

Avocado Quarterly

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The current situation in NZ and indeed around the world is very uncertain. It is hard to predict what it all means for our avocado industry. Please go to page 7 for an update on local market avocados and pool performance.

Change Is The Only Constant

Andrew Wylie – Grower

Each year we strive to set more fruit and improve size and quality so that our net profit from our year's work is a suitable return for our effort.

Someone once said, "insanity is doing the same thing, over and over again, but expecting different results". Yet a lot of growers do just that.

Each year on our own orchard we try to do things differently. Some changes we embrace entirely such as zero tolerance for drop bags when picking. Others, such as frost protection sprays, we trial on some blocks while leaving other blocks as a control to determine if there is a benefit or not.

Given we are not scientists, nor have any formal training in horticulture (our disclaimer), a few of the things we have tried and believe work for us include:

- Soil and leaf tests followed by a fertiliser recommendation.
- We then use that recommendation as a flexible guide. Common sense indicates if a tree has a heavy crop load then it will need more fertiliser (within reason). However, a tree with no fruit also needs to be fed to build its energy surplus for next season's flowering.

- We tend to increase the amount of boron recommended, as soils in our area are very free draining and tend to leach nutrients. We are not aware of any boron toxicity in our trees. Boron is critical to fruit set and we have put our improved fruit set in recent years down to its increased use.
- Regular coppers and Stimplex (seaweed) spray. We believe this produces a healthy leaf, which in turn feeds the tree.
- Targeted spraying for pests. We avoid broad spectrum knock down sprays as we have found the pests often reappear in larger numbers than before if all the beneficial insects are also wiped out. We spray as soon as the pest thresholds have been met as we need to protect the fruit given the difficulty setting it in the first place.
- We also have a leaf roller mating disruption trial happening on our orchard at the moment. Our gut feeling is that it really helps to reduce the number of sprays required to control leaf roller. So



if the research team can come up with a cost-effective, practical dispenser that is biodegradable, then we will incorporate this into our pest programme.

The next thing we are interested in is soil health. This seems to be the new buzz word and to us, it makes a lot of sense. We are trying to increase the microbial life in the soil so nutrients are more available to the trees and are more efficiently used. This should create a healthier ecosystem, which must be a positive. We are trialling some products that claim to achieve this but it's still early days.

Weed killers appear to have a detrimental effect on soil health. Therefore, we are trying to avoid using them and mowing as close to the trees as possible (note the conflict with soil compaction but it's the lesser of two evils in our view).

No doubt next year we will have some more things to try and may have crossed others off the list. This is why we find growing avocados so interesting.



Operations Update

Daniel Birnie – Avocado Manager

TOP 5 GROWERS TONNE/ HA

GROWER	LOCATION	TONNES PER HECTARE
Graham and Heather Aldridge (Bellbird 2 orchard)	No 3 Rd, Te Puke	38.8 tonne/ ha
Graham and Heather Aldridge (Bellbird 1 orchard)	No 3 Rd, Te Puke	35.4 tonne/ ha
Lee Crawshaw and Bridget Maher	Gridley Rd, Te Puke	32.1 tonne/ ha
David and Anna Haycock	Pukemapu Rd, Oropi	31.5 tonne/ ha
Julie Gibney	No 3 Rd, Te Puke	29.3 tonne/ ha

TOP 5 GROWERS EXPORT PACKOUT

GROWER	LOCATION	EXPORT PACKOUT
Max and Deborah Sullivan	Main Rd, Katikati	83.2%
Bruce and Lurline Plummer	Prestidge Rd, Katikati	82.0%
Roger and Colleen Clark	Paerata Ridge, Opotiki	80.3%
Trevor and Lyn Craig	No 1 Rd, Te Puke	79.9%
Wayne Smith and Margi Hampshire	Thompsons Track	78.9%

TOP 5 GROWERS AVERAGE SIZE

GROWER	LOCATION	AVERAGE SIZE
Dean and Sharyn Petersen	Kutarere, Opotiki	17.8
Stan Hopping Family Trust	No 1 Rd, Te Puke	18.7
Karl Priebe	Plummers Point Rd, Katikati	18.7
Janice Fleming	Vanstone Drive, Opotiki	19.0
Rob and Lorraine Garland	Benner Rd, Pongakawa	19.1



Harvest Assessment Report 2019/20 Season

By **Katherine Bell** – Avocado Services

Over the 2019/20 avocado season we completed 172 harvest assessments on 105 growers. This season we have continued these assessments in response to the poor fruit quality in market.

We have started a quality project (including the harvest assessments) to discover any pressure points along the supply chain. There is also an increasing need for on-orchard health and safety procedures to be monitored.

The goals of these assessments are to:

- Encourage harvesters to use best practice.
- Record any fruit (lenticel) damage and then compare to any offshore reports.
- Give an indication to the shed of the fruit quality coming in to be packed.
- Monitor and improve on-orchard health and safety.

We still had 10 instances where assessors saw dropped bags being used. This is an improvement from last season but we would like to see no dropped bags being used next season as they are both a risk to fruit quality and a health and safety risk.

The assessment sheet has changed since last season to include a temperature recording page as we were having quality issues and wanted to see if there was a link. It was surprising to see that even in the shade, we were recording 40°C temperatures. This has shown us the importance of making sure full bins are moved out of the sun as soon as possible.

We have started adding the results from these assessments with library trays, offshore reports, reject analysis reports, pre-packing and post-packing checks. We are also looking at making the assessment electronic next season with results being sent to growers like their reject reports.

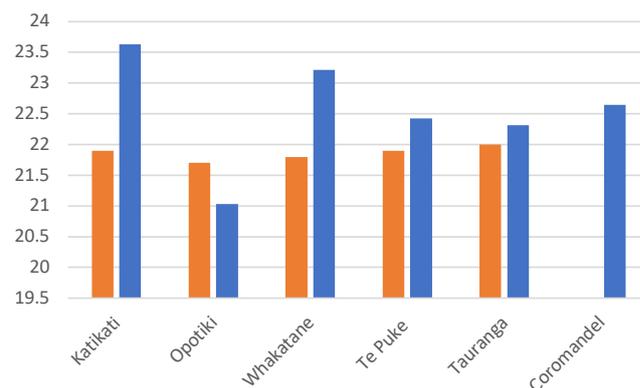
Regional Comparisons

By **Katherine Bell** – Avocado Service

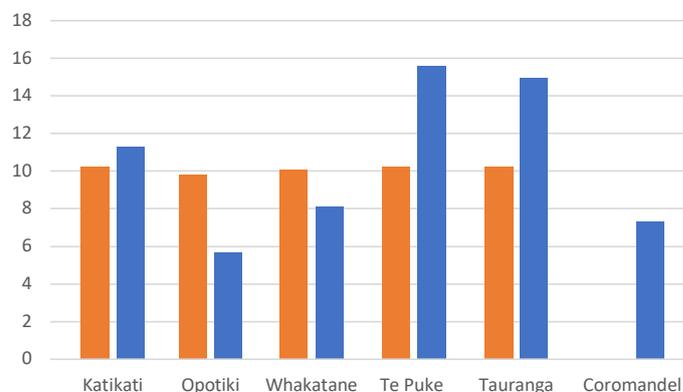
- This season Te Puke orchards produced the highest average yield of 15.6 tonnes/ha.
- There was a larger variation in average yields this season (2019/20) between regions than last season (2018/19).
- There is still a trend of Opotiki producing the lowest average yield but the highest average fruit size.
- Overall (except for Whakatane), export packouts this season increased from last season. This was reflected in the better quality that was seen in market.

- Last season Katikati orchards produced the worst average export packout percentage. This has turned around this season with Katikati orchards producing the highest average export percentage of 60.1%.
- This season was the first time we harvested export fruit from the Coromandel.

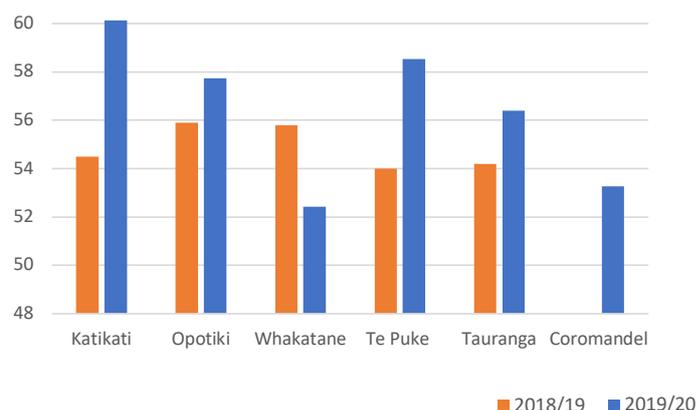
FRUIT SIZE



YIELD t/ha



EXPORT %



2018/19 2019/20

Nursery Update Autumn 2020

Anne Partridge – Avocado Nursery Manager

The nursery is again at maximum capacity after a very successful grafting season. Many thanks to the people who let us collect budwood from their magnificent and productive trees. Last year's sales exceeded previous year's production figures. A few of the 2019 Edranol trees are still available for sale.

The long hot summer has led to some extreme working conditions in the nursery, mitigated with some equipment upgrades to cool us, and the atmosphere, down a bit. We again

have a variety of polliniser trees available from September onwards – Ettinger, Edranol and the perennial favourite, Zutano. Due to demand, we have grafted more Reed which produce delicious canon ball-shaped fruit in autumn. Phone or email Anne if you would like to order some of our excess Reed plants for spring planting.

Looking forward to winter, young trees which have been planted this summer will benefit from some overhead shelter for frost protection.

A reminder of young tree fertiliser recommendations are below:

Tree Age	Fertiliser	Rate	Frequency	Timing
Four weeks from planting	Ravensdown Young Tree Mix	100 g / tree	Every 6 weeks	Four weeks from planting until flush stops in autumn
1 year from planting	Ravensdown Young Tree Mix	150 g / tree	Every 6 weeks	From early spring until flush stops in autumn
2 years from planting	Ravensdown Young Tree Mix	200 g / tree	Every 6 weeks	From early spring until flush stops in autumn
3 years from planting	Ravensdown Young Tree Mix	250 g / tree	Every 6 weeks	From early spring until flush stops in autumn
4 years from planting	Based on soil and leaf tests			

In a few months we will need Zutano fruit for seed for next spring's round of germination. Contact Daniel, Katherine, Jonathan or Anne if you have a quantity available for sale. Phone Anne 027 612 6636 or email anne.partridge@trevelyan.co.nz



Water Use And Irrigation When Growing Avocados

Dr Jonathan Cutting – Avocado Technical Manager



Water use by the avocado tree has been a challenge for avocado growers for more than 1000 years, since avocados were first grown in an agricultural system in Peru from around 800 AD. Avocados have been grown commercially in Florida and California since the early 1920s. Irrigation has been key in allowing this industry to grow and flourish.

More recently, a vibrant avocado industry was established in New Zealand. Some trees have been irrigated and some not, depending on location and rainfall. Both options have performed well. This has created some confusion as to the necessity of irrigation in New Zealand. Avocados are postulated to need more than 1500mm of annual rainfall well distributed throughout the year. The biggest water requirement is during flowering and during the major vegetative growing times of spring, summer and early autumn.

The last two most recent summers have been exceptionally dry and some production areas, such as Northland, Coromandel and north Waikato, are emerging from the driest and longest drought on record. We have seen the installation of irrigation systems in existing avocado orchards and growers naturally are asking questions about water, water use and irrigation options. While the drought appears to be weakening and, in some cases, has broken, it is a good time to review what we know and provide guidance on water use and irrigation for avocado production.

The first important consideration is that avocados evolved under a wet summer/dry winter environment in central and northern South America. In New Zealand we generally have a “year-round” well-distributed rainfall pattern. But looking at long term rainfall records for major production areas, the majority of rainfall occurs in winter and some areas have long dry summers.

For Te Puke, figure 1 shows in winter about 10% of rainfall falls monthly whereas in the summer this drops to between 5% or 6%. The summers of 2019 and 2020 were exceptionally dry with less than 2% of mean annual rainfall falling each month based on long term averages. Other production areas such as Coromandel and Northland fared even worse.

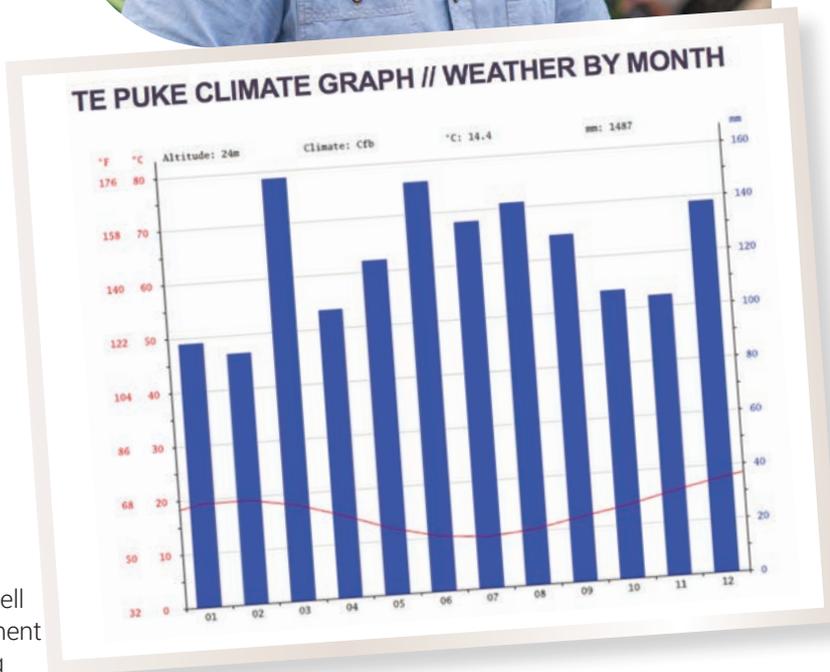


Fig 1. Mean monthly rainfall for Te Puke.

Long term annual rainfall for Te Puke is 1487mm which is at the cusp of the postulated 1500mm annual requirement for rainfall for traditionally grown avocados (100 trees/ha). More rainfall in summer and less in winter would be better. Te Puke is also blessed with some ash and pumice-based soils that hold a great deal of water. The important point is the annual rainfall being on the “cusp” of meeting annual water needs, creates some risk. In some years the orchard will be fine and in other years, not. Medium and high-density plantings of avocado with their shallow and smaller root systems will need irrigation.

Clearly one aspect of water supply and available water is rainfall, but there are others such as soil type and its capacity to “hold” water and make it available to plants, and the micro-climate. Environmental demand is heavily influenced by micro-climate such as temperature, wind and aspect. Micro-climate, especially shelter, plays a significant part in the available water equation. By way of example, wind-exposed orchards need more water, light soils that hold less water need more water, north-facing slopes need more water and older trees with larger leaf area indexes need more water.

The literature contains reports of the amount of water needed to sustain normal metabolic activity as between 4mm and

9mm per day. The amount of water needed depends on tree age, season and environmental factors. Understanding how water moves through soil and into the plant helps us plan and manage irrigation. The latter considers plant transpiration (metabolic demand) and the evaporative environmental demand. We won't cover all the plant-based physiological activity that water drives or is involved in commercial plant performance but growers are reminded that water is involved in nearly every growth and development activity in the plant from photosynthesis and mineral uptake to meristematic activity and reproduction. Nothing happens without water.

Design of the irrigation system determines where water is applied and at what rate. Management of irrigation is about how much water to apply and when. In recent times (the last 30 years) there has been some consensus around the "best" irrigation system. For avocados this appears to be mini sprinklers covering most of the orchard floor. This is especially important where there is significant rainfall for some period of the year allowing for root colonisation of most of the orchard floor. This root mass is best kept alive and functioning using irrigation during extended dry periods, especially in the summer when most metabolic activity occurs. There is some interest in drip type systems where water quality and/or supply is compromised but this does not apply to New Zealand.

Cost is a key factor affecting irrigation. Typically, the costs are in the water supply (a bore and pump, water storage (if required), filtration systems, irrigation controllers, fittings and piping). The actual micro spinners are relatively cheap. Based on recent involvement with the installation of avocado irrigation systems for moderate density spacing (ca. 300 trees/ha) the cost, excluding bore and tanks, is approximately \$10,000/ha or \$30/tree.

Scheduling irrigation is a combination of:

- Calculating the soil water balance. We need to know how much water the soil can hold. This guides the maximum amount of water that can be applied and both rate and volume.

- Measuring soil moisture. This shows how much available water is in the soil at any time and therefore how much to apply and when. This is a dynamic component and monitoring is a systematic activity.
- Understanding "critical" periods. This requires knowledge about when the plant needs water to meet critical functions that are seasonally driven, such as fruit set. Avocado trees don't have a "constant" water need. There are periods of quiescence (evergreen tree dormancy) and periods of intense activity such as flowering, root and shoot flushing, fruit growth and fruit drop. Matching the tree phenology with soil characteristics and water needs is a real skill, especially when water needs are high and when Phytophthora root rot disease and drowning are a risk. The following plant growth functions are all heavily influenced by water supply as determined by scientific experimentation:
 - o Shoot growth and vegetative vigour
 - o Root distribution and activity
 - o Yield
 - o Fruit size
 - o Oil content
 - o Leaf chlorosis and leaf mineral health
 - o Avocado root rot

Irrigation and fertiliser-based nutrition are often seen as interlinked functions especially when growers use fertigation. Management of irrigation is a precise science with knowledge gained from rigorous experimentation. Growers have an opportunity to use irrigation to become more efficient, more productive and more profitable. Growing larger fruit remains a key challenge and everyone benefits from the average fruit size being larger, even growers who already grow large fruit. Irrigation may prove to be very important if New Zealand continues to experience drier summers and growers continue down the path of higher density.



Avocado Local Market Update

Daniel Birnie – Avocado Manager



Lance Dodd, our Domestic Produce Manager, is being assisted in our local market sales programme by Zara Marra. Zara has been working at Trevelyan's for two and a half years, working mainly in the BayFarms online space, and developing that side of the business. Zara's main role with local market avocados is daily contact with all of our markets, including retail, wholesale and processing.

Zara lives in Te Puke with her husband and three children.

Update On Local Market

- Returns have been stable on Class 2 fruit through the season.
- Class 3 fruit value rose through January for the larger fruit.
- At various stages throughout the season Class 3 fruit, and smaller sizes of Class 2, have been going to the processors.

- There has been a marked difference in value between large fruit (size 30 count and bigger), and small fruit.
- Our tracking of returns by market show that our supply into supermarkets consistently return great value.

- As we write this at the end of March, the market has been severely disrupted by the coronavirus situation. With the uncertainty surrounding people's health, the economy, and employment, we have seen demand for avocados drop significantly.
- We hope this situation changes soon as our growers still have a large amount of fruit yet to harvest before the beginning of new season fruit.
- We are still working through inventory from fruit packed in mid to late March. This will mean both March pools are likely to have lower than expected returns.
- Our BayFarms online business has been very busy as shopping habits change.

CLASS 2	OCT-01	OCT-02	NOV-01	NOV-02	DEC-01	DEC-02	JAN-01	JAN-02
16	\$12.67	\$11.59	\$14.32	\$14.38	\$12.44	\$11.42	\$16.01	\$14.92
19	\$15.20	\$13.63	\$12.60	\$11.36	\$12.47	\$12.53	\$15.50	\$15.44
24	\$16.56	\$14.42	\$14.58	\$12.38	\$13.12	\$13.95	\$16.31	\$17.55
30	\$15.39	\$14.13	\$11.99	\$11.99	\$13.56	\$10.35	\$12.87	\$12.86
36	\$4.70	\$4.96	\$2.95	\$4.09	\$0.81	\$2.15	\$3.07	\$2.49
42	\$2.30	\$7.26	\$2.17	\$4.60	\$0.24	\$0.28	\$3.41	\$2.42
CLASS 3	OCT-01	OCT-02	NOV-01	NOV-02	DEC-01	DEC-02	JAN-01	JAN-02
16	\$10.41	\$8.68	\$11.50	\$10.85	\$9.43	\$8.46	\$10.16	\$11.86
19	\$8.03	\$9.13	\$8.76	\$7.96	\$8.06	\$8.12	\$9.97	\$10.26
24	\$8.28	\$8.55	\$8.47	\$7.78	\$8.87	\$8.72	\$10.65	\$12.20
30	\$5.70	\$6.19	\$6.67	\$6.07	\$6.63	\$7.41	\$10.30	\$6.34
36	\$5.65	\$4.70	\$3.25	\$4.24	\$3.46	\$2.03	\$3.73	\$2.32
42	\$3.02	\$3.48		\$3.86	\$2.64	\$3.08	\$3.33	\$2.49
Per bin	\$716	\$669	\$658	\$670	\$700	\$696	\$720	\$775
Average Size	22.9	23.3	23.0	23.7	22.3	23.3	23.3	26.6



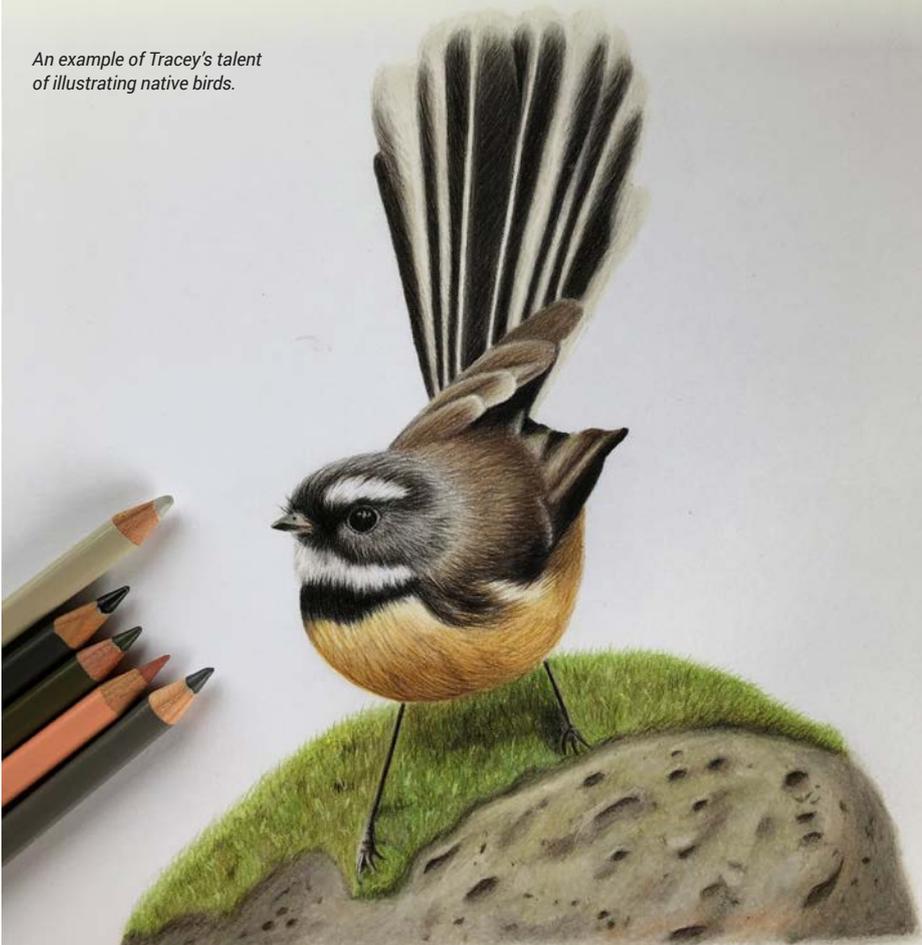
Staff Profile

Tracey Powley

What is your role and how long have you worked at Trevelyan's?

I am the Lab Supervisor and I have been working at Trevelyan's for about 16 months. I help run the lab and also create and update all the avocado maps for Trevelyan's growers.

An example of Tracey's talent of illustrating native birds.



2) What do you like so far about working at Trevelyan's?

Trevelyan's is such a friendly place to work, and everyone here makes you feel valued. I also like how varied the work is throughout the year; there is always something to do.

What are your main interests/hobbies outside of work?

My main hobby is drawing. I mostly use coloured pencils and native birds are my main subject. However, I am wanting to expand my range when I get some free time.

What's your favourite food?

Anything savory, from chips and dip to a good old pie.

If you could travel anywhere, where would you go and why?

I would love to travel to Europe. The history and architecture would be amazing to see.



Classifieds

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