

NZ Avocados Go Global Primary Growth Partnership Programme Evaluation

Commissioned by Ministry for Primary Industries | Manatū Ahu Matua

Completed by Maven Consulting Limited



Ministry for Primary Industries
Manatū Ahu Matua



Ministry for Primary Industries

Charles Fergusson Building
38-42 Bowen St
Wellington
New Zealand

Contact

Tess McCawe
Investment Manager, SFF Futures Partnerships
Tel: +64 4 830 1602
Email: Tess.McCawe@mpi.govt.nz



Maven Consulting Limited

Level 2, Grant Thornton House
215 Lambton Quay
Wellington
NEW ZEALAND
T: +64 4 801 6026

Contact

John Draper – Email: john.draper@consultmaven.co.nz
Lisa Newland – Email: lisa.newland@consultmaven.co.nz

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1.0 Executive Summary

The NZ Avocados Go Global programme's vision was to equip the industry with tools to triple productivity to 12 tonnes per hectare and quadruple industry returns to NZD\$280 million per annum by 2023. The programme has been a catalyst to help grow the New Zealand avocado industry by enabling information-sharing across the industry, developing new markets in Asia, and supporting improvements in tree health and orchard management.

The New Zealand Avocados Go Global Primary Growth Partnership (PGP) programme was an eight and a half year programme, which finished in December 2022, including two extensions. The investment in the programme comprised NZ Government funding of \$5.4 million (48%) and industry funding of \$5.96 million (52%).

This evaluation was commissioned by the Ministry for Primary Industries (MPI) to assess whether the programme achieved its outcomes, how well it was delivered, and the lessons learned from the programme. The evaluation comprised an examination of programme documentation and reports, interviews with industry and MPI staff involved in the programme, additional data collection, and development of this report.

The programme's vision, outlined in the 2012 Business Plan, was for an avocado industry that is *transformed, integrated, globally competitive, high value and sustainable*. It aimed to achieve this by increasing investment in industry activities that delivered the following objectives:

- To create an integrated and informed industry whose stakeholders are inspired, empowered and equipped to drive profitability through the demand-led value chain.
- To build a globally successful industry that has developed a range of markets and competes internationally to meet the consumer needs of each market.
- To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand avocados to global markets.

The programme had two overall value targets:

- NZD\$280 million in net sales (a quadrupling from 2012).
- Productivity tripled to 12 tonnes per hectare.

It set out to achieve other outcomes that would contribute to the overall targets. These included an increase in productive hectares planted in avocados, an increase in orchard yields, a significant increase in orchard gate returns (OGR), and a substantial increase in grower margins.

The programme sought to deliver these outcomes by improving collaboration and adoption of best practices by all growers, developing and expanding Asian markets for NZ avocados, increasing efficiency throughout the supply chain, developing industry-wide systems and tools to facilitate information sharing, and promoting good leadership across the industry.

The programme substantially achieved these broad objectives and value targets, as set out below.

Integrated Industry

The industry operates in a much more integrated way than it did before the programme got underway. It is regarded as more professional and cohesive with higher levels of collaboration than existed prior to the programme. This change has been led by NZ Avocado, which has become a stronger organisation with good representation from across the industry.

“The ability to activate [provided by the PGP] was what was needed to get the bigger partners on board and provided tangible steps [for improved] collaboration.”

– NZ Avocado executive member.

The development of industry-wide information systems including the Avo Hub and Avo Dairy, and the development of working groups and industry field days, were seen as particularly effective for growers to learn and share good practices. Although, it was acknowledged that not all growers participated in these activities and there are still some issues with the consistency of fruit quality reaching export markets.

“Getting all the knowledge in one place (Avo Hub) is very valuable.”

– NZ Avocados Go Global PGP programme board member

Expansion into Asian Markets

The expansion into Asian markets was a headline success for the programme with exports to the region rising from approximately 7% of all avocado exports by value in 2012 to 44% in 2023, with the Australian market share comparatively reduced. The growth of the South Korean market, the successful negotiations for market access to the Peoples Republic of China, and significant increases in sales to Taiwan, Hong Kong and India, were highlights within the overall success story.

Australia's higher consumer prices and lower export costs means it remains the most attractive market for exporters. Maintaining the volumes and premium prices for New Zealand avocados in Asian markets, particularly as exports to the region from Central and South America increase, will continue to be a challenge.

“[The PGP] work raised awareness of NZ avocados at a trade and consumer level. That platform will be built upon by exporters and NZ Avocado. We have aggressive plans to grow to markets outside Australia.” – Avocado exporter

Improved Yields and Fruit Supply

The programme substantially achieved its overall objective of “productivity tripled to 12 tonnes per hectare” when average industry yield reached 11.7 tonnes per hectare in 2021-22. It significantly exceeded its target for orchard gate return (OGR), with average grower return increasing from \$4,868 per hectare in 2012-13 to \$42,091 in 2020-21 (against a target of \$24,854 per hectare).

The programme reduced the irregular, bi-annual bearing pattern of avocado production, which was making it difficult to maintain consistent supply, through the development of an orchard benchmarking system that enabled tracking and reporting using a standardised calculation for yield and Irregular Bearing Index (IBI). The programme developed case studies of the top performing orchards, which were shared on the industry website and at grower field days, and the number of orchards in the IBI “best” and “good” categories showed significant improvement over the programme.

“The leap forward in funding for best practice guidance went across regions and across different scale orchards. Working groups were learning and sharing what works best. Comparisons between “sister orchards” were made available and shared with a wider base.” – NZ Avocado executive member.

Overall Value Targets

The programme largely achieved its overall value targets with industry returns of \$230 million (comprising export returns of approximately \$170 million free on board (FOB) and a domestic market of approximately \$60m) in 2020-21, and productivity of 11.7 tonnes per hectare in 2021-22.

“We have achieved the goals of increased productivity and returns with a record harvest three seasons ago. PGP activities to drive up yields and improve returns over time were successful.” – Avocado grower

The achievement of grower margin targets was not measured. Although the increase in yields and the substantial rise in OGR per hectare indicates that margins are likely to have increased, this evaluation concludes that the very ambitious targets of increased margin per hectare of 829% and total industry margin of 990% were unlikely to have been achieved. These targets were used to support the net present value (NPV) estimate of grower returns in the 2012 Business Plan and the fact that they were not measured throughout the programme detracts from an otherwise very positive picture of the achievement of the value outcomes from the programme investment.

Business Plan Outcomes

This evaluation concludes that the programme achieved or partially achieved all the outcomes set out in the 2012 Business Plan, with the following highlights:

- Exports to Asia rose from approximately \$3.7 million (FOB)ⁱ in 2012 to nearly \$30 million in 2021, with marketing programmes in South Korea, China, Taiwan, Japan, and Malaysia resulting in strong growth in those markets.
- Significant growth of the New Zealand market from \$28m in 2012-13 to \$63m in 2020-21, greatly exceeding the Business Plan target of \$30m by 2020.

ⁱ Free on Board - in this context, the value of exports at the point they are loaded onto a vessel or aircraft.

- Development of industry-wide digital solutions including Avo Hub portal and Avo Diary spray diary enabled sharing of information across the industry and compliance with export market requirements (and supported the opening of new markets such as China).
- Development of orchard benchmarking and case studies of good orchard practices, and sharing of these through working groups and industry field days.
- Significant increase in orchard productivity and reduction in bi-annual irregular bearing.

The objective of developing added value products from avocado waste was put on hold following evaluation of the opportunities as it was considered non-economic.

Extensions and Variations

The 2019 extension introduced new key performance indicators (KPIs), which were achieved or partially achieved as follows:

- Export volumes to Asian markets reached 1.5 million trays (target 800,000).
- Premium on returns of 15% was maintained in the Korean market but is proving difficult to maintain across all Asian markets.
- KPIs and baselines were established for industry sustainability.
- Feasibility study into an industry breeding programme was completed, but a full business case including funding sources was not completed.

The extension to December 2022 agreed the continuation of existing projects, the highlights of which were as follows:

- Sustainability projects including online survey of sustainability opportunities, fumigation and biofungicidal trials completed, Life Cycle Assessment (LCA) commissioned.
- Productivity projects relating to soil health and regenerative agriculture delivered.
- Further development of NZ avocado stories for exporters.
- Development of case studies and stories to support the World Avocado Congress themes of resilience, sustainability, and regenerative farming.
- Further industry data collection and systems functionality delivered.

Programme Delivery

The programme was well-managed, particularly in respect of the programme leadership from the CEO of NZ Avocado and the programme manager. Decision-making was timely and effective, particularly around the programme variations and extensions, and the funding of the programme was well managed with activities delivered to budget and funding reprioritised as agreed in the extensions.

“The governance group was well managed. MPI supported the programme well, and there was a good relationship with Jen [NZ Avocados CEO].” – Avocado grower

MPI's support for the programme, particularly from the investment managers, was seen as very effective and professional, and a strong contributor to its success. The consensus of those interviewed for this

evaluation was that the benefits derived from it could not have been achieved without the PGP partnership structure and funding.

The delivery of the information systems took longer than expected and elements were only delivered during the programme extensions. This was due to a lack of information technology expertise in NZ Avocado, inadequate analysis of user needs early on, and some technical and supplier delivery issues.

The assessment of the achievement of objectives and outcomes was complicated by the fact that there were many objectives and outcomes in the initial Business Plan, and that these changed throughout the programme, not only in response to the formal extensions but less formally in annual plans and other documents. For example, the 2012 Business Plan set out the following objectives for the programme:

- To create an integrated and informed industry whose stakeholders are inspired, empowered, and equipped to drive profitability through the demand-led value chain.
- To build a globally successfully industry that has developed a range of markets and competes internationally to meet the consumer needs of each market.
- To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand avocados to global markets.

Each of these objectives had initiatives and several activities with specific objectives.

The programme objectives were refined in the Annual Plan for 2015-16 to five key objectives:

- Market entry and growth – Asia and NZ.
- Consistent and sustainable avocado supply.
- Efficient supply chain.
- Products from waste.
- Information portal, knowledge transfer and adoption.

The extension approved in 2019 refocussed on:

- Market insights – develop a differentiated story for NZ avocados using consumer insights review.
- Trusted supply chain – develop evidence of food safety and take measures to improve quality.
- Evidence-based sustainability – establish a methodology for environmental assessment and reporting and incorporate into the story.
- Industry breeding programme – carry out research and develop a business case to support a breeding programme for avocados in NZ.

The value targets to triple productivity to 12 tonnes per hectare and quadruple industry returns to \$280 million per annum by 2023, were very ambitious, and the programme's achievements would not be so positive were these to be assessed against the 2022-23 season's volumes and returns.

Lessons Learned

The success of the programme has been tempered over the past two seasons by the reduced volumes harvested as a result of severe weather events, difficulties in maintaining exports due to shipping and logistics issues, and competition from South American fruit. These factors have negatively impacted grower productivity and overall industry returns. Despite this, there is a great deal of optimism for the future, and the gains delivered by the programme in terms of improved on-orchard and supply chain practices, the diversification of export markets, and the ability of the industry to differentiate New Zealand fruit in terms of nutritional value and environment standards, have created a strong foundation on which the industry can build as volumes and prices recover. The industry must continue to invest to consolidate the gains, and

while the priorities and mix of investment will continue to change, there remains much to be done in all of the key focus areas of the programme.

The NZ Avocados Go Global programme, being the first of its type in the horticultural sector, has come to be seen as an exemplar for similar programmes, an indication that it did much right and achieved its overall outcomes.

The positive learnings from the programme include the importance of strong governance and an independent chair, skilled programme management, and strong leadership from both MPI and the industry organisation (Avocado NZ). Having the flexibility to adapt priorities to meet changing opportunities and threats throughout the programme, such as Covid-19 impacts, pressure from growers and increased complexity in information systems, enabled outcomes to be achieved.

Future programmes should establish an objectives and outcomes framework from the beginning that will serve the programme throughout its life, with the flexibility to change priorities and identify the impacts on outcomes and benefits whilst maintaining focus on the strategic responses the programme was funded to deliver.

2.0 Background and Scope

Primary Growth Partnership is a government-industry partnership fund that invests in significant programmes of innovation and development to boost the economic growth and sustainability of New Zealand's food and fibre industries, as part of the Sustainable Food and Fibre (SFF) policy. PGP has encouraged more private investment in research and development in New Zealand's primary sector and shares the risk inherent in ambitious, large-scale transformational initiatives which may not proceed without government involvement.

The New Zealand Avocados Go Global PGP programme was an eight and a half year programme, which finished in December 2022, including extensions. The investment in the programme was \$11.36 million, comprising NZ Government funding (through MPI) of \$5.4 million (48%) and industry funding of \$5.96 million (52%), including extension funding of \$1.12 million from MPI and \$1.68 million from the industry.

The NZ Avocados Go Global programme's vision was to equip the industry with tools to triple productivity to 12 tonnes per hectare and quadruple industry returns to \$280 million per annum by 2023. The programme has been a catalyst to help grow the New Zealand avocado industry by enabling information-sharing across the industry, developing new markets in Asia, and supporting improvements in tree health and orchard management.

This report was commissioned by MPI to evaluate the success of the programme, specifically in the following areas:

- Outcomes – what has been accomplished by the programme so far and what are its benefits to New Zealand into the future?
- Execution – how well has the programme been executed?
- Lessons learned – what are the lessons from the programme and implications for other programmes and to SFF Futures as a whole?

The following tasks were in and out of scope:

In-scope:

- Establishing the effectiveness of processes used to develop and maintain the programme's Outcome Logic Model, Benefits Register and Business Case.
- Reviewing the findings and recommendations of the programme's planning, governance and management documents, progress reviews and audits.
- Assessing how benefit profiles have been updated in response to emerging intelligence, information, research, investigations, and evaluations.
- Assessing how risks to the realisation of benefits have been updated.
- Assessing how MPI communications, engagement and relationship management practices have contributed to effective programme governance and execution.
- Assessing the assumptions made in modelling and forecasting benefits.

Out-of-scope:

- Assessing the programme's alignment with current Government policy.
- Critiquing the PGP/SFF Futures model and the rationale for investing in the programme.

- Assessing the quality of intelligence, information, research, investigations, audits, and evaluations used by the programme's workstreams and projects.
- Assessing how MPI has revised baselines for financial, economic, and other benefits in the period after programme completion.
- Assessing MPI monitoring and forecasting processes.
- Assessing engagement and relationship management practices after programme completion.
- Re-modelling or re-forecasting benefits.
- Evaluating the reasons for the programmes being approved¹.

This report is the principal output of the evaluation. A summary version has also been prepared for public release.

3.0 Approach to this Review

Maven Consulting Limited was engaged to conduct this evaluation. The approach included the following phases and tasks:

1. Desk-based review of the programme documentation including the business plan and annual plan updates, the PGP agreement and variations, progress reporting and relevant research reports, technical reports and audit reports.
2. Semi-structured interviews with key stakeholders including the programme manager, programme partner personnel, relevant contractors and consultants, Programme Steering Group members, advisory group and working group members, and MPI staff involved in the programme.
3. Analysis of key themes from desk research, stakeholder interviews and additional data collection, and development of conclusions against the review questions. Validation of the findings with key MPI staff.
4. Development of this report and recommendations, including a publicly-available version of the report.

The programme team members and stakeholders interviewed for this evaluation are listed in Appendix 1. The authors thank all participants for their contribution, and particularly thank NZ Avocado and MPI for their support for this evaluation and the documentation they provided.

A detailed plan for this evaluation is included in Appendix 2.

4.0 Objectives and Outcomes

4.1 Go Global Vision

The headline vision for NZ Avocados Go Global as outlined in the PGP Business Plan 2012 was for an avocado industry that is:

Transformed, Integrated, Globally Competitive, High Value and Sustainable.

4.2 Prior State of the Industry

The New Zealand avocado sector at the start of the programme has been described as a “cottage industry”² with many small orchards producing inconsistent yields and quality of fruit from widely varying growing practices, and a disparate marketing community taking an opportunistic approach to developing new markets. A few growers, particularly the larger ones, had developed strong cultivation and management practices that produced impressive yields and returns but these were not shared across the industry, and while some marketers were making inroads into new export markets, there was no consistent differentiation or promotion of New Zealand avocados in those markets.

The 2012 Business Plan described three challenges that the industry faced, as follows.

Segregated Industry

The industry was not integrated, did not measure performance across the sector and did not have the capability to effectively share information and ideas. Decisions by growers, packers and marketers were often made in isolation due to the competitive nature of the industry at the time and a lack of understanding of the impacts on the overall industry and the New Zealand avocado brand in markets. The supply chain was unintegrated and relatively inefficient, contributing to inconsistent quality of New Zealand avocados in consumer markets. Some collaborative supply and marketing ventures had already been formed to address these issues, but these were not widespread.

Limited Markets

Success in, and reliance on, one market - Australia, which accounted for 88% of exports in 2012³ – was likely to be unsustainable as the Australian growers increased their production and the expansion of the Western Australian growing region resulted in a longer supply season. Australia is the world’s highest value market by price and per capita consumption but there is a preference to “buy Australian” and a limit to the consumption in the New Zealand supply window. Asia was seen as a significant opportunity to increase and diversify the export markets for New Zealand fruit but consumption and knowledge about avocados in that market were low, meaning that a disciplined and collaborative approach to market development would be required.

Irregular Supply of Fruit

The supply of fruit was variable, with significant swings in volume and yields due to irregular fruit bearing and inconsistent knowledge and practices on orchards. This resulted in varying returns and poor profitability for growers, which meant it was difficult to sustain investment in growing the industry and building new markets. While there was some funding for fruit and cultivation research already through the

grower levy, the lack of industry-wide research and development, and sharing of best practices, meant improvement was sporadic.

4.3 Opportunities

The 2012 Business Plan identified the following opportunities to meet the vision:

- Capitalise on the increasing global demand for healthy food in Asia.
- Capitalise on increasing demand for safe food.
- Utilise medical evidence of health properties of avocados.
- Develop new markets.
- Tailor the use of avocado to suit consumer needs.
- Transform the industry by integration and collaboration.
- Scale up R & D to significantly increase productivity.
- Optimise the value chain.

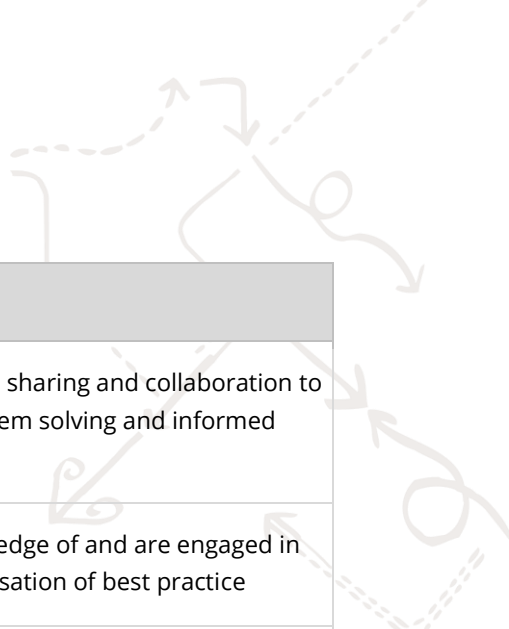
4.4 Programme Objectives

The 2012 Business Plan set out the following objectives for the programme:

- To create an integrated and informed industry whose stakeholders are inspired, empowered and equipped to drive profitability through the demand-led value chain.
- To build a globally successfully industry that has developed a range of markets and competes internationally to meet the consumer needs of each market.
- To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand avocados to global markets.

Each of these objectives had initiatives and several activities with specific objectives, as set out in the following table.

Programme Objective	Activity	Specific Objective
To create an integrated and informed industry whose stakeholders are inspired, empowered, and equipped to drive profitability through the demand- led value chain	Build leadership and capability	Deliver strong leadership which inspires and empowers industry stakeholders to make a step change towards market focussed production
	Benchmarking, performance measurement and transparency of information	Enable greater efficiencies across the value chain



Programme Objective	Activity	Specific Objective
	Information System	Increase information sharing and collaboration to enable greater problem solving and informed decisions
	Adoption of best practice	Growers have knowledge of and are engaged in the creation and utilisation of best practice
	Seek innovation in value chain	Significantly increase New Zealand's economic return
A globally successful industry that has developed a range of markets and competes internationally to meet the consumer needs of each market	Consumer research	Determine the key messages and media channels for an effective marketing programme
	Raise visibility	Increase awareness of avocados from New Zealand
	Marketing	Provide support for sales programme
	Supply chain optimisation	Ensure New Zealand avocados reach consumers in premium condition
	Plan market development in collaborative manner	
	New Zealand market initiative with retailer	Create additional value in the New Zealand market by introducing innovation into marketing
	Retain market access	Retain market access by reducing the risk of residues
To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand	New cultivars	Offer New Zealand growers the cultivars most likely to offer consistent and high yield in New Zealand conditions
	Plant growth regulators	Explore the impact of the use of new plant growth regulator use on productivity in New Zealand conditions

Programme Objective	Activity	Specific Objective
Avocados to global markets	Pruning trial	Extend the current Avocado Industry Council Pruning Trial to an industry wide programme on the impact of pruning on productivity
	Pollination	Determine best practice that optimises the production of flowers, their transformation into fruitlets, and the development of the fruitlets until maturity in New Zealand conditions
	Other factors	Review, in an integrated manner, other factors that impact on productivity

Five Key Objectives

The programme objectives were refined in the Annual Plan for 2015-16 to five key objectives as shown in the following diagram:

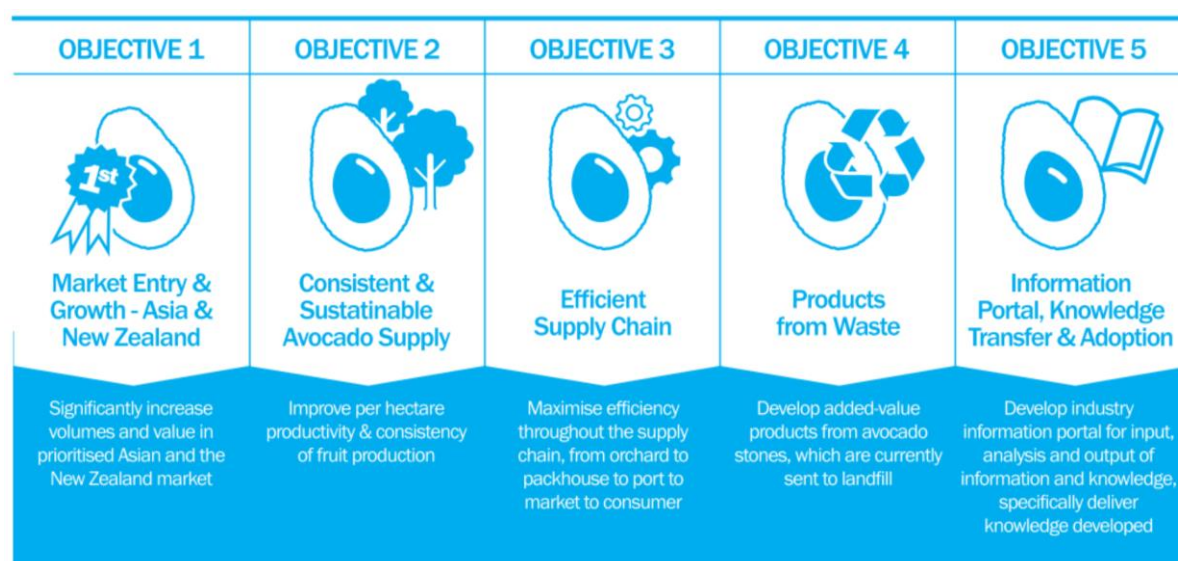


Figure 1 - Key Objectives from Annual Plan for 2015-16

4.5 Programme Outcomes

Overall Targets

Two overall value targets were set for the programme:

- **NZ\$280 million in net sales.**
- **Productivity tripled to 12 tonnes per hectare.**

It should be noted that these targets did not appear in the 2012 Business Plan but appeared in the first Annual Plan for 2015-16. They became the headline numbers throughout the rest of the programme.

Scorecard of Industry Value

The Business Plan 2012 set the following key value outcomes for the programme.

Target Outcome	2010	2020	Change from 2010
Total sales NZ\$m	\$73.60	\$183.50	149%
Value FOB \$m	\$69.10	\$168.80	144%
Productive hectares	4,323	5,074	17%
Yield (tonnes/ha)	3.9	8.3	116%
Volume TE m	3	7.7	154%
Export Volume TE m	1.7	5.1	197%
OGR per ha	\$9,846	\$23,854	142%
Grower margin per hectare	\$1,291	\$11,988	829%
Grower margin all hectares NZ\$m	\$5.60	\$60.80	990%

Other Outcomes

The Business Plan 2012 also included the following overall outcomes.

- **Scale:** The New Zealand avocado industry will move from reliance on a single export market to an industry that is globally competitive, high value and sustainable.
- **Collaboration:** The programme will develop a philosophy and system to share information and ideas across all industry stakeholders, whether that is on-orchard, in market or innovation around new products, particularly utilising the outputs of the research and development undertaken within the programme.
- **Profitability:** Strong programmes will have been developed into at least three Asian markets by 2020. A dynamic and coordinated New Zealand market.
- **Leadership and Capability:** Industry leadership will promote value creation across the industry.

- **Productivity:** Significant increases in productivity for growers, based on disciplined application of on-orchard best practice, particularly through research on the cause and solutions of irregular bearing - reducing the impact of irregular bearing from 120% in 2012-13 to 30% in 2020.
- **Return on investment:** Orchard gate return per hectare will have more than doubled by 2020 and grower return per hectare will exceed that of competing land use.

The Business Plan defined three projects to deliver the overall outcomes, with the following specific objectives and outcomes for each.

Project	Objective	Outcomes
1. Integrated and Informed Industry	To create an integrated and informed industry whose stakeholders are inspired, empowered and equipped to drive profitability through the demand-led value chain	<ul style="list-style-type: none"> • Scale • Integration • Collaboration • Productivity • Transparency
2. Market Development	A globally successful industry that has developed a range of markets and competes internationally to meet the consumer needs of each market	<ol style="list-style-type: none"> 1. Net sales to Asia represent more than 50% of export sales by 2020 2. NZ avocados have created a valuable market share in Korean, Malaysia and China by 2020 3. New Zealand market value over \$30m by 2020
3. Sustainable Supply	To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand avocados to global markets	<ol style="list-style-type: none"> 1. Scientific literature search provides full understanding of local and international knowledge 2. Review of experience and solutions adopted or trialed increases knowledge and understanding 3. Capability of growers, consultants, scientists significantly increased 4. Best practice management tools developed, reviewed and updated 5. Significant improvement in productivity and decline in irregular bearing

4.6 Programme Extensions

A formal business case extension was agreed in May 2019 that pushed the finish date of the programme to May 2021 and provided an additional \$2.8M funding (\$1.12M from MPI, \$1.68M from NZ Avocado). The extension sought to enable further work to be done in the following areas:

- **Market insights** – develop a differentiated story for NZ avocados using consumer insights review.
- **Trusted supply chain** – develop evidence of food safety and take measures to improve quality.
- **Evidence-based sustainability** – establish a methodology for environmental assessment and reporting and incorporate into the story.
- **Industry breeding programme** – carry out research and develop business case to support breeding programme for avocados in NZ.

The following specific KPIs were identified for the extension.

KPI Description	Baseline	Year 1 Target	Year 2 Target	2025 Target
Export Volume into Asian Markets	600,000 trays (2018-19)	Maintain 600,000 trays	800,000 trays	1,000,000 trays
Maintain Premium in Asian Markets	15%	15%	15%	15%
Define Industry sustainability KPIs and establish baseline data		Establish KPIs	Establish baselines	3 year trend data available
Business Case to inform decision-making for an industry breeding programme		Broad stakeholder engagement achieved	Business Case (cost / benefit analysis)	Decision informed by business case implemented

A six-month extension of time for all PGP programmes was granted in 2020, acknowledging the impact of Covid-19 restrictions.

A further time extension, of one year (taking the end date to December 2022) was approved to allow for the continuation of the following activities:

- Sustainability projects: Life Cycle Assessment, industry case studies, strategy development and maintaining linkages to government environmental reforms.
- Further developments to allow digital industry data collection and online systems.
- Productivity projects relating to soil health and regenerative agriculture and its extension to growers.
- Extension of the differentiated story via website activity and collaboration with exporters.

- Development of case studies and marketing collateral to support the World Avocado Congress theme of resilience, sustainability and regenerative farming.
- Seeking options for funding channels if a breeding programme is feasible.
- Programme administration and supporting the development of industry investment plans aligned with Fit for a Better World and MPI and Horticulture science strategies.

No additional funding was sought or provided for this extension.

5.0 Achievement of Objectives and Outcomes

5.1 General Comments on Assessment

The objectives and outcomes of the programme changed over time, as can be seen in the previous section. In this evaluation the original objectives and outcomes - as per the 2012 Business Plan - have been assessed first, and then the objectives and outcomes relating to the variations and extensions have been assessed.

The duration of the programme with extensions for the purposes of this evaluation is July 2014 – December 2022, although where the Business Plan 2012 and other early documents provided targets for 2020, those have been assessed against actual results for the 2020-21 yearⁱⁱ.

It should be noted that production and exports of avocados have declined markedly over the last two seasons, and while this situation is considered in the Lessons Learned section below, the timing of the downturn means it has not been considered in the formal evaluation of the achievements of the programme.

Where achievement against specific, quantifiable, or non-quantifiable objectives has been assessed, the following assessment criteria have been used:

Assessment	Criteria
Achieved	The objective or outcome was completely or substantially achieved. For quantifiable measures, 90% or greater achievement
Partially achieved	The objective or outcome was achieved to some extent. For quantifiable measures, 30% - 90% achievement
Not achieved	The objective or outcome was completely or substantially not achieved. For quantifiable measures, less than 30% achievement

Details of the rationale for the assessment have been provided where relevant.

5.2 Achievement of Overall Programme Objectives

The documentary research and interviews for this evaluation evidenced that the programme substantially achieved its overall objectives, with significant progress in delivering on the Go Global Vision and in addressing the challenges outlined in section 4.2 above, as set out below.

ⁱⁱ Note that for some yearly comparisons harvesting/export season is used, e.g. 2020-21, and for others calendar year, e.g. 2020, is used. This is unavoidable due to the source data being provided according to the different timeframe. Generally, the industry collects and provides data by season, whereas other sources such as Statistics NZ provides data by calendar year.

Integrated Industry

There was a strong consensus amongst those interviewed for this evaluation that the industry operates in a much more integrated way than it did before the programme got underway. The industry is seen now as “far more professional” and “more cohesive, more ready to collaborate” than it was.

The programme focused on building this integration early, with the December 2016 review of the programme concluding that, “The Go Global PGP programme has made a major contribution to the New Zealand avocado industry, achieving a step change in the way that the industry operates. It is now a much more trusting, collaborative, cohesive, communicative, and co-ordinated industry, with a correspondingly greater public profile.”⁴

NZ Avocado (the New Zealand Avocado Growers Association Inc. and its operating company, NZ Avocado Industry Ltd.) has become a stronger organisation with good representation from across the industry.

The development of digital industry-wide solutions including the Avo Hub and Avo Diary helped raise awareness and provide transparency into improved on-orchard and supply chain practices and standards.

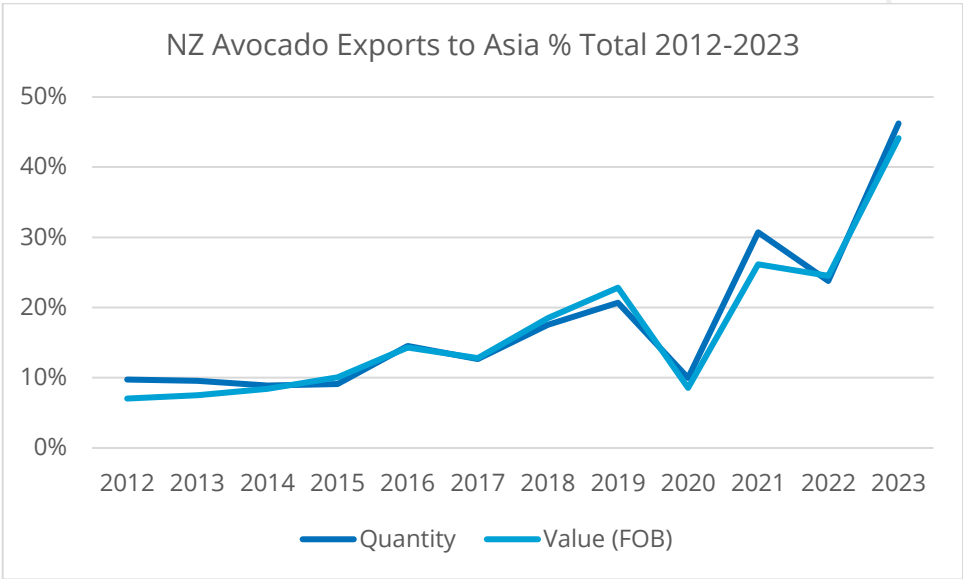
“PGP funding was invaluable but there was a bottomless list of requirements. The spray diary and Avo Hub development was vital for industry and opening up markets, such as China and Taiwan.” – Avocado grower.

The working groups and industry field days were seen as particularly effective for growers to learn and share good practices, although it was acknowledged that not all growers participated in these activities and there are still some issues with consistency of fruit quality reaching export markets.

Expansion into Asia Markets

The expansion into Asia markets was a headline success for the programme with exports to the region rising from approximately 7% of all avocado exports by value in 2012 to 44% by value, and 46% by quantity, in 2023⁵ (as shown in the graph below), and the Australian market share comparatively reduced. Marketing campaigns in Asian markets focused on the premium quality and nutritional attributes of New Zealand avocados as well as the sustainable nature of our industry. The growth of the South Korean market, the successful negotiations for market access to the Peoples Republic of China, and significant increases in sales to Taiwan, Hong Kong and India, were highlights within the overall success story.

It should be noted, however, that in 2020 exports to Asia dropped to 9% of total exports by value with Australia increasing to 90% due to higher Australian demand and prices resulting in fruit being diverted to that market, which indicates that the trend of reduction in reliance on the Australian market is still subject to major variation year-on-year. Australia's higher consumer prices and lower export costs means it remains the most attractive market for exporters, and fruit will be diverted to that market if there is an opportunity to export more, at the expense of Asia markets. In addition, it was acknowledged that the 2019 programme extension objective of maintaining a 15% premium for New Zealand avocados in Asia markets “would be difficult to maintain⁶”, and that “without an enduring premium, exporters will struggle to compete and sustain an increased presence in these key Asian markets⁷.”

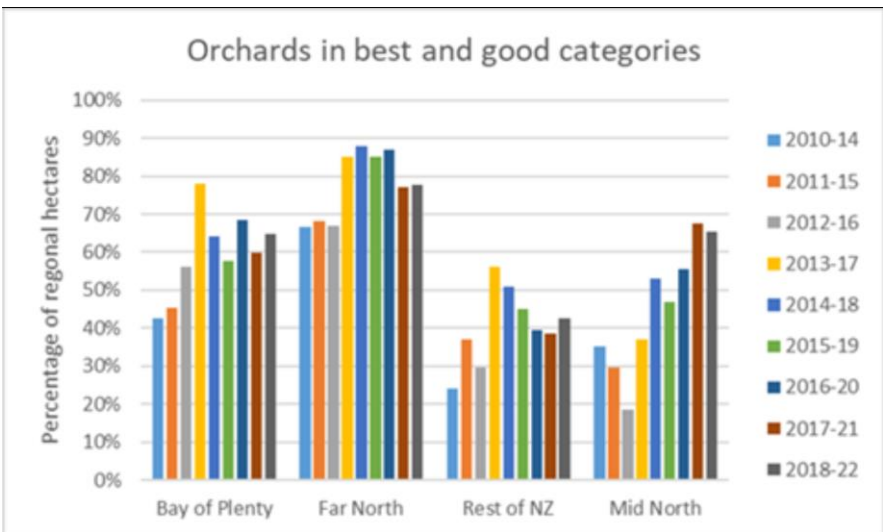


Source: Statistics New Zealand, Harmonised Trade Exports 2012-2023

Improved Yields and Fruit Supply

The programme substantially achieved its overall objective of “productivity tripled to 12 tonnes per hectare” when average industry yield reached 11.7 tonnes per hectare in 2021-22. In 2012-13 there were 534 registered growers producing 14,125 tonnes of fruit, and by 2021-22 the number of registered growers had nearly doubled to 1,039 and production had tripled to 45,392 tonnes⁸. The average orchard gate return (OGR) for growers increased from \$4,868 per hectare in 2012-13 to \$42,091 in 2020-21⁹.

The programme focused on reducing the irregular, bi-annual bearing pattern of avocado production, which was making it difficult to maintain consistent supply particularly to new markets. The development of an orchard benchmarking system enabled tracking and reporting on individual and regional progress across three categories using a standardised calculation for yield and Irregular Bearing Index (IBI)¹⁰. The data was used to develop case studies of the top performing orchards, which were shared on the industry website and at grower field days. The number of orchards in the best and good categories showed significant improvement over the programme, as seen in the following chart.



Percentage of orchards in IBI “best” and “good” categories by region. Source: NZ Avocados Go Global Final Report

Weather events had a serious impact on production during the 2022-23 growing season, which resulted in a reduced average industry yield of 8.7 tonnes per hectare, and this combined with lower international prices over the past two export seasons has had a significant impact on grower returns, with OGR dropping to \$17,720 per hectare in 2022-23. The lower return to growers means there is a risk that investment in improving productivity and fruit quality will not be sustained and that land will be converted to other uses.

5.3 Achievement of Business Plan Objectives

The programme largely achieved the specific objectives set out in the Business Plan 2012 and subsequent programme documents, which are individually assessed in the following tables.

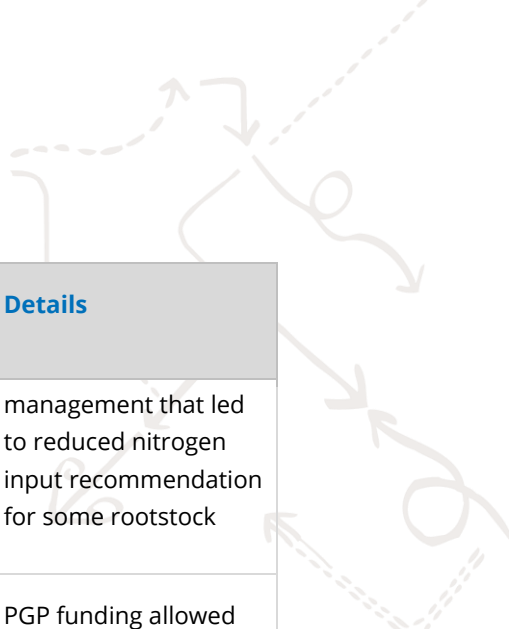
2012 Business Plan Objectives

Programme Objective	Activity	Specific Objective	Assessment	Details
To create an integrated and informed industry whose stakeholders are inspired, empowered, and equipped to drive profitability through the demand-led value chain	Build leadership and capability	Deliver strong leadership which inspires and empowers industry stakeholders to make a step change towards market focussed production	Achieved	NZ Avocado has been strengthened, and engagement with and collaboration across growers, packhouses and exporters has increased
	Benchmarking, performance measurement and transparency of information	Enable greater efficiencies across the value chain	Achieved	Orchard performance benchmarking system developed to measure performance of orchards enabled industry to track and report on individual and regional progress across key performance metrics
	Information system	Increase information sharing and collaboration to enable greater problem solving	Achieved	Information sharing portal (Avo Hub) developed, including upgraded spray diary (Avo Diary), which strongly contributed to improved compliance


Programme Objective	Activity	Specific Objective	Assessment	Details
		and informed decisions		with industry, Government, and market access standards
	Adoption of best practice	Growers have knowledge of and are engaged in the creation and utilisation of best practice	Achieved	Benchmarks and case studies of the top performing orchards developed and shared on the industry website and reported at grower field days Grower working and technical groups shared information on soil and tree health and orchard management practices
	Seek innovation in value chain	Significantly increase New Zealand's economic return	Achieved	Information sharing through the grower portal, identification of agrichemical limits and withholding periods, quality standards data collection, and post-harvest training on pestID competency all contributed to supply chain efficiencies
A globally successful industry that has developed a range of markets and competes internationally to meet the consumer needs of each market	Consumer research	Determine the key messages and media channels for an effective marketing programme	Achieved	Research included consumer insights working groups, social media testing and customer drivers for purchase
	Raise visibility	Increase awareness of avocados from New Zealand	Achieved	Development of the "Premium Avocados from New Zealand" story and "Triple Active



Programme Objective	Activity	Specific Objective	Assessment	Details
				New Zealand Avocados" campaign and associated promotional materials and activities
	Marketing	Provide support for sales programme	Achieved	Online library of promotion and education resources for exporters and marketers developed Marketing messages and imagery adopted in key markets
	Supply chain optimisation	Ensure New Zealand avocados reach consumers in premium condition	Partially achieved	Avo Hub and Avo Diary enable growers and post-harvest operators to track and comply with export and market access standards Some fruit is still reaching markets in poor condition, resulting in repacking and wastage
To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand avocados to global markets	New cultivars	Offer New Zealand growers the cultivars most likely to offer consistent and high yield in New Zealand conditions	Achieved	PGP funding was used to assess if existing NZ Avocado cultivars trial performance was replicated in a commercial growing setting. Several growers achieved productivity exceeding initial trials and these were promoted to the industry. Trials led to the import of five new cultivars. Later focus was on cultivar specific



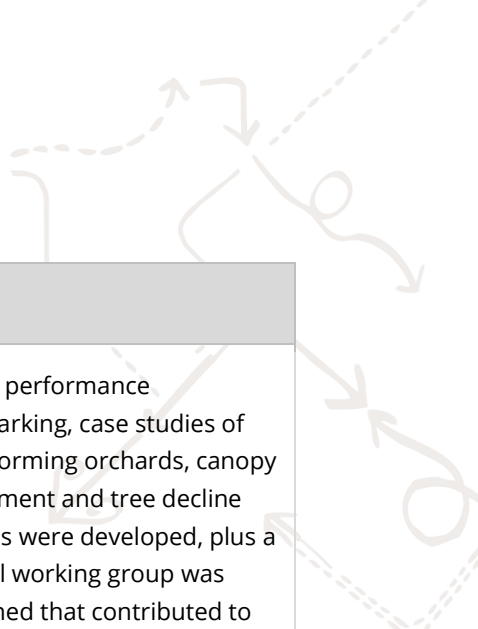
Programme Objective	Activity	Specific Objective	Assessment	Details
				management that led to reduced nitrogen input recommendation for some rootstock
	Plant growth regulators	Explore the impact of the use of new plant growth regulators use on productivity in New Zealand conditions	Achieved	PGP funding allowed more detailed capture and communication resources of a plant growth regulator (PGR) and small tree trial being conducted by Plant & Food Research. The PGR used (uniconazole) did not reduce vigour over the full season identifying a potential use more in improving fruit set than vigour control
	Pruning trial	Extend the current Avocado Industry Council Pruning Trial to an industry wide programme on the impact of pruning on productivity	Achieved	Pruning strategies of several highly successful growers were analysed. Information was communicated to growers and also used to develop best practice principles. Extension material and resources were developed to communicate best practice to growers
	Pollination	Determine best practise that optimises the production of flowers, their transformation	Not achieved	There was no dedicated work within the programme as NZ Avocado participated in the <i>From Bee Minus to Bee Plus and Beyond</i>



Programme Objective	Activity	Specific Objective	Assessment	Details
		into fruitlets, and the development of the fruitlets until maturity in New Zealand conditions		research programme with other agencies and partners
	Other factors	Review, in an integrated manner, other factors that impact on productivity	Achieved	Statistical analysis to determine extent to which weather factors influence orchard performance showed 30% of orchard yield variability could be explained by weather variables, highlighting the importance of orchard management practices. This work strengthened extension efforts of best practice to improve orchard yields and focused research on management rather than weather mitigation

Five Key Objectives

Objective	Outcome	Assessment	Details
1. Market Entry and Growth - Asia and New Zealand	Significantly increase volumes and value in prioritised Asian and the New Zealand market	Achieved	Exports to Asia increased from less than 600,000 trays in 2011-12 to 1.5m trays in 2021-22 and from 7% by value to more than 44% of all exports by 2023 ¹¹ . The New Zealand market increased from \$28m in 2012-2013 to \$63m in 2022 ¹²



Objective	Outcome	Assessment	Details
2. Consistent and Sustainable Avocado Supply	Improve per hectare productivity and consistency of fruit production	Partially achieved	Orchard performance benchmarking, case studies of top-performing orchards, canopy management and tree decline initiatives were developed, plus a technical working group was established that contributed to improved orchard practices and increased productivity. However, there is still some inconsistency in quality of fruit, resulting in rejection and repacking of fruit in overseas markets
3. Efficient Supply Chain	Maximise efficiency throughout the supply chain, from orchard to packhouse to port to market to consumer	Achieved	The development of the Avo Hub grower portal, Avo Diary spray diary, and streamlined data collection, plus post-harvest training programme and online training led to improved supply chain efficiency
4. Products from Waste	Develop added-value products from avocado stones, which are currently sent to landfill	Not achieved	Opportunities were evaluated but the objective was considered non-economic and the initiative was put on hold
5. Information Portal, Knowledge Transfer and Adoption	Develop industry information portal for input, analysis and output of information and knowledge, specifically deliver knowledge developed	Achieved	Development of Avo Hub, Agiloft CRM and industry website, GIS mapping of all export orchards, increased industry engagement and training. Industry surveys show that 70% of growers have changed orchard practice as a result of new information ¹³

Overall Value Targets

The programme Final Report prepared in 2023 states the programme delivered industry returns of \$230 million, just short of the \$280m goal, and a productivity of 11.7 tonnes per hectare in 2021-22.

These numbers appear to be based on 2020-21 export returns of approximately \$170m FOB and a domestic market of approximately \$60m, and the 2021-22 production season volumes. It should be noted

that production was 10.9 tonnes per hectare in 2020-21 and dropped to 8.7 tonnes per hectare in 2022-23, and net sales fell to \$120m in the 2021-22 season.

These targets have been assessed as achieved, notwithstanding the inconsistent measurement dates.

Overall Value Target	Assessment
NZ\$280 million in net sales	Achieved
Productivity tripled to 12 tonnes per hectare	Achieved

Scorecard of Industry Value 2020

The scorecard of industry value set out in the 2012 Business Plan has been assessed against the 2020-21 year.

Industry Value	2020 Target	2020-21 Actual	Assessment
Total sales NZ\$m	\$183.50	\$233.62	Achieved
Value FOB \$m	\$168.80	\$170.45	Achieved
Productive hectares	5,074	4,145 ¹⁴	Partially achieved
Yield (tonnes/ha)	8.3	10.9	Achieved
Volume TE m	7.7	8.2	Achieved
Export Volume TE m	5.1	4.8 ¹⁵	Achieved
OGR per ha	\$23,854	\$42,091	Achieved
Grower margin per hectare	\$11,988	Not measured	Not assessed
Grower margin all hectares NZ\$m	\$60.80	Not measured	Not assessed

Grower margins per hectare and for the industry were not measured. The increase in yields and substantial rise OGR per hectare indicates that margins are likely to have increased. However, unless on-orchard costs significantly decreased over the period it is highly unlikely that the disproportionate increases in margin per hectare (829%) and for all hectares (990%) were achieved. These targets were used to support the NPV estimate of grower returns in the 2012 Business Plan of between \$282 million and \$472

million, and the fact that they were not measured throughout the programme detracts from an otherwise very positive picture of the achievement of the value outcomes from the programme investment.

The Business Plan also used an NPV estimate based on FOB sales revenue and this is likely to be on track (it projects returns out to 2030), notwithstanding the lower returns over the last two seasons.

2012 Business Plan Overall Outcomes

Outcome	Assessment	Detail
Scale: The New Zealand avocado industry will move from reliance on a single export market to an industry that is globally competitive, high value and sustainable	Partially achieved	Exports to Asia rose from approximately 7% by value in 2012 to 44% in 2023, with the Australian share comparatively reduced. However, in 2020 Asia dropped to 9% of total exports with Australia increasing to 90% due to higher Australian demand and prices, resulting in fruit being diverted to that market, which indicates that the reduction in reliance on the Australian market may not be sustainable year-on-year ¹⁶
Collaboration: The programme will develop a philosophy and system to share information and ideas across all industry stakeholders, whether that is on-orchard, in market or innovation around new products, particularly utilising the outputs of the research and development undertaken within the programme	Achieved	The development of industry-wide digital solutions enabled sharing of information and ideas and comply with export market requirements. Development of orchard benchmarking and case studies of good orchard practices, and sharing through working groups and industry field days, helped growers to learn and share good practices
Profitability: Strong programmes will have been developed into at least three Asian markets by 2020. A dynamic and coordinated New Zealand market	Achieved	Marketing programmes in South Korea, China, Taiwan, Japan, and Malaysia resulted in strong growth in these markets. New Zealand market value grew from \$28m in 2012-13 to \$63m in 2020-21
Leadership and Capability: Industry leadership will promote value creation across the industry	Achieved	NZ Avocado has become a stronger organisation with good representation from across the industry and has delivered significant value for the industry through its leadership of the PGP programme

Outcome	Assessment	Detail
Productivity: Significant increases in productivity for growers, based on disciplined application of on-orchard best practice, particularly through research on the cause and solutions of irregular bearing – reducing the impact of irregular bearing from 120% in 2012-13 to 30% in 2020	Achieved ⁱⁱⁱ	Yields increased from 3.9 tonnes per hectare in 2010 to 10.9 t/ha in 2020-21 ¹⁷ . The number of orchards in IBI “best” and “good” categories improved significantly ¹⁸ . Overall orchard IBI trended downwards throughout the programme as shown the graph below this table
Return on investment: Orchard gate return per hectare will have more than doubled by 2020 and grower return per hectare will exceed that of competing land use	Achieved	Average OGR for growers increased from \$4,868 per hectare in 2012-13 to \$42,091 in 2020-21 ¹⁹ Return per hectare in 2018 was \$35,000 compared with \$1,937 for dairying ²⁰

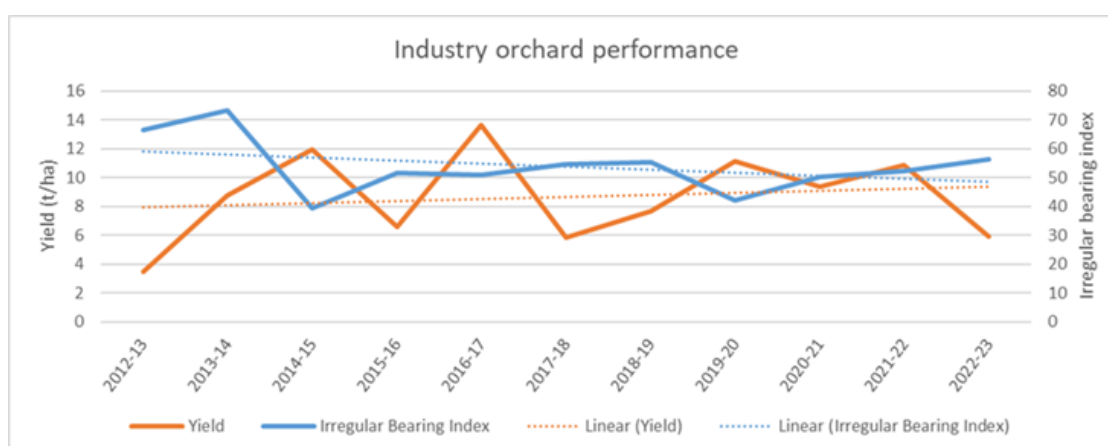


Figure 2 – Avocado industry orchard performance - yield and irregular bearing 2012-13 to 2022-23

ⁱⁱⁱ Note that the basis for measurement of orchard irregular bearing changed from that set out in the 2012 Business Plan. The current formula is the difference between two seasons yields divided by the sum of the two, i.e. $(Y_2 - Y_1) / (Y_2 + Y_1)$, which is always going to be less than 100%, so a comparison with the original target is not possible.

2012 Business Plan Project Objectives and Outcomes

Project	Objective	Outcomes	Assessment	Details
Integrated and informed industry	To create an integrated and informed industry whose stakeholders are inspired, empowered and equipped to drive profitability through the demand-led value chain	Scale	Achieved	The industry has reduced reliance on the Australian market and significantly increased production and export sales
		Integration	Achieved	Development of industry information portal and systems and programme field days and training have created a far more integrated and informed industry
		Collaboration	Achieved	Programme activities including development of case studies and benchmarking, formation of grower and working groups, and the development of industry information systems have created a far more collaborative industry
		Productivity	Achieved	Significant increase in productivity per hectare and reduction in irregular bearing have led to increased and more consistent supply of fruit
		Transparency	Achieved	Sharing of information, best practices and benchmarking have resulted in a much more transparent industry
Market Development	A globally successful industry	1. Net sales to Asia represent more than	Partially achieved	Exports to Asia increased from approximately 7%

Project	Objective	Outcomes	Assessment	Details
	that has developed a range of markets and competes internationally to meet the consumer needs of each market	50% of export sales by 2020		in 2012 to 44% by value in 2023
		2. NZ avocados have created a valuable market share in Korean, Malaysia and China by 2020	Achieved	1.5m trays were exported to Asia in 2021-22; Korea, Malaysia and China comprised 60% of non-Australian exports ²¹
		3. New Zealand market value over \$30m by 2020	Achieved	New Zealand market value grew from \$28.7m in 2012-13 to \$63m in 2020-21
Sustainable Supply	To undertake research to significantly increase productivity resulting in a sustainable and consistent supply of premium New Zealand avocados to global markets	1. Scientific literature search provides full understanding of local and international knowledge	Partially achieved	The grower's technical group and orchard management working groups distributed research on topics such as optimal pruning, but work remains in understanding on how to optimise fruit quality for New Zealand's climate and geography
		2. Review of experience and solutions adopted or trialled increases knowledge and understanding	Achieved	Sharing of knowledge and experience has significantly increased through the industry website, Avo Hub, AvoGreen monitoring, orchard benchmarking and quality standards
		3. Capability of growers, consultants, scientists significantly increased	Achieved	Grower technical group, working groups, field days and online training under the AvoGreen programme also contributed to increased



Project	Objective	Outcomes	Assessment	Details
				capability across the industry
		4. Best practice management tools developed, reviewed and updated	Achieved	Case studies of top performing orchards shared on industry website, at field days and in working groups
		5. Significant improvement in productivity and decline in irregular bearing	Achieved	Number of orchards in IBI “best” and “good” categories improved significantly

5.4 2019 Extension Key Performance Indicators

The four KPIs introduced in the 2019 programme extension are assessed below.

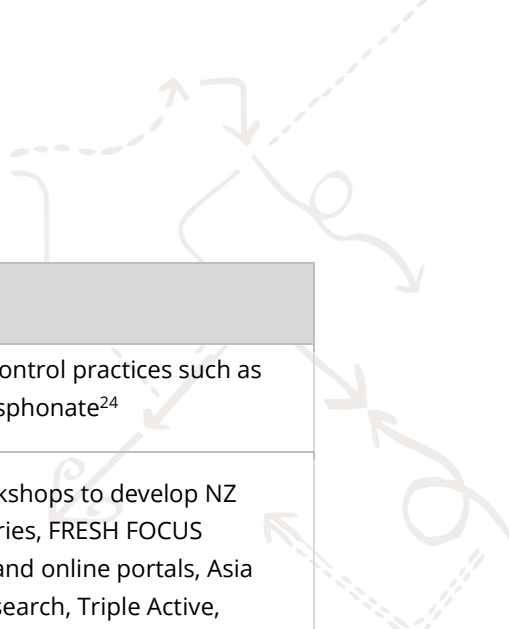
KPI Description	Baseline	Year 1 Target	Year 2 Target	2022-23 Actual	Assessment
Export Volume into Asian Markets	600,000 trays (2018-19)	Maintain 600,000 trays	800,000 trays	1,500,000 trays	Achieved
Maintain Premium in Asian Markets	15%	15%	15%	Premium was maintained in South Korean market ²² . The Final Report notes difficulty in maintaining premium across the board and this is borne out by comments from marketers	Partially achieved
Define Industry sustainability KPIs		Establish KPIs	Establish Baselines	KPIs to define industry sustainability and baseline created,	Achieved

KPI Description	Baseline	Year 1 Target	Year 2 Target	2022-23 Actual	Assessment
and establish baseline data				which were used for Life Cycle Assessment (LCA) study	
Business Case to inform decision-making for an industry breeding programme		Broad stakeholder engagement achieved	Business Case (cost / benefit analysis)	Feasibility study completed ²³ Business case including funding not completed	Partially achieved

5.5 Extension to December 2022

The December 2022 extension did not establish new objectives and outcomes but proposed additional or extended activities and additional time to deliver these. Therefore, the assessment of these activities is confined to whether they were delivered rather than whether objectives were achieved.

Industry Value	Assessment	Details
Sustainability projects: Life Cycle Assessment, industry case studies, strategy development and maintaining linkages to government environmental reforms	Delivered	KPIs to define industry sustainability and baseline created, online survey of sustainability opportunities, fumigation and biofungicidal trials completed, Life Cycle Assessment (LCA) commissioned
Further developments to allow digital industry data collection and online systems	Delivered	Weekly monitoring and reporting, online PPIN, Xero integration, online Avogreen registration and Global Gap training and research to produce Near-infrared maturity clearance system completed
Productivity projects relating to soil health and regenerative agriculture and its extension to growers	Delivered	Sustainability project objectives included soil characterisation from most productive orchards, nutrient removal assessments and potential environmental impacts of fertiliser inputs. Tree Decline working group tested for the presence of <i>Phytophthora cinnamomi</i> and other pathogens,



Industry Value	Assessment	Details
		highlighting control practices such as applying phosphonate ²⁴
Extension of the differentiated story via website activity and collaboration with exporters	Delivered	Exporter workshops to develop NZ avocados stories, FRESH FOCUS publications and online portals, Asia consumer research, Triple Active, Respectful Harvest campaigns
Development of case studies and marketing collateral to support the World Avocado Congress (WAC) themes of resilience, sustainability and regenerative farming	Delivered	Case studies and stories were developed and evaluated with consumers in Asian and New Zealand markets. Presentation of NZ's orchard performance at WAC, supported by case studies and LCA
Seeking options for funding channels if a breeding programme is feasible	Partially delivered	Feasibility study completed; funding options not established ²⁵
Programme administration and supporting the development of industry investment plans aligned with Fit for a Better World and MPI and Horticulture science strategies	Delivered	Administrative support was provided through to the end of the programme in December 2022. Industry consultation and research throughout the programme contributed to wider horticultural strategies including Fit for a Better World and wider horticulture science strategies

6.0 Programme Delivery

The assessment of the delivery of the programme in this section is primarily based on interview comments and documentation reviewed during the evaluation.

Programme Management and Governance

Everyone interviewed for this evaluation reported that the programme was well managed, particularly in respect of the programme leadership from the CEO of NZ Avocado and the programme manager. The appointment of an independent programme steering committee chair helped to ensure the interests of all stakeholders were considered in decision-making. Those involved in the governance of the programme felt that the reporting was mostly good, and decision-making was timely and effective, particularly around the programme variations and extensions. The only minor criticisms reported were that “there were too many meetings” and that at times communication to the industry on activities and progress “could have been better”, although these modest gripes were perhaps understandable in a large and complex programme of this nature.

The delivery of the information systems, particularly the Avo Hub portal, took longer than expected and elements were only delivered during the programme extensions. This was due to a lack of information technology expertise in NZ Avocado, inadequate analysis of user needs early on, and some technical and supplier delivery issues²⁶. A better understanding the risks of delivering systems of this type during programme planning may have anticipated and addressed these issues earlier.

Development and Measurement of Objectives, Outcomes and Benefits

The documentation review highlighted the fact that there were a large number of initial objectives and outcomes for the programme (as outlined in Section 4 above), and that these changed throughout the programme, not only in response to the formal extensions but less formally in annual plans and other documents. For example, the headline value targets (\$280million in net sales and productivity tripled to 12 tonnes per hectare) did not appear in the 2012 Business Plan and were first used in the Annual Plan for 2015-16. It is not clear why these new targets were established when there were already more modest sales and productivity targets (that presumably had been agreed for funding purposes) in the Business Plan. While quantitative goals are always desirable when measuring return on investment, this programme had too many varying targets, the achievement of which could have been impacted by factors beyond the control of the programme.

The lack of measurement of the grower margins, an important target in the 2012 Business Plan in terms of net economic benefits, detracted from an otherwise very positive picture of the achievement of the value outcomes from the programme investment. These targets were overly ambitious and probably unnecessary in terms of making the case for the initial investment.

The programme demonstrated a flexibility and agility to meet changing opportunities and threats – it was able to adjust to Covid-19 restrictions and subsequent supply chain disruptions, the increased complexity around some initiatives such as the information systems and products from waste, and the pressure from growers later in the programme to examine the feasibility of a breeding programme. The changes in KPIs and activities in the programme extensions were a necessary response to these events and resulted in additional funding and a refocus of resources for the remainder of the programme. The changes were formally agreed by the programme governance group, NZ Avocado and MPI, and did not substantially change the headline objectives of the programme, although the complexity and lack of consistency of the

detailed objectives and outcomes must have made it difficult to assess the impact of changing investment priorities and benefits.

An outcome logic map (OLM) was prepared in 2014 that did not reflect the objectives and outcomes agreed in the 2012 Business Plan or even in subsequent variations. The introduction of an OLM appears to have been an MPI requirement (as MPI introduced OLMs for projects of this nature around that time) and an attempt to address a lack of clear traceability between the issues facing the industry at the beginning of the programme, the responses the investment proposed to deliver, and the benefits that would be derived from those responses. A clearer and consistent outcome logic map could have been more effective in informing priorities and benefits realisation throughout the programme – detailed objectives could have changed, while outcomes remained consistent – but the OLM that was prepared does not appear to have served this purpose.

Management of Funding

The management of the funding of the programme was effective, activities were delivered to budget and funding was reprioritised as agreed in the extensions. The MPI Assurance and Evaluation report in May 2016 concluded that the programme had “appropriate systems in place for the financial management of the programme²⁷” and that there was “reasonable assurance that the funding that has been provided has been used to meet the actual costs of the programme”.

MPI Support for the Programme

MPI’s support for the programme, particularly from the investment managers, was seen as very effective and professional, despite some changes in personnel over the duration of the programme. It was noted by MPI that this was the first horticulture PGP programme and that it was smaller in scale, although somewhat more complex, than some of the other programmes, and as such there was some learning to be done as the programme progressed. Overall, the consensus of industry stakeholders was that MPI’s support for the programme was a strong contributor to its success and that the benefits derived from it could not have been achieved without the PGP partnership structure and funding.

7.0 Lessons Learned

State of the Industry Today

The success of the programme in raising productivity on orchards, opening up new markets in Asia, growing the New Zealand market, and improving the standards and collaboration across the industry, has been tempered over the past two seasons by the reduced volumes harvested as a result of severe weather events, difficulties in maintaining exports due to shipping and logistics issues, and competition from South American fruit. Industry OGR has dropped from a peak of \$174m in 2020-21 to \$87m in 2022-23 and average orchard OGR from \$42,091 to \$17,720, with the effect that many growers have made losses over this period.

However, there is a great deal of optimism for the future, and the gains delivered by the programme in terms of improved on-orchard and supply chain practices, the diversification of export markets, and the ability of the industry to differentiate New Zealand fruit in terms of nutritional value and environment standards, are seen as having created a strong foundation on which the industry can build as volumes and prices recover. The industry is much more united, focused on its collective goals, and clear on what needs to be done to continue to grow production and sales, than it was ten years ago. The industry body, NZ Avocado, is providing strong leadership and has the confidence of all those spoken to in this evaluation.

Where to From Here?

There remains much to be done. Cultivation and harvesting practices on orchards are still varied, and while much has been achieved in understanding the impact of conditions throughout the supply chain, poor quality fruit is still reaching markets, resulting in repacking, wastage and impacts on returns, and undermining the image of high-quality, healthy, and very nutritious New Zealand avocados the industry has invested in building over the term of the PGP programme. Growers, packhouses and marketers would like to see more research into cultivars, orchard practices and supply chain conditions to address the ongoing quality issues, but more research is not seen as a panacea. There is a sense that some players are “letting the side down” by not investing in the practices and standards that were developed and promoted in the programme, and that a focus on bringing everyone up to the required level is needed. The industry structure does not lend itself to highly directive actions, such as might be used by Fonterra or even Zespri to enforce quality standards, but continuing effort and resources need to be concentrated on helping lower-performing orchards and all participants in the supply chain raise their standards.

The industry must continue to invest to consolidate the gains, and while the priorities and mix of investment will continue to change, the key areas of focus should remain those of the programme:

- Promoting the differentiated New Zealand avocado story in key markets – concentrating effort and investment on continuing to develop the Asian markets that have already shown high growth potential and not spreading effort too thinly across lower-volume markets.
- Continuing to identify and promote best practices in cultivation and orchard management, fruit handling, and throughout the supply chain, to ensure the best quality fruit is reaching the consumer in all markets.
- Undertaking further research in breeding and growing conditions to develop fruit that is resilient and sustainable in the New Zealand environment and during shipping to remote markets.
- Continuing to enhance the information systems and digital tools that are needed by growers, packhouses, exporters, shippers, and regulators to facilitate continued market access and assure the quality and value of New Zealand avocados.

Lessons for Other Programmes

The NZ Avocados Go Global programme, being the first of its type in the horticultural sector, has come to be seen as an exemplar for similar programmes, an indication that it did much right and achieved its overall outcomes. The positive learnings from the programme include:

- The importance of strong governance – the programme benefited from an effective governance group with an independent chair.
- The importance of skilled and experienced programme management – the programme had good leadership with strong support from Avocado NZ and MPI.
- Having the flexibility and agility to change priorities to meet changing opportunities and threats – the programme was able to adjust to Covid-19, the increased complexity around some initiatives such as the information systems and products from waste, and the pressure from growers to examine the feasibility of a breeding programme. It was able to make the case for extensions and additional funding to meet these opportunities and threats.

Other learnings from the programme include:

- The need to ensure the right skillsets are identified and available early in the programme, for example in the information technology area.
- The need to establish an objectives and outcomes framework that will serve the programme throughout its life, with the flexibility to change priorities and identify the impacts on outcomes and benefits whilst maintaining focus on the strategic responses the programme was funded to deliver.

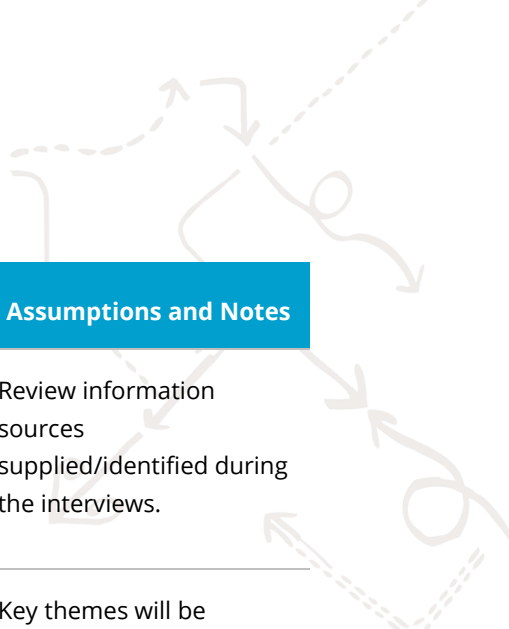
Appendix 1: Interviewees

The following people were interviewed for this evaluation. The authors thank them for their time and contribution to this report.

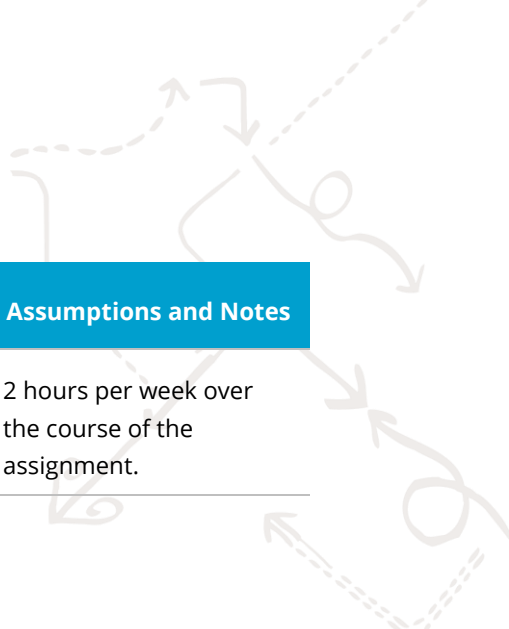
Name	Position / Organisation
Jen Scoular	Former CEO, Avocado NZ
Martin Napper	Primor Produce
Brad Seibert	CEO, Avocado NZ; former NZ Avocados Go Global programme manager
Claudia Hermosilla Madrid	Orchard Manager, King Avocado
Bob Major	Former chair of NZ Avocados Go Global programme governance group
Declan Graham	Business Manager, Plant & Food Research
Ashby Whitehead	Former chair, Avocado NZ; orchard owner
Alistair Young	Director, Avoco; chair NZ Avocado; orchard owner
John Bowen	Mountview Orchard owner
Bevan Jelley	General Manager, Southern Produce
James Trevelyan	Managing Director, Trevelyan's
Daniel Birnie	Head of Avocado, Trevelyan's
Tess McCawe	Investment Manager, SFFF Partnerships, MPI
Maria Watchorn	Orchard owner, former director of NZ Avocado
Steve Penno	Director, Investment Programmes, MPI
Sam Leske	Former MPI representative on NZ Avocados Go Global programme governance group

Appendix 2: Evaluation Plan

Activity	Approach	Assumptions and Notes
Project Kick-off (Initiation Meeting)	Meet with MPI to confirm the scope of the assignment and the objectives of the review, and the format for the evaluation plan. Agree stakeholders and representatives for interviews/workshops, sources and access supporting documents/information, and agree delivery timeframes.	Maven consultants to attend. Includes preparation and write up.
Update Evaluation Plan	Produce an updated evaluation plan, based on the initiation meeting with MPI. This will confirm the final scope requirements for this evaluation. The Plan will be approved by the MPI Investment Manager.	It is assumed that this proposal will form a substantive part of the evaluation plan. Includes a stakeholder map and interview list.
Desktop research/document review	Desk research - Documents to be included in the review will include: <ul style="list-style-type: none"> • Outcome Logic Model • Original Business Case • Reports including assurance audit • Independent Progress Review Report • Annual Plans and Quarterly Reports • Outcome and benefit measures/KPIs with performance data collected • Other reports and/or evaluations produced to inform the programme. 	The Investment Manager from MPI will provide key liaison support for supplying documents.
Interviews/Workshops	Interviews/Workshops - Teams or face to face interviews, potentially including: <ul style="list-style-type: none"> • Programme Manager and key Programme staff (including representatives' commercial partners) • Programme Governance Group members (propose 2 members) • Commercial Partner(s) Senior Leadership Team representatives • MPI Investment Manager • Director of MPI Investment Programmes • SFF Futures Investment Advisory Panel representative • Relevant industry representatives (e.g. those in the venison supply chain). 	Assume 15 interviews of 90 mins each. 2 Maven consultants at each interview. Includes upfront interview design and post-interview write-up. Interviewees to be agreed with MPI during project kick-off. The Investment Manager from MPI will provide key liaison support for arranging interviews.



Activity	Approach	Assumptions and Notes
Additional Data Collection	Conduct a brief review of international trends and other key influencing factors as discovered during the interview process that may have impacted on the likelihood of success of the programme.	Review information sources supplied/identified during the interviews.
Evaluation / Theme Analysis	Analyse key themes that have emerged from desk research, stakeholder interviews and additional data collection.	Key themes will be collated into a summary document.
Discussion	Discussion of evaluation findings with key MPI staff.	Meeting to be held between MPI and Maven consultants to review key themes. Includes time for preparation time and write up.
Face to face presentation to MPI and PGP Programme Partners	Develop presentation based on the findings of the evaluation and resulting discussion with key MP staff.	Workshop with MPI and Programme partners. To be in person, online or hybrid. Includes time for preparation and write up.
Develop Final Report	Utilising the presentation and feedback, develop the confidential evaluation report deliverable.	If MPI and the Programme Partners agree that there are substantive issue(s) relating to in the programme that require further investigation, additional hours may need to be negotiated.
Develop Public Summary Report	Final summary report removing commercially sensitive material.	MPI will review to identify all sensitive material to be removed to enable production of the public version of the report. No material facts will be changed during the revision from draft to final by MPI.



Activity	Approach	Assumptions and Notes
Weekly status reports, client liaison	Weekly status updates will be provided to MPI by email.	2 hours per week over the course of the assignment.

Appendix 3: Glossary

Term	Definition
Avo Diary	The online spray diary developed by NZ Avocado
Avo Hub	The industry information portal developed by NZ Avocado
CEO	Chief executive officer
FOB	Free on Board - in this context, the value of exports at the point they are loaded onto a vessel or aircraft
GIS	Geographic information system
KPI	Key performance indicator
IBI	Irregular Bearing Index – a measure of the variation in orchard yields between years
LCA	Life cycle assessment
NZ Avocado	NZ Avocado Growers Association and/or NZ Avocado Industry Limited
MPI	Ministry of Primary Industries
OLM	Outcome logic model
PGP	Primary Growth Partnership
NPV	Net present value
PGR	Plant growth regulator
OGR	Orchard gate returns
SFFF	Sustainable Food and Fibre Futures
R & D	Research and development

TE	Trays (5.5 Kg) equivalent
Yield	The amount of fruit (usually measured in tonnes per hectare) produced on an orchard

References

- ¹ Ministry for Primary Industries, *All of Government Consultancy Services Order - Avocados Go Global Primary Growth Partnership (PGP) - Evaluation Services*, p3
- ² Linda Flegg, NZ Avocado Chair, *NZ Avocado Annual Report*, 2023
- ³ *NZ Avocados Go Global Final Report*, p6
- ⁴ *NZ Avocados Go Global PGP Progress Review Report*, December 2016, p5
- ⁵ NZ Statistics, *Harmonised Trade Exports 2012-2023*
- ⁶ *NZ Avocados Go Global Final Report*, p17
- ⁷ Ibid
- ⁸ *NZ Avocado Annual Report 2023*, p25
- ⁹ Ibid
- ¹⁰ *NZ Avocados Go Global Final Report*, p22
- ¹¹ NZ Statistics, *Harmonised Trade Exports 2012-2023*
- ¹² *NZ Avocados Go Global Final Report*, p21
- ¹³ Ibid, p46
- ¹⁴ *NZ Avocado Annual Report 2023*, p26
- ¹⁵ Ibid, p25
- ¹⁶ NZ Statistics, *Harmonised Trade Exports 2012-2023*
- ¹⁷ *NZ Avocado Annual Report 2023*, p25
- ¹⁸ *NZ Avocados Go Global Final Report*, p22-23
- ¹⁹ *NZ Avocado Annual Report 2023*, p26
- ²⁰ NZ Avocado, *2020-21 Industry brief for website*, p16
- ²¹ NZ Statistics, *Harmonised Trade Exports 2012-2023*
- ²² Email from CEO, NZ Avocado, 17th May 2024
- ²³ NZ Avocado, *Breeding Programme Update*, 13th May 2021
- ²⁴ Email from CEO, NZ Avocado, 17th May 2024
- ²⁵ NZ Avocado, *Breeding Programme Update*, 13th May 2021
- ²⁶ *NZ Avocados Go Global Final Report*, p29
- ²⁷ Ministry for Primary Industries, *Assurance on Use of PGP Funding – New Zealand Avocados Go Global*, p3