

Branching Out Blueprint

# Kiwifruit

THE OPPORTUNITY FOR TARANAKI, NEW ZEALAND



**venture**  
TARANAKI

Te Puna Umanga



# A blueprint for the future of food and fibre

Branching Out is a project that has been initiated and led by Venture Taranaki. It is underpinned by funding from the Ministry for Primary Industries' Sustainable Food and Fibre Futures fund (SFFF). It is supported by local sponsors as well as the region's three district councils – New Plymouth District Council, South Taranaki District Council and Stratford District Council. The project has identified a number of innovative, commercially viable food and fibre value chain opportunities for Taranaki. This work supports the region's strategy and long-term vision for a resilient, high-value, and low-emissions economy built on inclusivity and sustainability, as articulated by Tapuae Roa and Taranaki 2050 – the guiding strategic documents for the region, co-created with the people of Taranaki.

Branching Out aims to strengthen and diversify the Taranaki economy and has taken input from a wide range of industry participants, from landowners to interested growers, manufacturers to food & fibre entrepreneurs and potential investors. Through a process of investigation, a shortlist of eleven feasible ventures have been selected. Crown Research Institutes and universities, including Massey and Lincoln, were engaged to provide robust research that underpins each venture selection. Work has also been undertaken with commercial partners to support the development of prototypes with significant market potential, and a core focus on sustainability and waste reduction.

The investigations, collaborations, and potential commercial pilot opportunities for the region that have been explored as part of this project are being presented

as Venture Blueprints. These blueprints aim to build investor confidence and serve as an informative and inspirational roadmap to kick-start complementary land-based activities and associated value chain enterprises in Taranaki.

The blueprints focus on traditional methods of assessing value, determined by comparing inputs (land, animals, machinery, time) and outputs (milk, meat, wool, other products). However, consumer expectations and an increased awareness of environmental degradation mean that thought should also be given to how the natural environment can be protected and what value this action can add to a developing sector.

## TE TAIAO

In 2020, the Primary Sector Council released their Food and Fibre Strategy, Fit for a Better World. This strategy adopted the Te Taiao framework, acknowledging that Te Taiao is all of the natural world that contains and surrounds us (land, water, air, and biological life). It is a uniquely New Zealand perspective that is underpinned by three guiding principles:

- Our land, water, air, and biological life must be able to thrive without over-use
- Any use is a privilege, not a right
- If something is not healthy or well, we must fix it.

Developing or participating in a new value chain is an opportunity to consider your business's relationship with Te Taiao. It is a chance to farm, produce and engage in a way that safeguards the mana and integrity of the natural world. If the whenua (land), and the entities that are connected to it, are to be nourished and thrive, then it must be cared for and protected. Each blueprint opportunity should be considered with Te Taiao in mind.

## DISCLAIMER

This document, produced by Venture Taranaki, provides an overview of opportunity for commercial production and processing of kiwifruit in Taranaki, and an indication of potential returns. It does not constitute investment advice. Professional advice should be sought if you wish to explore this opportunity further. This blueprint is correct to our knowledge and based on the best information we could access as of June 2022. However, this work is ongoing, and we welcome new or emerging information about this opportunity. For more information or for input, please contact [branchingout@venture.org.nz](mailto:branchingout@venture.org.nz).

**How to reference:** Venture Taranaki – *Branching Out, Kiwifruit: The opportunity for Taranaki*, June 2022



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# Kiwifruit: A snapshot

## UNTAPPED POTENTIAL

- Kiwifruit is New Zealand's highest value horticultural crop with an ambitious global sales target of \$4.5 billion by 2025. As the industry looks to regional diversification to meet this demand, increasingly favourable climatic conditions, improved growing methods, land availability and an entrepreneurial mindset means the potential of kiwifruit in Taranaki is again being recognised.
- Commercial plantings of Zespri™ Green kiwifruit have been established near Waitotara in South Taranaki. There is potential for more kiwifruit development in the region and with the established supply chain a short drive away, Zespri is a close and reliable customer.
- Beyond the high value fruit, opportunities will arise for support services, post-harvest infrastructure and processing facilities for value-added products. The region is well positioned to capitalise on this development, transferring skills and knowledge to the industry and building on the existing leadership in food and product development.

## WHY NOW?

- Prices for land suitable for kiwifruit development in Taranaki are low compared to land in established kiwifruit growing regions.
- Zespri is encouraging regional diversification to meet demand and spread risks from climatic events and pest or disease outbreaks.
- Growing demand for value-added products that can be produced from kiwifruit.
- Viable complement to dairy.
- Growing demand for kiwifruit from customers in the Asia-Pacific region.

**SECTOR TURNOVER:**  
NZ kiwifruit exports were worth \$3B in 2020/2021.

**GROWTH TARGETS:**  
Zespri has a global sales target of \$4.5B by 2025, grown from 1.85B in 2017/18 to \$3M.

## WHY TARANAKI?

Growing conditions: fertile, free-draining volcanic soil combined with a temperate climate appear ideal for growing kiwifruit.



**Commercial interest:** Kiwifruit was grown commercially in the region in the 1980's and 1990s. Orchards have recently been developed at Waitotara and there is interest in further development opportunities in Taranaki.



**Climate:** Due to Taranaki's climate the kiwifruit **growing cycle will likely be slightly later** than the Bay of Plenty. This delay may be helpful in terms of accessing support services from out of the region as well as commanding premium prices for later season fruit.



**People:** Taranaki people have a readiness to take on new ventures and transfer their skills and knowledge to new industries.



**Existing capabilities:** The food production and processing sectors are well established in Taranaki with capabilities and experiences that can be applied to kiwifruit.

## WHO SHOULD BE INTERESTED?



Taranaki farmers and landowners looking to expand and diversify their income stream.



Growers from other regions looking to reduce weather-related and disease risk.



Growers/investors looking to take advantage of lower land costs in Taranaki compared to the Bay of Plenty.



Packhouse and post-harvest operators wanting more fruit and/or to spread their flow of fruit over a longer season.



Other service providers, such as food producers, wanting to grow their businesses or develop new products.



Investors seeking an attractive return in a growth industry.

## IN-REGION INFRASTRUCTURE OPPORTUNITIES

In addition to the establishment of orchards there are opportunities for regional support services, post-harvest infrastructure and processing facilities for added value products.

## VALUE ADDED OPPORTUNITIES

While most kiwifruit is sold as raw fruit, there are growing opportunities for high value food and non-food products. Derived primarily from the industry's waste streams, kiwifruit and its by-products contain nutraceutical phytochemicals with significant health benefits.

## RISKS AND SENSITIVITIES

- Taranaki is windier than most other regions where kiwifruit are currently grown at scale. Shelter will be needed but is readily available with well-established methods.
- Different varieties of kiwifruit have different climatic requirements, particularly with regard to temperature. Care should be taken to confirm which, if any, varieties may be suitable for a specific location.
- Given the water footprint of kiwifruit and the likely [less predictable rainfall patterns across New Zealand in the future](#), access and allocation of water is an important consideration.
- PSA is a fungal disease of kiwifruit, which significantly affected the industry when it first arrived in New Zealand. Its effects have been reduced with new growing methods and growing less susceptible varieties. Should [a new strain](#) come into New Zealand, the industry could suffer significant losses.
- Hi-Cane is a plant growth regulator used to promote uniform budbreak and increase yields in kiwifruit. Its use is particularly important in warmer areas. The Environmental Protection Authority is reassessing its use in New Zealand.
- Early entrants in Taranaki may experience challenges accessing supporting services and inputs locally. A range of goods and skilled services required to develop and run orchards may need to be sourced from other regions.
- Fruit will need to be sent out of the region for packing and processing until a local packhouse is established.
- As with any business, the kiwifruit industry will see economic peaks and troughs over time.

## FARM FINANCIALS

Minimum viable land: 4 hectares

Initial Capital Investment for growers:

- Development Costs: \$150,000 – 200,000 per hectare
- One-Off License Fee:  
Green – nil  
SunGold - \$550,000 per hectare (2020, by annual tender)

Orchard Gate Returns 2020:

- Green: \$67,500 per hectare
- SunGold: \$115,500 per hectare

Estimated time to 100% yield:

5 – 7 years

Time to Cash Positive:

- Green: 5 years
- SunGold: 8 years

## POTENTIAL RETURNS FROM ONE SCENARIO OF KIWIFRUIT DEVELOPMENT IN TARANAKI

Modelling suggests a scenario in which 100ha of Green Hayward kiwifruit grown in Taranaki could:

- Produce 1m trays (at a yield of 10,000 tray/ha)
- Provide an orchard gate return of around \$7.5m
- Produce profit before EBITDA of around \$4m
- Employ around 51 FTE.

This would provide a significant opportunity for the region.

## TARANAKI BRANCHING OUT SCORECARD

Opportunity rating  
1 = low, 5 = high.

*This scorecard is intended to act as a quick comparison between blueprint opportunities. These scores are subjective and based on information available at the time of publishing. Further professional investment advice should still be sought.*

### Development Opportunity

Suitable growing conditions	4
Suitable land available at reasonable cost	4
Existing investment interest	3
Local development experience	3
Circular economy opportunities	3
Established local, domestic, and international demand	5

### Product Opportunity

Large and growing demand for high quality kiwifruit	5
New Zealand kiwifruit differentiated in key markets	4
Contribution to health and wellness of the consumer	4
Established sustainable/ regenerative growing practices, including water usage	2-3
Reduced greenhouse gas emissions compared to existing land uses	4

### Postharvest and Processing Opportunity

Postharvest and processing facilities available now in Taranaki	1
Opportunities for development of added value products, particularly from waste products	4

# New Zealand's kiwifruit industry by numbers

Grower-owned company Zespri has developed strong and growing international markets for New Zealand kiwifruit and runs the single-desk export marketing model for New Zealand kiwifruit.

Zespri sells around

**97%**

of New Zealand produced kiwifruit.

**3,222**

registered Zespri orchards.

**6**

main kiwifruit producing countries: New Zealand, China, Italy, Greece, Iran, and Chile.

Total production in 2020:

**575,000**

tonnes<sup>1</sup>.

The largest packhouses pack up to

**15 mil**

trays per season, with the majority of packing and storage infrastructure located in the Bay of Plenty. The smallest packhouses packing from upwards of 200,000 trays per year.

Around

**90%**

is bought by Japan, China, Taiwan, South Korea, USA, and the European Union.

**161 mil**

trays were submitted for sale in 2020.

**99%**

of trays submitted were sold<sup>1</sup>.

**81%**

of kiwifruit grown in the Bay of Plenty.

**13,334**

total producing hectares<sup>1</sup>.

Zespri has focused on adding value to fresh fruit production through:

- Development and protection of novel varieties such as Zespri™ SunGold™ Kiwifruit and Zespri RubyRed™ Kiwifruit.
- Organic production.

- Promotion of the Zespri brand and associated quality standards.
- Maintaining a year-round supply of fruit. In 2020/21 Zespri sold around 22 million trays of fruit grown outside New Zealand.

While Zespri has focused on marketing fresh fruit to international markets, a range of other companies have also developed markets for processed kiwifruit products. There is considerable opportunity for development and marketing of further processed kiwifruit product.

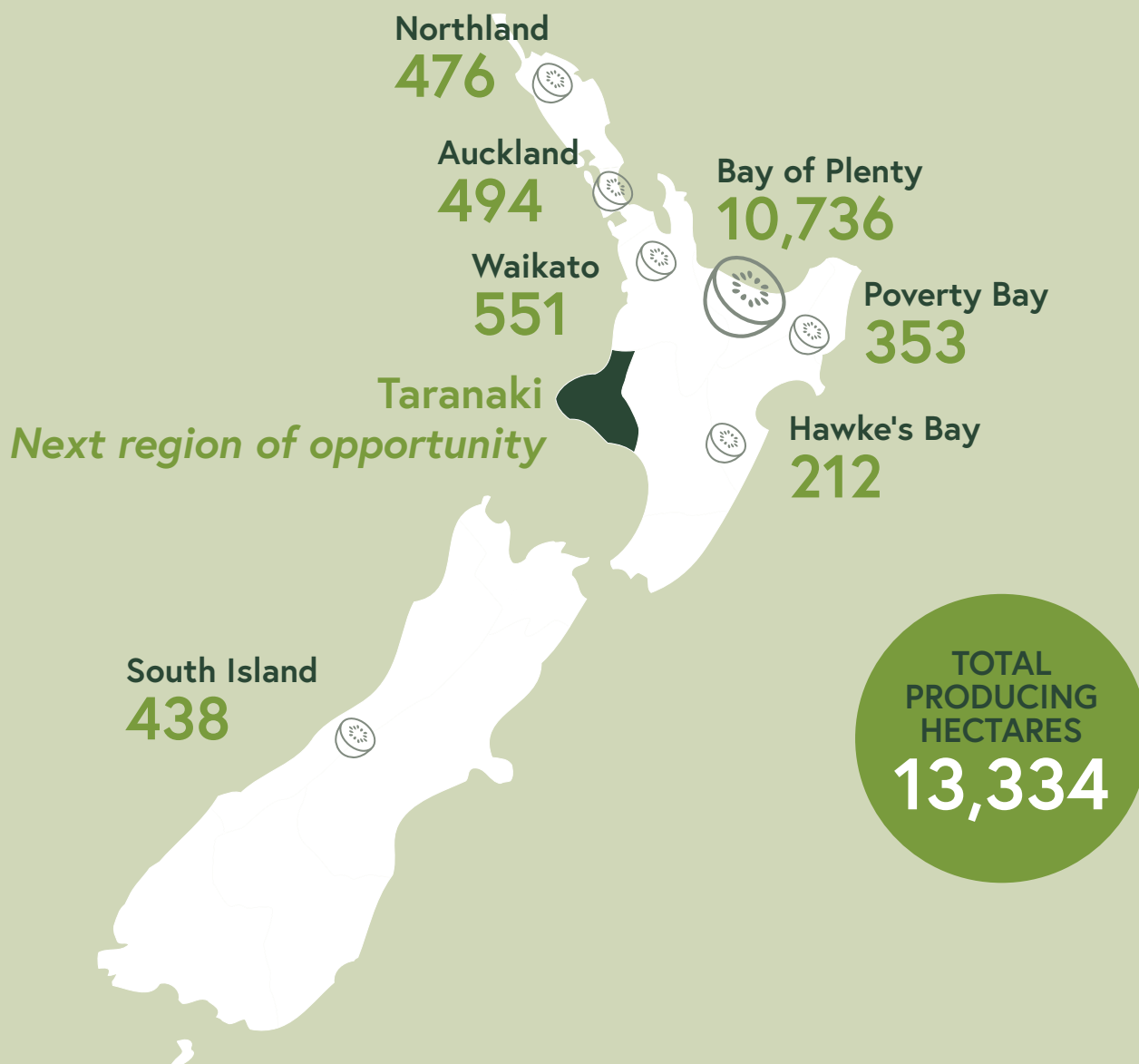
<sup>1</sup> NZKGI notes. Zespri 2020/21 Annual Report

# Drivers of growth



# Main kiwifruit growing regions in New Zealand<sup>2</sup>

81% of New Zealand's orchard area is in the Bay of Plenty – over 10,000 hectares. There are several other regions with orchard areas in the hundreds of hectares.



<sup>2</sup> Regional supply to Zespri 2020 (ha)



# The opportunity for Taranaki

Zespri has identified that 7,000 more hectares of kiwifruit plantings are required over the next ten years to meet their demand-projections. As the industry looks to regional diversification to meet this demand, increasingly favourable climatic conditions, improved growing, and wind mitigation, methods, land availability and an entrepreneurial mindset means the potential of kiwifruit grown in Taranaki is again being recognised and explored.

Apata, specialist service provider for the fruit, are actively looking for opportunities in South Taranaki. Early-stage criteria include the location of suitable land less than 30 minutes to a labour population and under 200 m above sea level. If the land is not close to the existing kiwifruit orchard it is suggested a development of 60+ hectares in close proximity would be sustainable and of a scale to support the necessary infrastructure.

'Meeting the 10-year demand projection requires a step change in the pace of development. It requires investment and innovation by Zespri, growers, post-harvest operators and partners across the supply base. The implications of meeting around 280 million trays by 2030 are 7,000 more hectares of plantings in New Zealand and around \$700-\$750m of investment by the postharvest sector to keep pace with volume growth.' Zespri's [5 Year Forecast](#)

# The kiwifruit industry's supply chain

On the production side of the kiwifruit industry, there are several key organisations and well-established businesses to support the ongoing success of the the industry and the wider kiwifruit ecosystem.

SUPPORT	CHANNEL TO MARKET	SERVICES AND PROCESSING
<p><b>NZKGI</b></p> <p><a href="#">New Zealand Kiwifruit Growers Incorporated</a> is a representative body for growers. It provides support to, and advocates for, growers. New Zealand Kiwifruit Growers Incorporated provides <a href="#">The Kiwifruit Book</a>. It includes an in-depth guide to establishing an orchard and the wider industry value chain.</p> <p><b>THE MĀORI GROWERS FORUM</b></p> <p>The <a href="#">Māori Kiwifruit Growers Forum Incorporated</a> advocates for Māori growers.</p> <p><b>KIWIFRUIT NEW ZEALAND</b></p> <p><a href="#">Kiwifruit New Zealand</a> is an industry regulatory body. It can authorise other parties to export kiwifruit in collaboration with Zespri to markets other than Australia. In 2019/20 2.9 million trays (or just under 2% of local production) were exported collaboratively.</p> <p><b>ORCHARD MANAGEMENT AND DEVELOPMENT BUSINESSES</b></p> <p>All the major packhouse and postharvest operators also provide orchard development and management services. APAC and MPAC provide their services via <a href="#">Groplus</a> – Tauranga and Auckland. Apata has been active in orchard development and management in Taranaki and is specifically seeking <a href="#">development opportunities in Taranaki</a>. Tim Barrett of Taranaki-based Farm Ventures Ltd is also interested in kiwifruit development opportunities in the region. It is possible other businesses may also be keen and this support service network is likely to grow as kiwifruit orchards establish.</p> <p><b>Other orchard managers and developers include:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Southern Cross Horticulture</a> – Tauranga</li> <li>• <a href="#">Kiwifruit Investments 2001 Ltd</a> – Te Puke</li> <li>• <a href="#">EHC</a> – Te Puke</li> </ul>	<p><b>ZESPRI</b></p> <p><a href="#">Zespri</a> controls the route to market for most kiwifruit grown in New Zealand and all export, apart from exports to Australia. The organisation also sets standards for production systems and fruit quality, controls the production of several new varieties of kiwifruit and has more varieties under development.</p> <p>Zespri is grower-owned. Suppliers to Zespri may purchase Zespri shares based on historical production levels and new entrants are given a deemed production level for initial share allocations<sup>3</sup>.</p> <p>Zespri works with <a href="#">some northern hemisphere growers</a> to supply fruit under the Zespri brand when New Zealand produced fruit cannot be supplied, enabling Zespri to provide fruit 12 months of the year. In 2020/21 Zespri sold over 22 million trays of non-New Zealand grown fruit (12% of the fruit sold by Zespri).</p> <p>Zespri provides a New Grower Pack: <a href="#">Becoming a Grower (zespri.com)</a>. This is a great place to start with information on the kiwifruit industry and establishing a new orchard.</p>	<p><b>PACKHOUSES AND POST-HARVEST OPERATORS</b></p> <p><a href="#">Packhouses and post-harvest operators</a> play an important role in the kiwifruit industry<sup>4</sup>. Many also provide advice to growers, and orchard development and management services. It is important for parties developing new orchards to establish a relationship with a packhouse and confirm a route to market for their fruit.</p> <p>The major packhouses and postharvest operators are:</p> <ul style="list-style-type: none"> <li>• <a href="#">Eastpack Limited</a> – Te Puke</li> <li>• <a href="#">Seeka Limited</a> – Te Puke</li> <li>• <a href="#">Apata Group Limited</a> – Katikati and Te Puke</li> <li>• <a href="#">DMS Progrowers Limited</a> – Tauranga</li> <li>• <a href="#">Trevelyans Pack and Cool Limited</a> – Te Puke</li> <li>• <a href="#">Hume Pack-N-Cool Limited</a> – Katikati</li> <li>• <a href="#">Opotiki Packing and Cool Storages Limited (OPAC)</a> – Opotiki</li> <li>• <a href="#">Auckland Pack and Cool (APAC)</a> – Auckland</li> <li>• <a href="#">Mount Pack and Cool</a> – Tauranga (subsidiary of APAC)</li> <li>• <a href="#">Riverlock</a> – Opotiki</li> <li>• <a href="#">Orangewood Kiwifruit Post-harvest &amp; Orchard Management</a> – Kerikeri</li> <li>• <a href="#">Birchwood Packhouse Limited</a> – Katikati</li> <li>• <a href="#">Punchbowl</a> – Pukekohe</li> </ul> <p>In addition, several companies are <a href="#">licensed to export kiwifruit to Australia</a> and several companies also provide kiwifruit to the local market.</p> <p>There are several other packhouse and coolstore operators in NZ.</p> <p><b>PROCESSING</b></p> <p>While the majority of New Zealand kiwifruit is sold as fresh fruit there is growing interest in processed kiwifruit products. Several companies are well established, providing added-value food and nutraceutical products – please see Opportunities for Adding Value Section for examples.</p>

3 From the Zespri New Grower Booklet (p14) – available via [Becoming a Grower \(zespri.com\)](#)

4 A larger list of kiwifruit packhouses can be found at: [Packhouse and processing facilities that export fresh and frozen fruits and vegetables to China | MPLI NZ Government](#)

# Rewarding returns

In Zespri's [5 Year Outlook](#) they forecast Orchard Gate Returns (OGR) per tray from 2020/2021 to 2025/26.

## OGR 2020/2021 – 2025/2026

Zespri™ Green \$6.50-\$8.50<sup>5</sup>

Zespri™ SunGold™ \$8.50-\$12.50

Organic Green \$9.50-\$11.50

Organic SunGold™ \$10.00-\$14.00

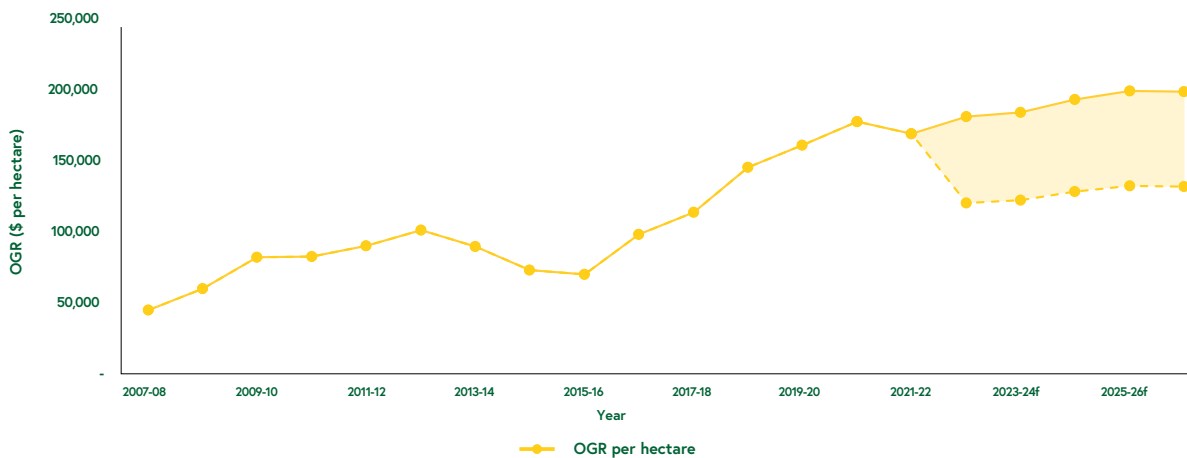
Zespri™ Ruby Red™ \$10.50-\$13.00

The past actual OGR and forecast future OGR for both Green and SunGold are shown below

ZESPRI™ GREEN OGR PER HECTARE



ZESPRI™ SUNGOLD™ OGR PER HECTARE



<sup>5</sup> There is an important note with respect to Zespri's forecasts for Green which is that the forecast prices are "depending on declining volumes". In other regions green kiwifruit orchards are being replaced by newer varieties, particularly SunGold. Zespri is anticipating this to continue. This overall tightening supply sustains green prices.

# Kiwifruit's key varieties

Native to central and eastern China, kiwifruit is a name applied to several species of the genus *Actinidia*. In New Zealand, there is more to kiwifruit than the dark green, hairy-skinned 'Hayward' variety. In particular, the new smooth-skinned SunGold variety which was developed in New Zealand has been very successful. The red variety is also showing promise.

	<i>Actinidia deliciosa</i> "Hayward"	<i>Actinidia chinensis</i> "Gold3"	<i>Actinidia deliciosa</i> <sup>6</sup> "Green14"	<i>Actinidia chinensis</i> "Red19"
Brand	Zespri™ Green Kiwifruit	Zespri™ SunGold™ Kiwifruit	Zespri™ Sweet Green Kiwifruit	Zespri RubyRed™ Kiwifruit
Organic	Zespri™ Organic Green Kiwifruit	Zespri™ Organic SunGold™ Kiwifruit		
Protected by Plant Variety Rights	No	Yes - Zespri	Yes - Zespri	Yes - Zespri
Suitability for Taranaki	Hayward is widely thought to be suitable for growing in Taranaki's climate. It is successfully grown commercially in Whanganui.	SunGold is thought to prefer warmer conditions than Hayward. Further investigations will be required to determine if it is suitable for Taranaki.	As a variety related to Hayward it is likely that Sweet Green will also be suitable for Taranaki. Further investigations will be required to determine if it is suitable for Taranaki.	It is thought that Zespri Red will prefer similar conditions to SunGold. It fruits earlier than SunGold which helps balance seasonal workforce requirements. Further investigation will be required to determine if it is suitable for Taranaki.
Appearance and Taste	Hairy-skinned, with traditional dark green fruit and black seeds. Can have a core. Haywards has a tangy taste.	Smooth-skinned with golden fruit. They have a smaller core than Hayward and fewer seeds.  SunGold is described as having a tropical taste.  Slightly larger than Hayward.	Dark green, hairy-skinned, slightly smaller and with sweeter fruit than Hayward.	Smooth-skinned, with sweet, red, slightly berry-flavoured fruit.

## DOES SIZE MATTER?

Although different markets like different sized kiwifruit and different sizes affect the number and weight of fruit per tray, according to the NZKGI Kiwifruit Book ([Chapter 5](#)) taste is more important. Taste is primarily determined by the level of sugars (as measured by dry matter<sup>7</sup>) and acids in the fruit. Sugars give the sweetness and acids give the taste of kiwifruit. Zespri samples fruit for taste and this forms an important part of grower returns. Fruit is also graded on appearance.

## HEALTH BENEFITS OF THE FRUIT

Kiwifruit have numerous health benefits. In addition to standout Vitamin C<sup>8</sup>, fibre and good levels of folate and potassium, kiwifruit also contain strong antioxidant, anti-inflammatory properties, and are believed to be protective against heart diseases, cancer, diabetes, or central nervous system diseases. An enzyme actinidin which helps the digestion of proteins is also helpful for people with compromised digestive systems. Kiwifruit also have a low glycemic index (<50).

[Zespri](#) promotes the health benefits of vitamin C, digestive health benefits and abundance in other nutrients in kiwifruit.

<sup>6</sup> There can be some confusion over species names as green kiwifruit were originally classified as *Actinidia chinensis*. They have been classified as the separate species *Actinidia deliciosa* since 1984.

<sup>7</sup> Which is largely starch and converts to sugars.

<sup>8</sup> One kiwifruit provides most or all of the recommended daily intake of Vitamin C



# Opportunities for adding value

## FOOD AND BEVERAGE



## HEALTH AND WELLNESS



## PERSONAL CARE AND BEAUTY



There is opportunity for technology developments to create value.

## HIGH VALUE PRODUCTS

While the majority of New Zealand grown kiwifruit (95%+) is sold as fresh fruit there is a growing industry adding value to the raw product. An opportunity exists to expand the value-added product market while capitalising on trends and scientific innovation to reduce the impact of peaks and troughs the industry may face in the future. Value addition currently largely takes the form of packaged food products as well as kiwifruit seed oil used in skin- and hair-care products. An established kiwifruit industry in Taranaki will provide the region's thriving food & beverage brands a ready supply of raw material for new product development and processing.

There is also increasing interest in kiwifruit waste products, currently used as low value animal feed. Driven by global demand for natural ingredients with functional benefits, culled kiwifruit, peels, seeds and pruning waste presents new opportunities for extraction or incorporation into the production cycle of other industries in Taranaki with wide potential application in the food and non-food sectors.

## POST-HARVEST OPPORTUNITIES

The phrase post-harvest is widely used in the kiwifruit industry to describe those activities that occur once fruit are picked. Provided commercial arrangements are agreed, it is likely, initially, that fruit grown in Taranaki would be freighted to another region for packing and cool storage.

The development of a packhouse and storage facilities in the region would help develop the kiwifruit industry in Taranaki. It is possible that a packhouse could also support other crops such as avocados and late harvest fruit.

The biggest packhouses in the Bay of Plenty process up to 15m trays per season. New Zealand's smallest kiwifruit packhouse processes around 200,000 trays per season. At the average annual yield of 12,070 trays/ha, that packhouse would process the production of just 16.56ha. A packhouse that services orchards totaling around 50ha, like owner-operated Cooper Coolpak in Whanganui, can operate successfully however it has been advised that 3-4m trays (or 250-300ha of production) would more likely be the minimum feasible size.

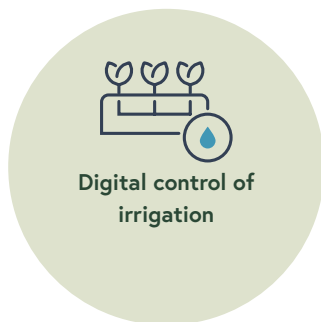
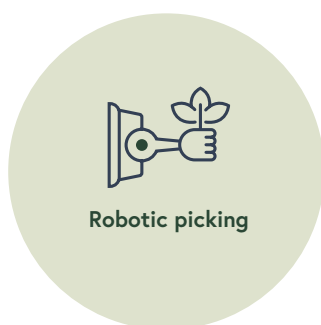
Further investigations will be necessary to assess and confirm what level of Taranaki production will support an efficient and economic packhouse and cool store operation. This needs to be considered alongside costs of compliance and transport operations including road, rail freight and shipping. Even if fruit are packed and stored in Taranaki, the fruit will still need to be transported to an export port – most likely Port of Tauranga. Should this and other food opportunities scale, container shipping from Port Taranaki could occur (as it has historically).

# As the industry grows in Taranaki there will likely be an opportunity to establish a local packhouse and associated cool store.

## INNOVATION OPPORTUNITIES – MAKE YOUR MARK

In keeping with New Zealand's history of innovation and leadership in food and product development, the New Zealand kiwifruit industry has a strong history of R&D. New management practices, disease control and new varieties have been key to the industry's development and will continue to drive the future of the industry in New Zealand.

**There are many areas being explored by the New Zealand kiwifruit industry including:**



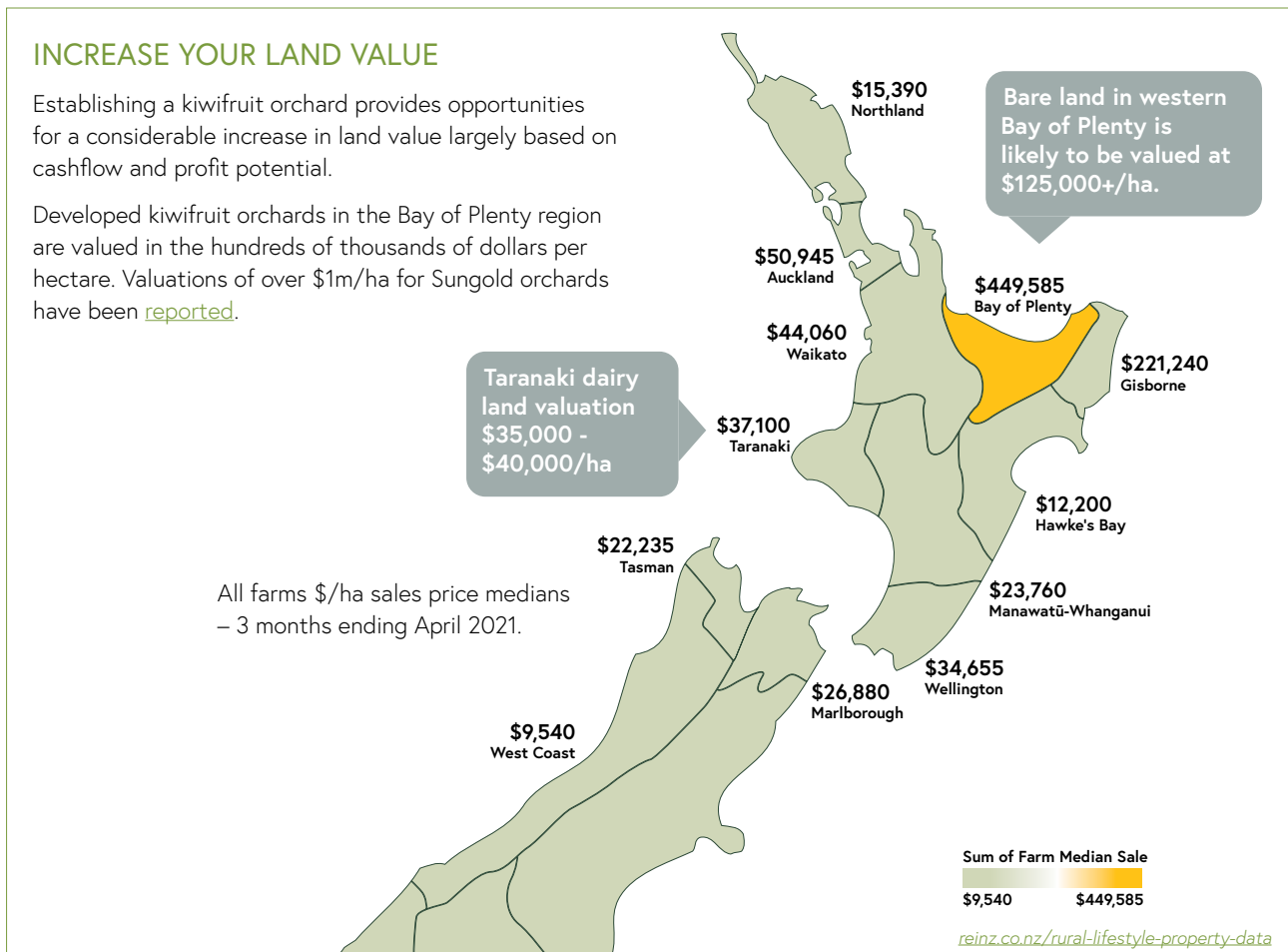
As the industry expands into new regions such as Taranaki, that are cooler and windier than the Bay of Plenty, there will likely be need and opportunity for development of new management systems suitable to the region. These systems and the tools associated with them may prove to have market opportunity in other regions. The R&D required may be eligible for support from Callaghan Innovation or MPI.

# What's the bottom line?

## A financial model (2020)

Financial Summary Per Hectare	Green Kiwifruit	Gold Kiwifruit
Average trays, indicative price/tray & Orchard Gate Return	9000 @ \$7.50 \$67,500	11,000 @ \$10.50 \$115,500
Labour, orchard & overhead costs	\$30,000 - \$50,000 (Excluding land costs, financing & income tax)	
Time to First Harvest	3 - 4 years	
Time to 100% Yield	5 - 7 years	
Time to Cash Positive	8 years	5 years
Development Costs	\$150,000 - \$200,000	
One-off Licence Fee	Nil	\$550,000+ (2020) By annual tender
Vine Life	30 - 50 years	

NOTE: A full financial model is available from Venture Taranaki. Please note, you should seek your own independent professional advice.



# Assessing the options

## – which variety should you grow?

WHY HAYWARD?	CONSIDERATIONS
<ul style="list-style-type: none"> <li>This was the variety grown in the region in the 1980s and 1990s and recently re-established <a href="#">near Waitotara</a>.</li> <li>Hayward makes up just under half of the national kiwifruit crop. While its proportion of the national crop is decreasing as plantings of other varieties increase, there continues to be good market demand for Hayward fruit. There is also a market for organic green Hayward kiwifruit.</li> <li>No licences are needed to plant Hayward, so it costs less to establish a Hayward orchard than an orchard with a licensed variety. However, these lower costs need to be assessed against the current and <a href="#">forecast</a> comparatively lower (but still viable) orchard gate returns from green Hayward kiwifruit.</li> </ul>	<ul style="list-style-type: none"> <li>Specialist advice should be sought to assess which areas are suitable for a specific site in Taranaki.</li> <li>This <a href="#">analysis</a> suggests that Hayward is suited to parts of Taranaki though the frequency of strong winds may be a limiting factor. Shelter will be an important consideration.</li> </ul>
WHY SUNGOLD?	CONSIDERATIONS
<ul style="list-style-type: none"> <li>Zespri has invested heavily in developing new varieties of kiwifruit. There is particularly strong export demand for SunGold kiwifruit with the variety now making up just over 50% of the kiwifruit crop.</li> <li>SunGold is a high-yielding variety with strong market demand and returns.</li> </ul>	<ul style="list-style-type: none"> <li>This variety is controlled by Plant Variety Rights and <a href="#">licences are needed to grow them</a>.</li> <li>A further 750ha of SunGold were licensed in 2021 including 50ha for organic production. 350ha are being released in 2022.</li> <li>The median price of SunGold licences in 2021 was <a href="#">\$550,000 per hectare</a> with Organic SunGold having a median price of \$305,000 per hectare.</li> <li>SunGold requires <a href="#">slightly warmer</a> conditions than Hayward, particularly in winter.</li> </ul>
WHY RUBYRED?	CONSIDERATIONS
<ul style="list-style-type: none"> <li>RubyRed is another new variety with the fruit <a href="#">first marketed in 2019</a>.</li> <li>Plantings of RubyRed are increasing as further licences are released. 350ha of RubyRed was licensed in 2021 at a median cost of \$75,000 per hectare. A further 350ha are being licenced in 2022.</li> <li>It fruits earlier than other varieties which may help with managing workflow requirements.</li> </ul>	<ul style="list-style-type: none"> <li>While the variety is showing promise, plantings of RubyRed are small and its market scale is still being determined.</li> <li>It is also likely to require slightly warmer conditions than Hayward.</li> <li>It is expected that licences for RubyRed will be available in 2022.</li> </ul>

### ORGANIC KIWIFRUIT

There is a growing demand for organic kiwifruit of all varieties. These are not different cultivars, but a different method of growing<sup>9</sup> that adheres to the BioGro certification standards, valuing natural methods of plant nutrition and pest control. To grow organic kiwifruit, growers will need to apply for a license from Zespri, bidding through the tender process.

While much of the growth in plantings of new varieties such as SunGold has come from conversion of existing Hayward orchards, new orchards will need to be developed to meet continuing market demand for New Zealand-grown Hayward fruit.



<sup>9</sup> <https://www.southerncrosshorticulture.co.nz/news/which-kiwifruit-plants-and-vines-to-buy>





Photo: Jamie Troughton, Describe Media via Apata.

# Entry requirements

**The minimum viable size for a commercial kiwifruit orchard is about 4ha for an owner-operated block. Zespri's average supplier is 4.14ha.**

Commercially managed orchards need to be larger. For example, the new kiwifruit orchard at Waitotara is 21 canopy hectares. Apata, which supported that development, [is looking for land parcels of 10ha or more](#) for kiwifruit development in South Taranaki.

Apata has suggested that 50ha of kiwifruit orchards within a 30 - 40-minute driving distance from each other is ideal to strengthen the provision of professional orchard management services in North Taranaki. This 50ha could be across several orchards.

At this size there may be sufficient scale to support a small pack-house operation. A total of 100ha would produce more fruit than the smallest current packhouse (200,000 trays/ year).

Longer-term it would be ideal to have several hundred hectares in Taranaki, if not more. This would enable multiple service providers to set up, minimising risk and ensuring competition. If this occurred, Taranaki production of kiwifruit would be similar to regions such as Northland, Waikato, Gisborne, and Hawkes Bay.

## DEVELOPMENT STRUCTURES

There are various business models for how kiwifruit orchards are developed and operated:

- An individual landowner can manage and operate the development.
- A specialist partner can manage the development process and/or operate an orchard for the landowner.
- An orchard can be developed and operated by multiple owners through a syndicate.



# Establishing an orchard – what's required?

Establishing a kiwifruit orchard in Taranaki will be a greenfield opportunity converted from another land use. The NZKGI Kiwifruit Book contains an excellent guide to orchard development ([Chapter 2](#)).



## SHELTER

Natural shelter (e.g., hedging) is widely used in New Zealand and is lower cost but takes time to establish, requires maintenance, takes up productive land and can compete for nutrients. Artificial shelter is more expensive up-front and may require replacement (it is usually provided with a ten-year warranty) but has lower annual maintenance costs. Some orchards also provide overhead shelter providing further wind, and also hail, protection as well as retaining warmth.



## KIWIFRUIT PLANTS

Kiwifruit plants are dioecious – plants are either male (produce pollen) or female (grow fruit). Orchards need to have the right mix of male and female plants to encourage good cropping.

The fruiting varieties of kiwifruit are usually grafted onto specialist rootstock varieties – the most common is Bruno. The rootstock plants are more resilient to pest and disease and enable stronger plant and fruit development. The variety of rootstock can influence when vines fruit.



## WATER

An orchard will need to meet the requirements of the local council's District Plan and obtain (or vary existing) consents for the use of water for irrigation.



## SUPPORT STRUCTURES

Kiwifruit are woody vines that are grown on either pergola or T-bar structures. Pergolas are now the more common choice in new orchards. The vines grow on the pergola structure and the fruit hang down underneath.

Taranaki has promising conditions for growing kiwifruit. Plentiful sunshine, rain and suitable chill in the winter along with rich, free-draining volcanic soils. Shelter will be needed.



# Managing your orchard

**Due to Taranaki's climate, the kiwifruit growing cycle will likely be slightly later than the Bay of Plenty. This delay may be helpful in terms of accessing support services from out of the region, as well as commanding premium prices for later season fruit.**

The cycle of a kiwifruit orchard may also be complementary to other farming operations. Find out more about orchard management in the NZKGI Kiwifruit Book ([Chapter 3](#)).

KIWIFRUIT GROWING CYCLE												
The table below shows an indicative kiwifruit growing cycle <sup>10</sup> .												
Season	Winter			Spring			Summer			Autumn		
Month	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Vine Growth	Dormant		Budbreak			Flower- ing	Fruit set		Fruit growth		Leaf Fall	
Orchard Management	Winter prune		Budbreak sprays	Bud & flower thinning and pollination		Male prune		Canopy management + thinning + girdling			Harvest	

## POLLINATION

Kiwifruit are mostly pollinated by bees (plus a little via wind). Setting fruit can be challenging as female plants produce relatively few flowers, the flowers they do produce need a lot of pollen for full pollination and they are not very attractive to bees as they don't produce nectar. The pollination process requires active bee management and occasionally artificial pollination processes.

## GIRDLING

Girdling is often carried out in spring and summer. Girdling involves cutting a thin slice of bark from the circumference of a stem which stops the roots of the plant competing with the fruit for the carbohydrates produced by the leaves. Root pruning is also sometimes carried out for similar purposes.

## PRUNING

Summer pruning is needed to control female kiwifruit vines which grow very vigorously. Male vines are also pruned in spring and summer to stop them competing with the female vines.

Fruit occurs on one year or older canes – but fruit volume declines with age. Old canes need to be pruned during winter to encourage new growth.

## THINNING

Selective thinning of fruit is also carried out to encourage the remaining fruit to be larger and tastier. Keeping an open canopy also reduces disease risk and promotes fruit quality.

## HI-CANE

Hi-Cane is a plant growth regulator (Hydrogen cyanamide) that is widely used to [promote uniform budbreak and increase yields in kiwifruit](#). Its use is particularly important in warmer areas of the country. The Environmental Protection Authority is reassessing its use in New Zealand. It is used on kiwifruit in late winter before fruit has formed.

## DISEASE

As kiwifruit has only ever been imported to New Zealand as seeds, many pests and diseases seen elsewhere are not present in New Zealand. Taranaki's isolation from existing kiwifruit growing regions may also be beneficial if there is a disease outbreak in other regions.

The PSA virus (*Pseudomonas syringae actinidiae*) arrived in New Zealand in 2010. SunGold and Hayward variants are relatively resistant to PSA and are productive with good management systems.

Other pests and diseases, such as fruit fly, would cause issues if they arrive in New Zealand.

To learn more about orchard management please refer to the NZKGI Kiwifruit Book ([Chapter 3](#)).

<sup>10</sup> Based on a diagram in the [NZKGI Kiwifruit Book \(p34\)](#).

# Environmental considerations

## SUSTAINABLE FARMING

Zespri has adopted sustainability as a major focus and has developed both a [Sustainability Position Statement](#) and [Sustainability Framework](#). At the orchard level, Zespri growers use the Good Agricultural Practice program. This is designed to ensure growers minimise their environmental impact while also providing fruit of a very high quality.

According to the Zespri New Grower Booklet (p15<sup>11</sup>) the system is focused on: "Tailored integrated solutions for pest and disease management, crop protection strategies, protection of the environment for future generations and the health, safety and welfare of the people that work on orchards."

There are standards for both conventional and organic production. NZKGI's Kiwifruit Book notes ([Chapter 3, p46](#)): "These standards ensure fruit meets the legal requirements in each country where Zespri fruit is sold and that customers and consumers requirements for safe fruit, produced in an environmentally responsible manner are met."

The standards include:

- Monitoring for pests and diseases,

- applying appropriate agrichemicals at the right time and at the correct concentration,
- using cultural controls to further minimise pest and diseases, and
- implementing orchard hygiene measures to prevent the spread of pest and diseases.

## REGENERATIVE PRACTICES

Regenerative farming relates to an integrated whole system approach to agriculture in which the natural environment is regenerated while food and fibre is produced, allowing for improved outcomes on farm and beyond the gate. Principles of working cooperatively with nature and focusing on soil health, as a productive starting point, guide practices that have likely beneficial outcomes for soil, water, air, climate, biodiversity, nutrient cycles, plant and animal health, human wellbeing, social license, and economy.

Zespri and T&G Global received funding from MPI in 2022 to explore [regenerative practices and market analysis of regenerative horticulture in the kiwifruit industry](#). This work aims to understand how existing sustainable practices link to the emerging concept of regenerative horticulture and what added value there might be for both consumers and growers.



Photo: Jamie Troughton, Describe Media via Apata.

11 Available via: [Becoming a Grower \(zespri.com\)](#)



# Growing conditions

VCSN station	Urenui 21741	New Plymouth 21442	Inglewood 21546	Stratford 21605	Ōaonui 30692	Hāwera 21610	Waverley 26825
Mean temperature for May - July (°C)	10.8	10.9	9.9	9.0	10.7	10.0	10.0
Mean date of budbreak (Green)	Sep 22	Sep 23	Sep 17	Sep 14	Sep 21	Sep 18	Sep 18
Mean date of budbreak (Gold)	Sep 17	Sep 17	Sep 15	Sep 11	Sep 11	Sep 11	Sep 11
Frost risk	0%	0%	0%	0%	0%	0%	0%

Gold: gold-fleshed kiwifruit

Green: green-fleshed kiwifruit

VCSN: Virtual Climate Station Network

Source: [Taranaki Land and Climate Assessment](#).

Zespri [notes](#):

***"New Zealand provides the ideal conditions for growing kiwifruit. Plentiful sunshine, rain and just the right amount of chill in the winter. Plus, the soil has to be premium. That means, perfectly fertile with just the right acid balance. The soil needs to be slightly acidic — but not too acidic!"***

***Kiwifruit vines thrive in fertile, moist soils that are free draining and contain pH levels between 5.0 and 6.8. New Zealand's favourable temperate climate and volcanic soils produces ideal growing conditions, in an environment that growers respect and protect."***

These requirements are likely met in warmer parts of Taranaki which may be suitable for establishment of further kiwifruit orchards. Shelter will be needed.

Kiwifruit [grow best](#) in regions that are warm and sunny in summer (2,200-2,500 sunshine hours pa) and have at least 600 hours of winter cooling below 7°C for spring bud development. Cold, wet, or very dry, and windy sites are not suitable.

Kiwifruit require at least 1,100 Growing Degree Days and Taranaki's temperate climate along with its moist, fertile soils and high sunshine hours mean parts of the region appear promising for growing kiwifruit. Growing Degree

Days (GDD) are the total number of degrees Celsius above a base threshold temperature (Tbase) each day.

These requirements are likely met in warmer parts of the region, such as northern Taranaki. Other locations may also have suitable microclimates e.g., developments are occurring at Waitōtara. See the [Taranaki Land and Climate Assessment](#) report for more details.

Warming due to climate change is likely to make Taranaki a better location for kiwifruit in coming decades.

Since kiwifruit were last grown commercially in Taranaki, in the 1980s and 1990s, improved growing methods have led to higher yields and greater wind-resilience.

**With strong returns and improved profitability per hectare, kiwifruit has potential to be commercially viable in parts of Taranaki.**

# Labour considerations

The seasonal cycle of kiwifruit production requires a seasonally variable workforce which can be a challenge for growers and packhouses. The industry has relied on workers from several Pacific Islands coming into New Zealand under the [Recognised Seasonal Employer Scheme](#).

New Zealand Kiwifruit Growers Inc. has produced [a guide to finding seasonal work](#) in the kiwifruit industry. It includes the following diagrams showing the seasonal timeline for key activities and the pressures on the workforce required to operate kiwifruit orchards and packhouses. There is particularly strong labour demand for picking and packing during late autumn and early winter.

The intensity of labour requirements varies from variety to variety. New Zealand Kiwifruit Growers Inc. has also produced a [document](#) on labour requirements including a summary of indicative total labour requirements for and gold production (see below).

The later growing cycle likely to be seen in Taranaki may create a longer picking and packing season for workers keen to work across regions.

## WORKFORCE DEVELOPMENT

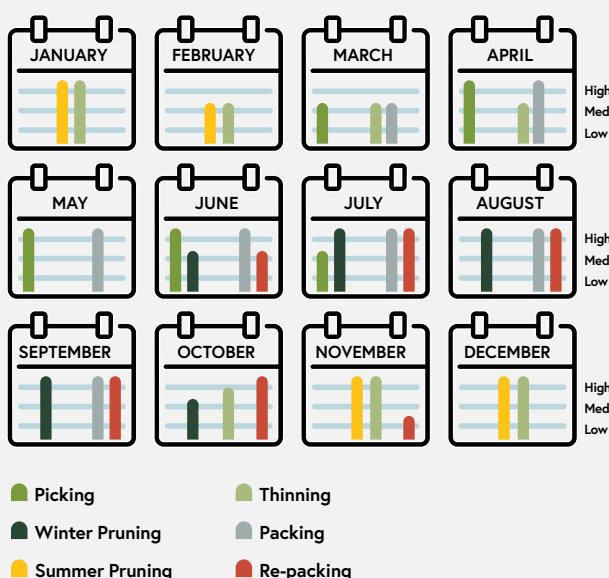
There is a range of occupations involved in running kiwifruit orchards and post-harvest operations. There are also many other occupations involved in providing other support services to the kiwifruit industry.

## HEALTH AND SAFETY

As with any other business health and safety is vitally important. Business owners and directors have primary responsibility for the health and safety of their workers and contractors on-site. Kiwifruit orchards and post-harvest operations involves a range of hazards and due care must be taken to identify them, mitigate them and provide appropriate protection and training to avoid incidents occurring. Zespri and NZKGI provide [resources](#) for managing health and safety matters.

## ORCHARD/PACKHOUSE PRESSURE TIMELINE

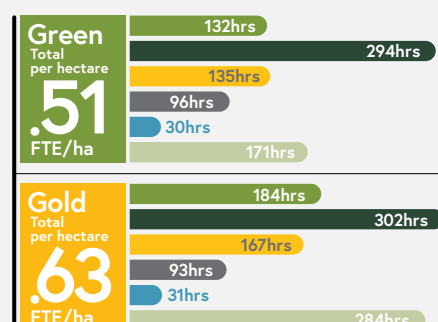
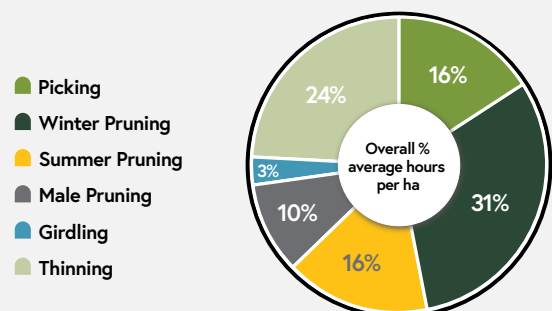
### Activity by month



Source: New Zealand Kiwifruit Growers Inc.

## 2018 ORCHARD OPERATIONS

### Total hours / per task / per hectare



# Potential for the region

## WHAT A KIWIFRUIT INDUSTRY IN TARANAKI LOOKS LIKE

If 70ha of kiwifruit were developed in North Taranaki, matching what is already developing in South Taranaki, the region would have 100ha of kiwifruit.

Based on possible yields and current returns for green kiwifruit this scenario would mean:

- 100ha planted
- Yield of around 10,000 trays per hectare
- \$1m trays produced
- Orchard gate return of \$7.51m<sup>12</sup>
- On-orchard costs would total \$3.5m<sup>13</sup>
- Profit before EBITDA would be \$4.0m.

## PEOPLE POWER

100ha of kiwifruit in Taranaki would employ 51 full-time equivalent people in on-orchard operations with a mix of skilled and unskilled roles based on a benchmark of 0.51 FTE/ha for on-orchard employment in green kiwifruit orchards<sup>14</sup>. If a packhouse was established in Taranaki that would provide additional employment.



<sup>12</sup> At the 2020/21 average price of \$751/tray

<sup>13</sup> Assumed on-orchard costs are \$35,000/ha

<sup>14</sup> [https://www.nzkgi.org.nz/wp-content/uploads/2019/12/NZKGI\\_Labour\\_Doc\\_Update\\_Nov19A.pdf](https://www.nzkgi.org.nz/wp-content/uploads/2019/12/NZKGI_Labour_Doc_Update_Nov19A.pdf)



# Next steps

## YOUR SUPPORT TEAM

**Setting up and operating a kiwifruit orchard, providing infrastructure for the industry, or developing value added products using kiwifruit requires a range of supporting services. Fortunately, the kiwifruit industry in New Zealand has a well-established support network.**

- [Horticultural advisors and consultants](#) to assess opportunities and advise on orchard establishment and operations.
- Financial advisors to support and/or package development projects.
- Nurseries to provide plant-stock – both rootstock and/or the grafted fruiting plant.
- Contractors to help establish orchards.
- Contractors to help with orchard management.
- Pruners and pickers.
- Apiarists to provide bees for pollination.
- Rural sector retailers to provide the equipment and supplies needed for orchard operation.
- Transport companies to move fruit from Taranaki to packhouses.
- [Packhouses and post-harvest operators](#) to process, package, and store fruit for export.
- Exporters (mainly Zespri)

Many of these services will initially be provided from other regions but as the industry grows so too will the support industry.

## FUNDING OPPORTUNITIES

**The source or sources of funding for development of a kiwifruit orchard will depend on the circumstances of the party or parties carrying out the development and the structure of the proposed investment.**

- Several New Zealand banks have teams with experience in assessing opportunities and providing loans for kiwifruit developments.
- Some projects are funded by the landowner – perhaps using equity and cashflow from an existing farming operation that continues in conjunction with the kiwifruit development.
- There are also developments part-funded by syndicators of kiwifruit investment opportunities where equity is provided from multiple investors.
- Other sources of funding may also be available for specific activities such as R&D. Venture Taranaki can advise on whether there are other such funding opportunities.



## CHECKLIST AND ACTION GUIDE FOR INTERESTED INVESTORS

If you are a/an:

- Taranaki landowner with 4+ hectares suitable for kiwifruit development.
- Kiwifruit grower, contractor, packer or processor with an interest in diversifying into Taranaki.
- Investor with an interest in supporting new kiwifruit development in Taranaki.
- Syndicate with an interest in packaging a development and investment opportunity in Taranaki.
- [Register your interest](#) with Venture Taranaki.

### REVIEW:

Venture Taranaki's [Kiwifruit seminar \(2020\)](#)

Plant & Food Research's [Taranaki Land and Climate Assessment](#) report

[Zespri](#)

Zespri [New Grower Information](#)

Zespri [Kiwiflier](#) Newsletters

[Zespri Annual Report](#)

[Zespri 5 Year Outlook](#)

[New Zealand Kiwifruit Growers Incorporated](#) including [The Kiwifruit Book](#)

The [ANZ Kiwifruit Report \(2019\)](#)

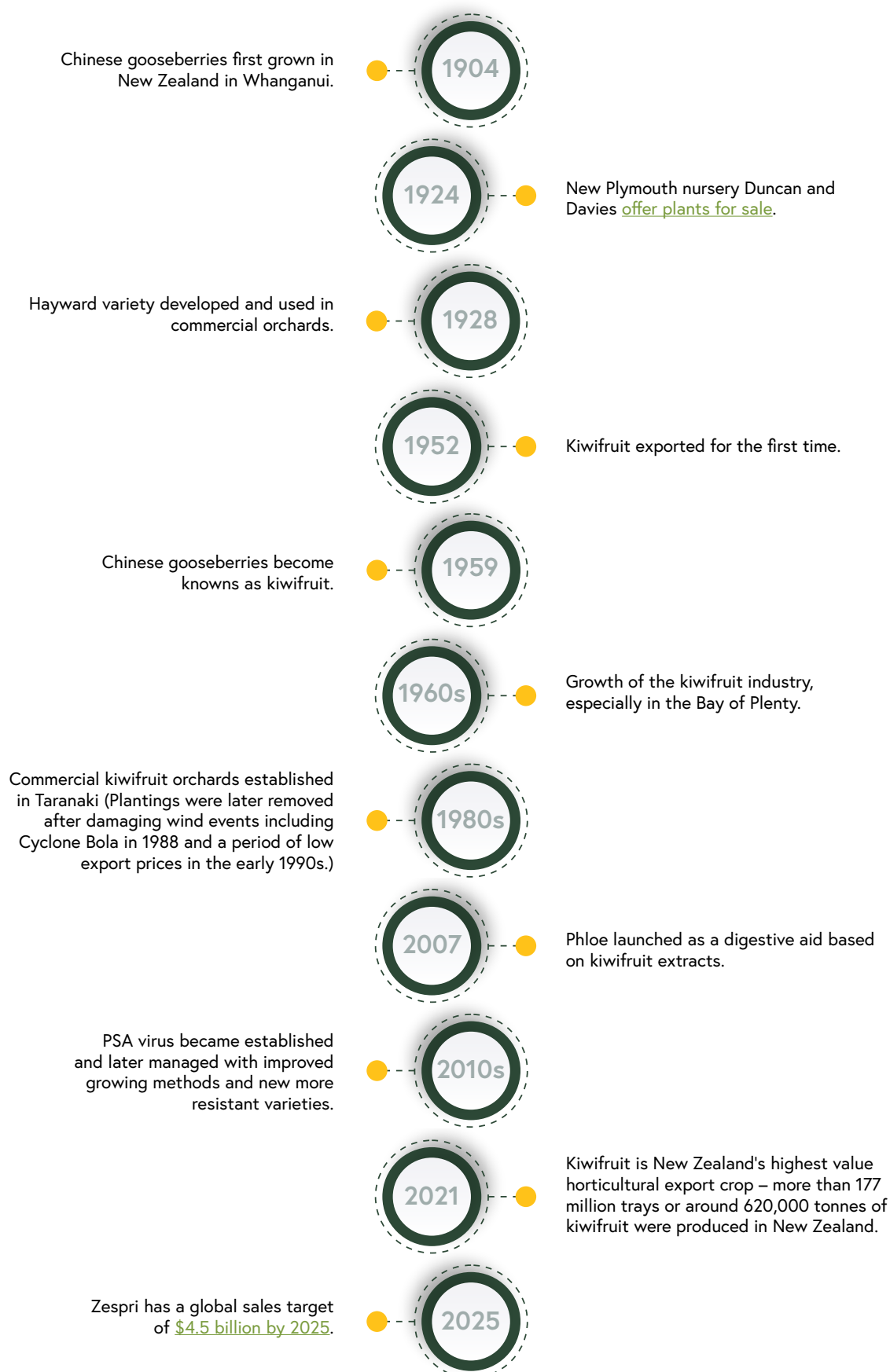
### CONSULT:

[Kiwifruit Advisors](#)

**Get in touch, email [branchingout@venture.org.nz](mailto:branchingout@venture.org.nz)**

# Appendices

## APPENDIX A: THE HISTORY OF KIWIFRUIT IN NEW ZEALAND





## ABOUT VENTURE TARANAKI

Venture Taranaki is the regional development agency for Taranaki. The organisation is responsible for regional development strategy, enterprise and sector development, investment and people attraction, and major project initiatives which contribute to the inclusive and sustainable growth of the region. Venture Taranaki is a registered charitable trust and a New Plymouth District Council Controlled Organisation, supported by the three District Councils of the Taranaki region.

**venture**  
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