorrow

For more advice on using ReTain to get the best out of your harvest this season, talk to your local Nufarm Territory Manager on **0800 Nufarm** or visit **nufarm.co.nz/retain**.

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Landini REX4 Electra – Evolving Hybrid receives EIMA Technical Innovation Award 2020–21

The prestigious Eima International Technical Innovation Award has gone to Landini again.

After winning with their Advanced Driving System in 2018, the **Argo Tractors** group is once again honoured with the award, thanks to the **Electra – Evolving Hybrid** system. The award is also intended for the **Landini REX4**, which is to take centre stage both at **Eima Digital**, the preview scheduled on a web platform from **11 to 15 November**, and at the physical edition of **Eima 2021**, scheduled from **3 to 7 February** at the Bologna Fiere fair district.

“For Argo Tractors this is an important recognition that rewards our great commitment to, and our investment in research and development, which enable us to achieve cutting-edge technology levels for our tractors” – commented a satisfied **Giovanni Esposito, Innovation Director at Argo Tractors** on hearing the news about the award. “The evolution of our products provides customers with the most innovative solutions to optimise productivity and improve the quality of their work, with great focus – as ever – on the human factor. From this point of view, the Electra system – Evolving Hybrid – has been designed to further enhance the handling, comfort and ease of use of REX4 tractors, so as to meet the needs of a contemporary customer base – using new technology to guarantee cost-effectiveness with an eye to the environment and sustainability, which are always primary objectives”.

Intended for orchards and vineyards, Landini REX4 has already gained a reputation for its handling prowess and ease of use, which combine with astoundingly thrifty running costs to meet the needs of the most demanding customers.

Such qualities are coupled with solutions that also look to increase the efficiency of the tractor system and further improve comfort during the long hours spent driving the tractor.

Landini REX4 Electra – Evolving Hybrid features an innovative electric front wheel drive with independent wheels, **brake energy recovery**, a cabin with electronically controlled semi-active suspension and a semi-automatic transmission that lets you select speed using a joystick. ●

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Landini tractors are represented in New Zealand by Agtek Tractors and Equipment.

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Density-based smart sprayer arrives downunder

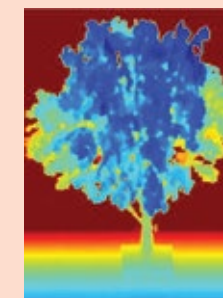
Reduced chemical use, economical spray application and advanced crop mapping... finally there is some good news to come in 2020!

The year that has been known for a global pandemic, a national lockdown and an impact on business' bottom line, can now also be remembered for the arrival of what is possibly, the most revolutionary spray technology to enter the Australasian market.

The BA Smart Sprayer powered by Smart-Apply® is a density-based spray system that utilises sensor technology, providing viticulturalists and horticulturalists with greater spray application. John Dixon, operations manager at BA Pumps and Sprayers, said the system has an abundance of benefits for growers, not least the growth data it can source.

BENEFITS OF LIDAR SENSOR TECHNOLOGY

- Up to **73%** reduction of spray consumption.
- Up to **87%** reduction in spray loss beyond tree canopies.
- Up to **87%** less airborne drift.
- Up to **93%** reduction in spray loss on the ground.
- As effective or better crop protection.



“Unlike traditional sprayers, the BA Smart Spray system utilises LIDAR (Light Detection and Ranging) sensor technology that detects the specific architecture of the canopy,” John Dixon explains. “The sensor can create a digital representation of the crop, including height, width, spacing and density of each plant it passes. Each spray nozzle is then controlled independently for instant application and adjustment of spray where required, reducing chemical use and achieving cost savings.”



Field-tested for proven results

Researched, developed and field-tested at the United States Department of Agriculture (USDA) National Institute of Food and Agriculture over the past decade, the BA Smart Sprayer powered by Smart-Apply® has been proven to reduce spray inputs and spray loss beyond canopies.

The system is also proving effective in reducing up to 87% of airborne drift. “The sustainability factors of this technology are huge,” John says. “Both in terms of environmental sustainability as well as economic. The precision this system can achieve has significant long-term benefits for orchards and vineyards by way of healthier plants and cleaner and safer groundwater. Add to that greater overall yields and you can see why we’re excited to have this cutting-edge technology available for the New Zealand market.”

Retro-fitted technology

The system can be retrofitted to existing air blast spray equipment and utilises an Android Tablet for display, enabling easy application. “This interface enables the LIDAR sensor technology to work in tandem with a GPS (Global Positioning System) to determine ground speed and position in the field, thus allowing growers to easily gauge the spray coverage and gather valuable data of their orchard or vineyard,” John says. “But it also offers growers the flexibility to revert to manual spraying if needed.”

The BA Smart Sprayer powered by Smart-Apply® is available to the Australasian market through BA Pumps and Sprayers (formerly known as Bertolini Australasia). BA Pumps and Sprayers will be conducting a series of demo events throughout the country. “After months of planning, and the disruption of Covid-19, it’s great to finally get out and introduce this pioneering technology to New Zealand growers,” John Dixon says. ●



Vantage NZ – Precision solutions for precision block management

Vantage NZ is New Zealand's leading precision agriculture expert providing growers all over New Zealand with precision agriculture products, services and expertise for the entire block.



Installed AquaCheck soil moisture probes on Halo telemetry in the Bay of Plenty as part of an integrated block-wide monitoring and control radio-mesh network.



EM Surveying to map soil variability in the Hawkes Bay on a new orchard development block. This information then informed block planning and design.



AquaCheck sub-surface soil moisture probe being installed in the Bay of Plenty.

At the root of it, precision agriculture and the technology behind it allows growers to easily record and collect detailed information across their block at a spatial level. GPS (global positioning system) enabled tractors, spatial farm maps and soil maps, GPS-recorded soil nutrient tests and much more all further enhance the understanding of why crops are performing as they are. Precision agriculture gives growers confidence to tweak decision making at a spatial level to ensure all areas of the block are set up for maximum success.

Understanding your block from the ground up is integral to successful crop growth. EM (electro-magnetic) soil surveying has long been used as a detailed method of understanding soil variability across a block and the effects it may have on crop growth and performance. How do I manage my light soil areas differently to my heavier soil areas? Are there pans across the block? These are all questions to be investigating particularly at the block planning phase, but equally in an established block. EM Surveying allows accurate identification of these differences so different decisions can be made in different areas of the block. For example, irrigation design might be matched to soil type variability or variety planting planned differently.

While understanding your soil is critical, so is soil moisture. Multi-depth capacitance based soil moisture probes such as the AquaCheck allow a detailed insight into soil moisture levels the whole way down the root zone, making irrigation

management a breeze with accurate information, including soil temperature, right at your fingertips.

With new nitrogen regulations coming into effect it's now even more important to ensure that inputs are recorded and fine-tuned as much as possible while ensuring optimised productivity and profitability within this regulated environment. Simplifying record-keeping through the use of integrated GPS displays and easy-to-use software apps such as Trimble Ag Software now take the hassle out of it all. Trimble Farmer Core and Farmer Pro offer solutions from basic record-keeping through to full work-order planning and crop scouting.

Having identified all this variability and having these maps is all well and good, but you still need the hardware to control the application, and that's where the Trimble display range can help. From the entry level GFX-350 right up to the TMX-2050 there's a solution for whatever your needs are be it basic guidance, section control, steering or much more. Trimble are currently offering a trade-up programme for old displays whether they're Trimble or not, so if you're interested in upgrading get in touch with the Vantage NZ team today to find out if you qualify. ●

Vantage NZ is your one-stop shop for all your precision agriculture needs. To find out more about how precision agriculture could help your farming business call **0800 482 682**, or visit **www.vantage-nz.com**.



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