



# A smart green future. Together.

Annual Report 2020

**This annual report presents operating results  
for The New Zealand Institute for Plant and  
Food Research Limited (Plant & Food Research)  
for the financial year ending 30 June 2020.**

It meets our reporting requirements for  
the Acts of Parliament under which we are  
governed. Unless otherwise stated,  
all figures are in New Zealand dollars (\$).

This report also demonstrates how we are  
supporting our Core Purpose industries in  
meeting their targets for economic and  
environmental sustainability. It provides easy-  
to-read information outlining our performance  
and strategy against our Statement of  
Corporate Intent 2019/20, as well as case  
studies that demonstrate a cross-section of  
our research and outreach activities. This  
information is presented for the interest of our  
key stakeholders, including shareholders, staff,  
commercial partners, clients and research  
collaborators.

**Cover photo**

We have a team of 1000 people,  
including berryfruit technician  
Lenka James, working towards  
creating a smart green future for  
Aotearoa New Zealand.



[plantandfood.co.nz](https://plantandfood.co.nz)

More information can be found on our company website  
and via our social media channels.

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## Our Core Purpose

To enhance the value and productivity of New Zealand's horticultural, arable, seafood and food and beverage industries to contribute to economic growth and the environmental and social prosperity of New Zealand.

# About us

At Plant & Food Research, we believe science can create a better future. By finding smarter, greener options today, we're helping secure the world we want to live in tomorrow. With our partners, we use world-leading science to improve the way they grow, fish, harvest and share food. Every day, we have 1,000 people working across Aotearoa New Zealand and the world to help deliver healthy food from the world's most sustainable systems.

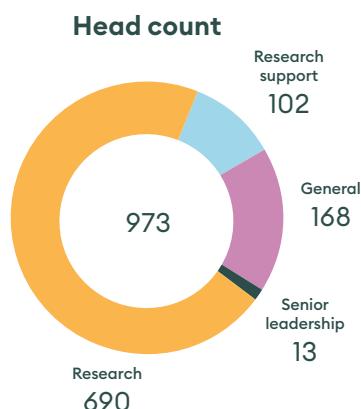
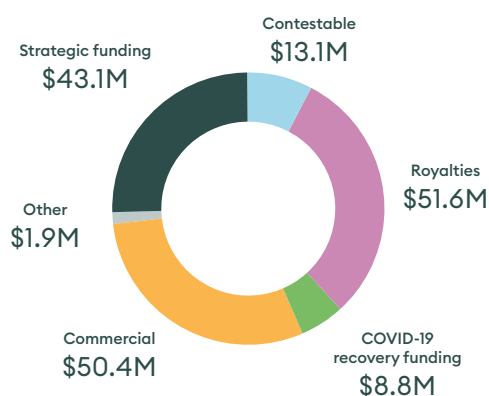
The Institute brings together more than 90 years of research supporting the primary industries.

- 1926** The Department of Scientific and Industrial Research (DSIR) formed
- 1928** DSIR joined with the Department of Agriculture in establishing a Plant Research Station
- 1936** Plant Research Station transferred entirely to the DSIR. The DSIR began doing its own research rather than coordinating those of other institutions
- 1980** The Fish Research Unit established at DSIR
- 1987** Ministry of Agriculture and Forestry (MAF) Technology division formed
- 1992** Ten Crown Research Institutes (CRIs) established out of former government departments, including DSIR and MAF Technology
- 2008** Plant & Food Research formed following the merger of former CRIs HortResearch and Crop & Food Research

## Our Mission — to create the world's most sustainable food systems

Our activities are funded through direct commercial research for our customers, the reinvestment of royalties and the New Zealand Government's investment in science.

We have more than 900 staff based at 14 sites across New Zealand, as well as offices in Australia and the USA.

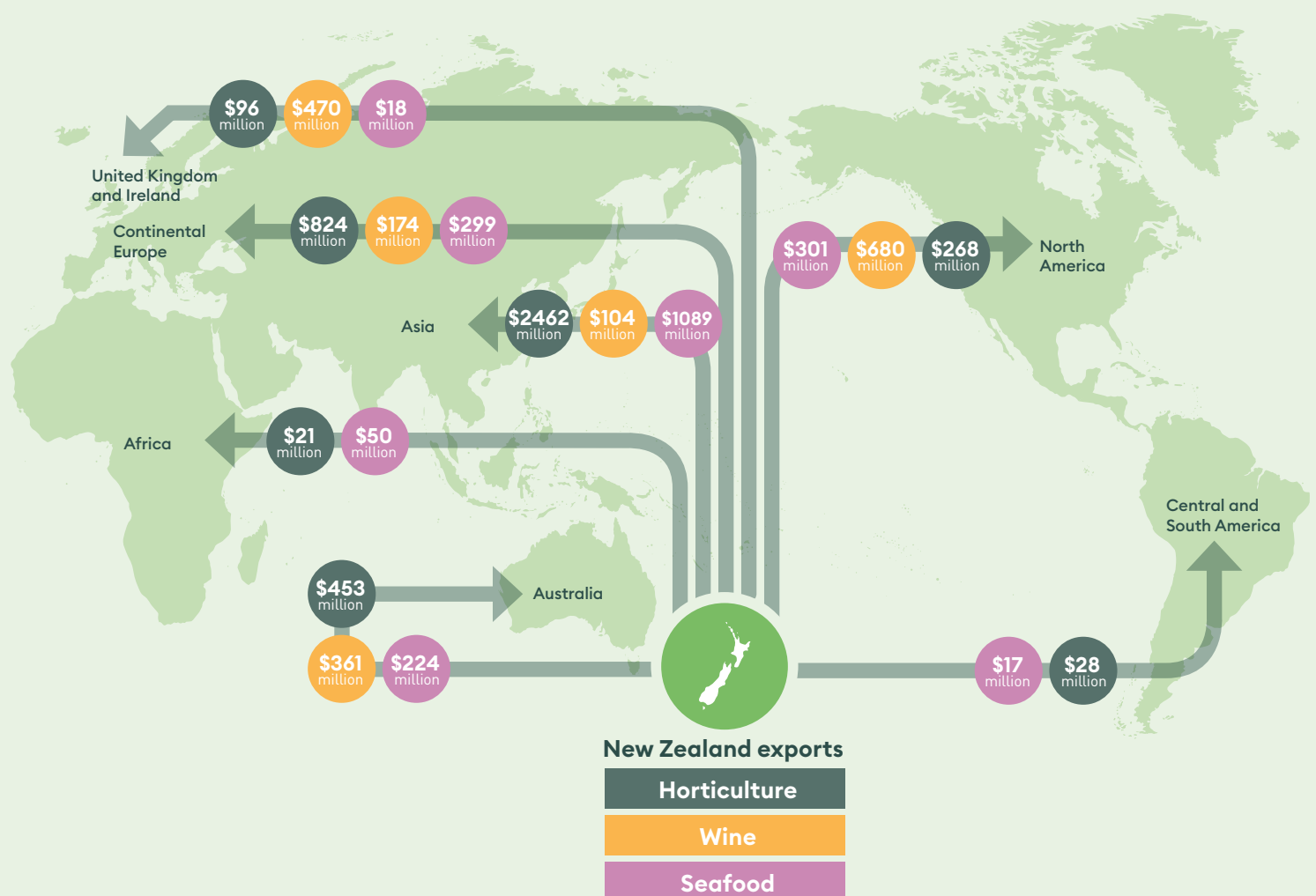


Strategic funding – Government investment allocated directly to each CRI  
 Contestable – Government investment allocated through competitive bidding  
 Royalties – Commercial return from plant varieties and IP  
 Commercial – Direct investment by customers  
 COVID-19 recovery funding – Government allocated COVID-19 funding  
 Other – All other income sources



## Our science plays a vital role in the success of our sectors

	Horticulture	Wine	Seafood	Food and beverage	Cropping
2019 Domestic market value (\$NZB)	2.7	0.6	0.4	21	1.6
2019 Export market value (\$NZB)	4.4	1.8	1.9	36	0.3



Horticulture and wine – year to 30 June 2019  
 Seafood – year to 31 December 2019

# Our locations



New Zealand



Australia



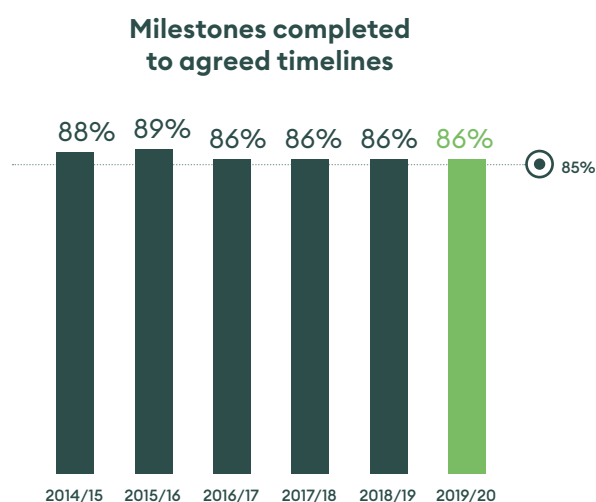
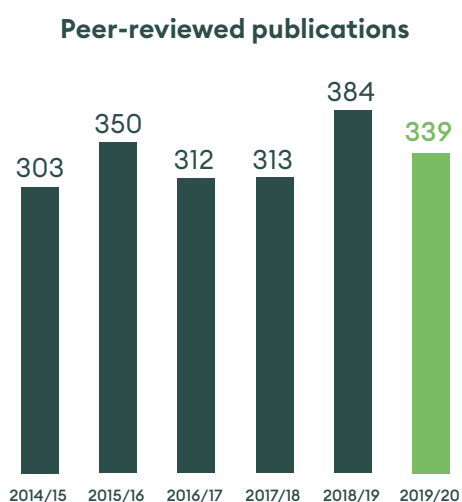
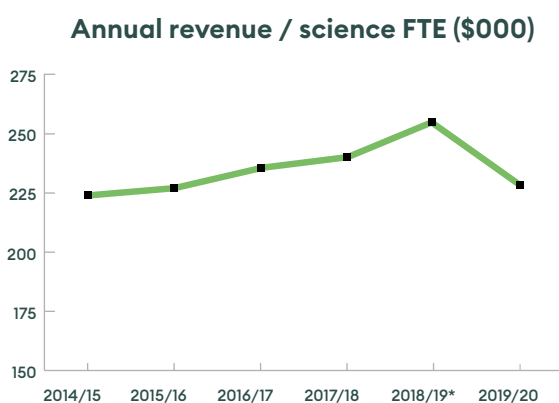
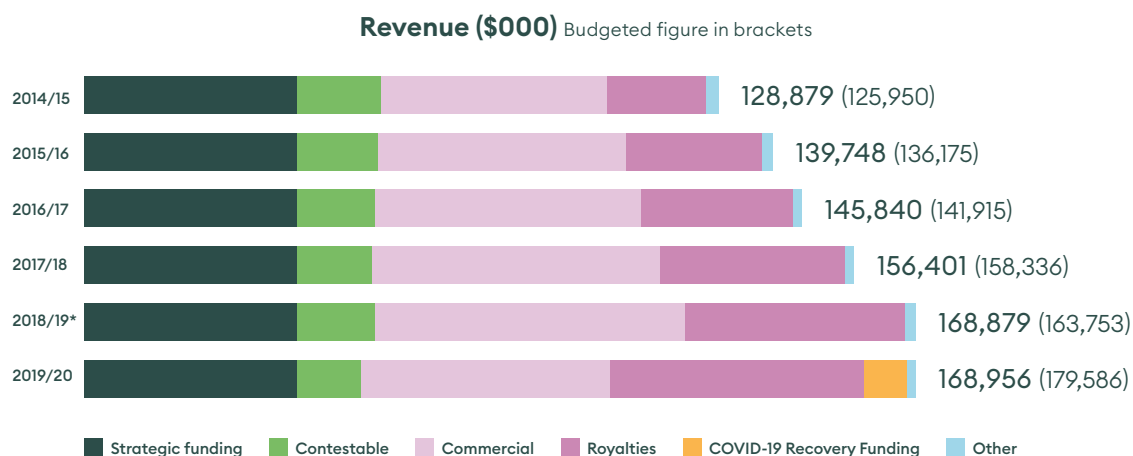
USA

## Key



1/ Kerikeri					2/ Auckland					3/ Pukekohe					4/ Ruakura				
SITE AREA (ha)		Total	Research farm		SITE AREA (ha)		Total	Research farm		SITE AREA (ha)		Total	Research farm		SITE AREA (ha)		Total	Research farm	
		52	46				7	-				3	2				6	1	
RESEARCH PLANTINGS					RESEARCH PLANTINGS					RESEARCH PLANTINGS									
STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total	
	10	6	16			180	142	322			3	-	3			62	9	71	
5/ Te Puke					6/ Hawke's Bay					7/ Palmerston North					8/ Wellington				
SITE AREA (ha)		Total	Research farm		SITE AREA (ha)		Total	Research farm		SITE AREA (ha)		Total	Research farm		Co-located at Science New Zealand				
		46	37				48	44				9	6						
RESEARCH PLANTINGS					RESEARCH PLANTINGS					RESEARCH PLANTINGS									
STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total	
	42	12	54			50	19	69			99	22	121			-	1	1	
9/ Motueka					10/ Nelson					11/ Blenheim					12/ Lincoln				
SITE AREA (ha)		Total	Research farm		SITE AREA (ha)		Total	Research farm		Co-located at Marlborough Research Centre. Includes 10ha of research farm					SITE AREA (ha)		Total	Research farm	
		55	52				1	-									186	176	
RESEARCH PLANTINGS					FINFISH FACILITY 324,700L					RESEARCH PLANTINGS									
STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total	
	29	9	38			40	10	50			12	1	13			148	48	196	
13/ Clyde					14/ Dunedin					15/ 16/ 17 Australia					18/ USA				
SITE AREA (ha)		Total	Research farm		Co-located at University of Otago					15. South Australia 16. Queensland 17. Victoria					18. California				
		58	57																
RESEARCH PLANTINGS																			
STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total		STAFF	Research	General	Total	
	6	3	9			3	-	3			5	1	6			-	1	1	

# Our performance



\* Revenue as reported in the 2018/19 financial year reflects the impact of adoption of New Zealand Equivalents to International Financial Reporting Standards 15 (NZ IFRS 15).

# Highlights

## Launched hot climate apple

**Launched the first apple tailored specifically for growing in hot regions from the New Zealand-Spain collaborative Hot Climate Programme.** 'HOT84A1' is a mid-season, partial red-skinned sweet apple with a lightly crisp and very juicy texture. The first commercial trees will be planted in early 2021 on the Iberian Peninsula by Fruit Futur.



### **Recognised at Biosecurity Awards for multi-organisation myrtle rust effort.**

The Myrtle Rust Research Consortium, of which Plant & Food Research is a member, won the Bio-Protection Research Centre Science Award for its rapid and integrated research response to the fungal disease that attacks many taonga plants.

**Joined forces with Māori groups to explore the use of technologies to preserve reproductive cells of taonga fish and develop local skills to start a nursery of regional treasures for the Uawānui community.** The two projects support our vision to become a trusted and meaningful partner of Māori and promote prosperity by weaving Mātauranga Māori (Māori knowledge) with Western science.

**Discovered a sex-determining gene in kiwifruit with our research partners in Japan and the USA.** The gene called Friendly Boy (FrBy) could potentially lead to the breeding of hermaphrodite kiwifruit varieties. The study also validated the "two-mutation model" in sex acquisition of plants, which suggests that at least two gene mutations are necessary to transform a hermaphrodite species into one with separate sexes.

**Announced a new blueberry breeding partnership with T&G Global.** The breeding programme will produce new varieties of blueberry with improved yield and resistance to disease while also delivering consumers larger, tastier berries over a longer period, with an extended harvest season.

For more go to page 23

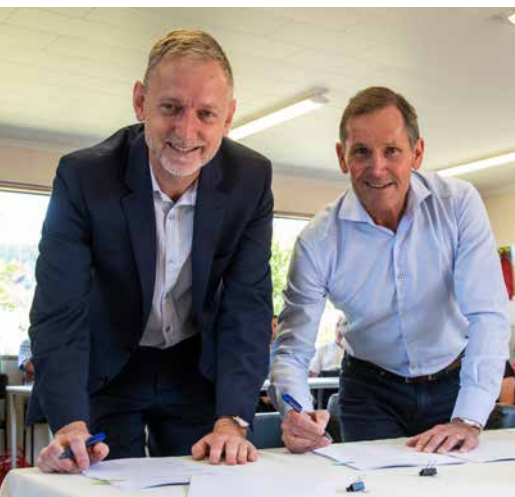
### **Conducted studies which showed New Zealand blackcurrants can improve sports performance, benefit exercise recovery and motivation to adhere to exercise.**

New Zealand blackcurrants improved sports performance by 0.45% compared with a placebo according to a meta-analysis conducted with the University of Auckland. Other studies found daily consumption of New Zealand blackcurrants either maintained or enhanced exercise recovery effectiveness, and that consuming blackcurrant juice one hour prior to exercise produces a significantly lower perception of exercise exertion.

**Launched Operation Pollinator with Syngenta in New Zealand.** Operation Pollinator, a global programme, aims to boost the numbers of pollinating insects and enhance overall biodiversity, as well as improve crop yields, sustainable farming and environmental stewardship.



## Announced new blueberry breeding partnership with T&G Global



**Awarded \$18 million of Government funding for new research to support development of offshore aquaculture methods.** The new funding from the MBIE Endeavour Fund will support the invention of low-impact, offshore mobile technology that aims to transform finfish production. Five Smart Ideas proposals also received funding – to investigate the sex pheromones of social wasps, cellular agriculture of fish, plant-microbe interactions, ascomycete fungal pathogens, and improved genetic selection for breeding.



## Awarded funding to support development of offshore aquaculture methods

**Signed Memorandum of Understanding with Hendrix Genetics.** The new collaboration will assess the viability of Plant & Food Research's image-based fish recognition and measurement technology in a commercial environment.

**Appointed Dr Roger Robson-Williams as inaugural Chief Sustainability Officer.** The appointment is an important step in Plant & Food Research's business journey to focus on sustainability not only in its science programmes but also in the way the organisation operates.  
[For more go to page 18](#)

**Sponsored the prestigious Ahuwhenua Trophy competition for horticulture.** Plant & Food Research was a proud Gold sponsor of the Excellence in Māori Horticulture Award 2020. This was the first time since 1933 that the competition celebrated outstanding Māori in the horticultural industry.

**Signed Memorandum of Understanding with Shandong Agricultural University to establish the "China-New Zealand Apple Quality Innovation Centre".** The new joint Centre will support collaboration between the two institutes and further understanding of fruit pigmentation.

**Discovered a brand new class of flavonoid pigments called "auronidins" with Lincoln University.** The scientists found the red pigment in liverworts are not anthocyanins but an entirely new class of compound, which suggests anthocyanins did not evolve as early as commonly thought. The ground-breaking discovery was published in the *Proceedings of the National Academy of Science* (PNAS).

**Joined the VacciniumCAP project with Genomics Aotearoa to improve fruit quality of the blueberry and cranberry.** The four-year project led by North Carolina State University has a goal to create new genetic and genomic resources to support the selective breeding of blueberry cultivars with improved fruit quality attributes.

**Celebrated Zespri's decision to make red kiwifruit available to growers under licence for production.** Zespri selected a new red-fleshed cultivar – the first red variety from the Plant & Food Research-Zespri joint breeding programme to be selected for commercialisation – that will be marketed from 2020 as Zespri™ Red Kiwifruit.  
[For more go to page 45](#)

**Joined the Blue Economy CRC Australia study exploring the use of floating offshore platforms.** This study aims to support the development of a sustainable blue economy in Australia's offshore/high energy industry. The platforms will be reviewed for a range of uses such as supporting marine aquaculture, renewable energy installations and marine research facilities.

## KiwiNet Commercial Impact Award



**Recognised for commercialisation with KiwiNet Research Commercialisation Award.** Our partnership with Compac to develop new high-tech sorting and grading equipment Spectrim™ and Inspectra2™ won the PwC Commercial Impact Award at the annual event. These new technologies have allowed Compac to stay ahead of the market and double sales revenue in only four years.





## RNZIH Plant Raisers' Award

**Russell Lowe** received the 2020 Plant Raisers' Award by the Royal New Zealand Institute of Horticulture for the breeding and selection of 'Zesy002' (Zespri™ SunGold Kiwifruit), which arguably saved the New Zealand kiwifruit industry from a plant disease epidemic almost 10 years ago.

# Celebrating our people



**Dr Philip Elmer** received The Sir Brian Elwood Trophy New Zealand Kiwifruit Industry Award for his role in developing Psa-combating Aureo®Gold. He also received The New Zealand Institute of Agricultural & Horticultural Science AGMARDT Technology Transfer Award for his contributions to the New Zealand horticultural business community through technology transfer. He was also a semi-finalist in the New Zealander of the Year Awards, Innovator category.



**Dr Jay Jayaraman** was awarded a Rutherford Foundation postdoctoral fellowship for his research which aims to identify the first Psa-resistant R-gene system that is naturally present in some non-industrial kiwifruit species, with the ultimate goal of breeding a durable commercial cultivar.

**Our Communications Team** were awarded a gold medal in Internal Communications at the PRINZ annual awards for the thinking that went into a renewed emphasis on communication since the appointment of a new CEO and Senior Leadership Team in 2018, including the creation and delivery of our All Staff Connect livestream events.

**PRINZ  
gold  
medal**



## Internal awards

**Chair's awards recognising outstanding contributions to Plant & Food Research were presented to:**

**Red5 Kiwifruit Genome Sequencing Team (lead by Dr Sarah Pilkington and Dr Robert Schaffer)**, in recognition of the high quality "gold standard" annotated kiwifruit genome they published and made available to the public domain. This will facilitate future breeding efforts through improved power of genetic analysis and genomics-assisted breeding.

**Myrtle Rust Leadership Team (Dr Grant Smith, Alby Marsh, Dr Robert Beresford, Dr Beccy Ganley, Mark Bullians)**, in recognition of their leadership which lead to testing of germplasm against a variety of different strains of myrtle rust and high quality sequencing of the genome, while developing relationships around the world which will keep other strains of the rust from establishing in New Zealand.

**Dr Andrew McGlone (and the Applied Sensors Team: Dr Bob Jordan (deceased), Dr Chris Clark (deceased), Rainer Künemeyer, Dr Peter Schaare, Dr Paul Martinsen, Richard Seelye, and Richard Oliver)**, in recognition of the development and leadership of comprehensive research projects investigating non-destructive methods for assessing biological materials and particularly, the detection and measurement of fruit quality-related attributes.

**Daniel Black**, in recognition of his four years as Orchard Manager where he has transformed the Kerikeri Research orchard into a world class research facility through tailoring commercial practices and novel techniques to the specific research needs of individual science teams.

### Science New Zealand National Awards

**The Precision Seafood Harvesting Team** won the Plant & Food Research Team Award for creating and developing a world-leading technology, Modular Harvesting System (MHS), which answers the need for a more environmentally-sustainable way of fishing that maximises quality and limits impact to non-target catch.

**Dr Nick Albert** received the Plant & Food Research Early Career Research Award for his work identifying the genes responsible for regulating where, when and the amount of phytochemicals plants produce.

**Dr Brent Clothier** received the Plant & Food Research Lifetime Achievement Award for his 44 years spent enhancing our understanding of the natural capital that the environment provides to grow our crops and to make informed land use decisions.





Every day, we have more than 900 people, including 690 researchers – such as Dr Jay Jayaraman and PhD student Erin Stroud – working towards a smart green future.





# Our Strategy



A period  
of transition



# Report from the Chair



## This first year as Chair of the Plant & Food Research Board has been an eventful one.

The Board is in a period of transition – with the majority of Directors coming on board in the last 18 months, we are learning together how the Institute operates. The Directors and I are all very impressed with the organisation and the work that has been done by the Senior Leadership Team in ensuring its resilience. This, of course, has been well tested since the beginning of 2020 through the COVID-19 pandemic.

Plant & Food Research has tremendous depth, and this depth is seldom seen except in exceptional circumstances. Business acumen is important in ensuring financial sustainability, and I am pleased to see the organisation has well established processes and strategies with the flexibility required to weather the COVID-19 storm. But I am most impressed with the culture – the teamwork and cohesion demonstrated by the staff has truly made the difference between success and failure under pressure. The pride the staff have in the organisation and what it stands for, which we see can see in formal measures such as the staff survey, has shone through during this difficult time, and for that I commend each and every member of the team.

### Looking forward

The work that Plant & Food Research undertakes, and the sectors it supports, will be an important part of New Zealand's post-COVID-19 recovery and into the future. Maintaining a strong export sector has ensured New Zealand is in a good position to keep moving forwards. The reputation of our food industry, combined with the Kiwi positive attitude, is helping our nation pull through this period of global turbulence – whilst not emerging unscathed, we will have a solid foundation on which to keep building.

The innovation that Plant & Food Research provides will be vital for the future – New Zealand cannot hope to maintain its reputation for healthy, sustainably produced food without ensuring the tools and technologies our farmers and growers use are constantly being updated to align with new global trends. Consumers want evidence of environmental and, increasingly, social sustainability,



and the aspirations of New Zealand's horticulture, seafood and wider agrifood sectors are well placed in this space.

Through the application of science, we can ensure New Zealand and New Zealanders have high quality jobs based on evolving and new technologies for our food industries. Only by becoming a digitally-enabled, high-tech industry will our agrifood sector continue to grow and excel on the world stage.

### Financially stable but cautious

Plant & Food Research ended the financial year with total revenue below budget, driven in part by a more challenging environment for commercial research work and in part by the impact of COVID-19 on the delivery of research projects. The impact of the revenue shortfall to budget was lessened by a boost from the Government's COVID-19 recovery funding, along with actions taken to curtail operational and capital expenditure. Overall, with recognition of some other positive contributors to profit (including a \$2.9 million gain on sale of assets and the reintroduction of building tax depreciation), the profit after tax result was \$9.8 million for the year.

We are not out of the woods yet – the world is still dealing with the effects of COVID-19 in numerous ways. But I feel secure in the knowledge that Plant & Food Research is well placed for the future. I wish to thank David Hughes, his Senior Leadership Team and every member of the Plant & Food Research staff for all their hard work in keeping the Institute moving forward.

Nicola Shadbolt  
CHAIR

Three blueberries are positioned on a solid pink background. One is in the top left, one in the top right, and one in the bottom center. Each blueberry has a small, dark, irregular hole or tear in its skin, suggesting damage or a challenge. The text "Rising to the challenge" is centered in white, sans-serif font, with the holes in the blueberries appearing to be part of the text's meaning.

Rising to  
the challenge

# CEO's review



**The past year has been highly unpredictable. Despite the impact of COVID-19 – on us as individuals, as a company and as a nation – Plant & Food Research remains in a positive position for the future.**

Our organisation, our customers and New Zealand rose to the challenge created by the pandemic. Across the science sector, the Crown Research Institutes came together and responded in concert with one another. Senior leaders worked to ensure a consistent response to safeguard the health of staff and to continue supporting New Zealand with excellent science wherever and whenever possible. Government agencies, such as MPI, were also highly supportive in helping us understand the impacts of the pandemic on our science. This meant we could work with our customers to determine the best way to support them and to understand how they in turn were affected, making important decisions about science delivery in response to the situation in real time.

Our staff have performed admirably during the COVID-19 pandemic, working together to ensure our facilities were appropriately managed prior to and during lockdown and finding ways to contribute to the Institute's research from home offices – or kitchen tables – to keep our scientific endeavours moving forward. The lockdown required a change in internal communications activities to keep everyone informed during the fast-moving changes in policy required, and we've learnt some valuable lessons on how to keep connected in a virtual world. We've also used the necessary changes brought about by the pandemic environment to review some of our activities and put in place more sustainable practices, allowing us to move closer to some of the travel and financial goals identified in our new Sustainability Agenda (see page 18).

## A focus on the future

Looking forward, there is still a long way to go before we are out of the COVID-19 storm, but I'm convinced our organisation and our people have the agility and resilience to weather any future complications. Despite the turbulence of the past six months in particular, we have had many things to celebrate.



Our sectors are still making significant investments in their future, and we're proud to be the science underpinning many of their decisions. Zespri and New Zealand Hops have both launched new cultivars from our breeding programme in the past months – marketed as Zespri™ Red Kiwifruit (see page 45) and the new hop Nectarone® (see page 43). We've also signed a new blueberry breeding arrangement with T&G Global (see page 23). This shows that our sectors still have confidence enough to continue introducing new innovations to their growers.

We are also focused on the future. The last year has seen research programmes begin as part of our new Growing Futures™ Directions. This investment in foundation science is focused on what, we believe, will bring the most value to New Zealand in 10 to 20 years' time, allowing our sectors to prepare early for an unknown future. Our Science Services and Technology Development businesses are strong, and we are excited by the increasing role that Māori knowledge is playing in our day to day activities. We've also launched our new brand – a promise to New Zealand that we will continue to deliver the science needed for a prosperous future for all.

## Thanks to all

I wish to acknowledge the support of the New Zealand Government, our shareholder, during this turbulent time. Government agencies have worked to ensure we could and can continue our research, and the increased investment through the COVID-19 recovery fund has supported us in making difficult decisions on how best to keep moving forward.

I would like to end by extending my personal thanks to everyone at Plant & Food Research for their continued optimism and commitment to the organisation. The culture we have is a testament to every member of the team, and I am humbled by the support and belief you have in Plant & Food Research and the smart green future I know we can create together.

David Hughes  
CEO

# Our Strategy

We believe our science can make the world a better place. That by working together, we can create a smart green future for Aotearoa New Zealand and the world.

We invest in our people, our facilities, our information systems and in future science. We believe that these are vital parts of creating an organisation that delivers world-class science.

We know our science can only make a difference if it is applied outside the lab. We build relationships with customers and partners, including with Māori organisations, to find the best ways for our science to help their businesses grow.

We then share our knowledge and skills, so that our customers, our partners and Plant & Food Research itself receive fair value from the results of our science. We provide R&D services for those that need it and create pipelines of new technologies for commercialisation, either directly by us or in partnership with others.

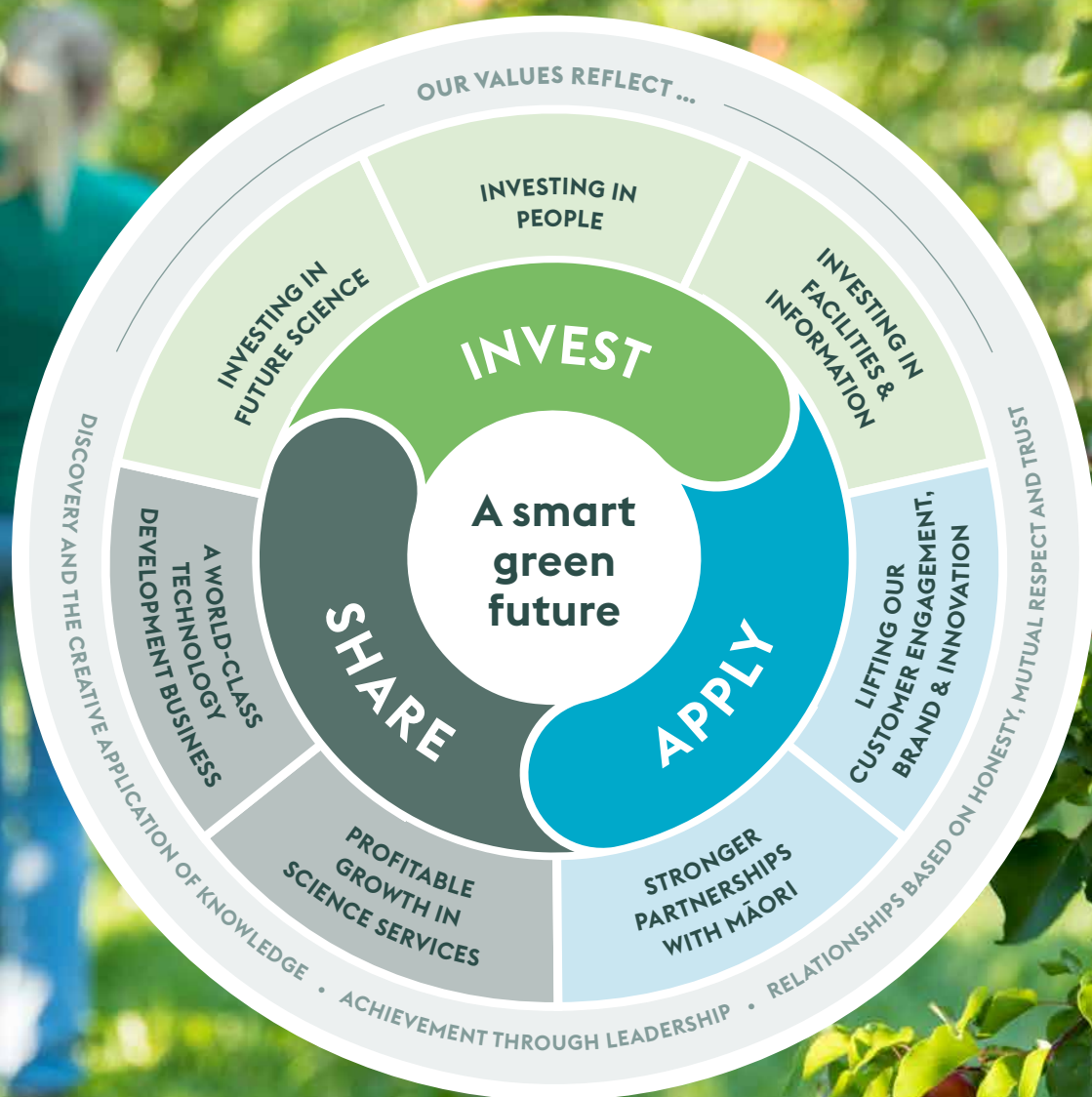
For us, a smart green future means we use all available knowledge to produce healthy, nutritious food from the land and sea, while ensuring we protect our environment and create opportunities for future generations.

Our strategy has three elements that together will deliver a smart green future for Aotearoa New Zealand:

1. Invest / Whakangao  
to create world-class science
2. Apply / Whakamahi  
that science to create maximum value
3. Share / Tuari  
that value fairly with those who have contributed to its creation to increase the sustainability of their businesses.

This strategy is realised through seven strands that ensure our activities align with the requirements of our Institute, our customers and our partners.







Dr Roger Robson-Williams, our GM Science Sustainable Production, was appointed the inaugural Chief Sustainability Officer to lead the development and implementation of our new sustainability agenda.

A man with a beard, wearing a dark zip-up jacket over a green shirt and dark jeans, stands in a field of green plants. In the background, there is a large, arched greenhouse structure. The sky is blue with scattered white clouds.

## Our sustainability agenda

The main goal of Plant & Food Research is the development of the world's most sustainable food systems. Sustainability is at the heart of everything we do, and we are committed to not only helping our customers, partners and the wider food sector improve the sustainability of their businesses, but also to leading by example and making sure we are working in the most sustainable ways in our own organisation. We want to know our work is beneficial to people and planet, and has purpose, as well as delivering profit, primarily for our customers but also to allow us to invest in our own organisation – the multiple bottom line of a sustainable business.

In the 2019/20 year Plant & Food Research created a new sustainability agenda. It has three strands:

**Thought leadership** – sharing with others our knowledge and insights of ways to be a sustainable business to create new conversations about the future of food

**Innovation leadership** – making sure our customers and partners understand how our science can help their businesses be more sustainable

**Authentic leadership** – making sure Plant & Food Research includes sustainability in its own business decisions.

### Becoming a Future-Fit business

The Future-Fit Business Benchmark is a tool that helps companies assess, measure and manage the impact of their organisations in ways that support the United Nations' Sustainable Development Goals. In March 2020, Plant & Food Research hosted a workshop with Martin Rich from the London-based Future-Fit Foundation, and invited representatives from seven of our key customers. Together, we learned more about the Future-Fit tool and how this could be used by New Zealand businesses to improve sustainability decision-making.

### Sustainable Business Council

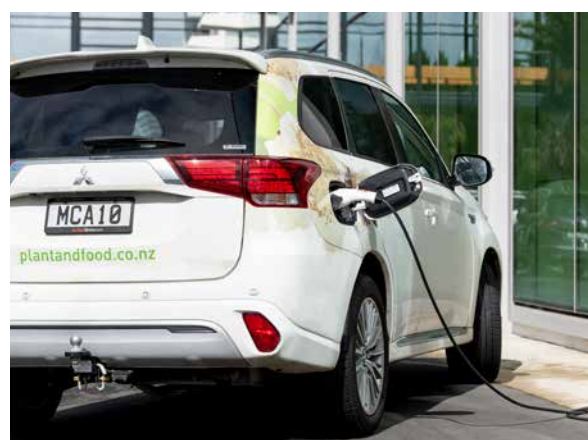
In late 2019, Plant & Food Research joined the Sustainable Business Council (SBC). This network of more than 100 organisations from across New Zealand, who deliver more than 31% of New Zealand's private sector GDP, aims to support members in identifying their own sustainability commitments and ensuring best-practice when making sustainable business decisions. The SBC is part of the World Business Council for Sustainable Development and help companies align their sustainability agendas with the United Nations' Sustainable Development Goals.

**Sustainable  
Business Council**

 wbcscd Global Network Partner

### Sustainable Travel Policy

The COVID-19 pandemic forced the world to start engaging in a different way, showing us that travel is not always required to work effectively and to ensure we have strong relationships with customers, partners, collaborators and one another. Our new Sustainable Travel Policy includes guidelines to make sure we make mindful decisions about our travel activities and, where possible, reduce our impact on the environment due to travel. Plant & Food Research has also committed to carbon off-setting of business air travel from July 2020.



In 2019, Plant & Food Research introduced hybrid vehicles to its fleet. Where possible, electric or hybrid vehicles will be purchased as part of the ongoing fleet replacement programme.



A network of Site Sustainability Liaisons has been created across Plant & Food Research. Each of the 20 liaisons will work with staff on their sites to introduce new sustainability initiatives and share information and ideas.



We work with our customers across the horticulture industry to find new ways to sustainably grow food.







Apply /  
Whakamahi



A photograph of a man and a woman standing in an orchard. The man, on the left, is wearing a blue and white striped short-sleeved shirt and glasses. The woman, on the right, is wearing a white t-shirt and has her hands raised, gesturing towards a tree. They are both looking up at the tree. The background is filled with green foliage and trees, suggesting a rural or agricultural setting. The lighting is bright, indicating it is daytime.

Working on international development projects allows our researchers – such as Dr Lucia Ramos Romero and Dr Dale Yi, working on an avocado orchard in Viet Nam – to use their knowledge to improve lives.

## Lifting our customer engagement, brand & innovation

Our customers are part of our community. We work alongside them, often over many years, to create research plans and deliver the science that helps their businesses grow. We work with these customers in a number of different ways. They may fully fund research themselves, but we may also work together to find investment from other organisations, or use our own money as co-investment in a project. What's important is that our customers know we're behind them and will find a way to help their business succeed.



We value our relationships with our customers, with investment agencies, and with our science collaborators. We share stories of these relationships, to show how our science and our staff are helping to create a smart green future.

### Going global together with blueberries

T&G Global – one of New Zealand's largest produce growers, exporters, marketers and distributors – has entered a new partnership with Plant & Food Research to become our strategic development and commercialisation partner for blueberries.

The agreement builds on an existing relationship that had already granted T&G access to a suite of Plant & Food Research-bred and licensed (from Fall Creek Farm & Nursery) blueberry varieties for production in Australia. Under the new partnership, T&G will co-invest in our New Zealand-based blueberry breeding programme and will have commercialisation rights to future varieties from the programme. The new varieties will provide improved yield and resistance to disease while also delivering consumers larger, tastier berries over a longer period, with an extended harvest season.

Having access to new and improved varieties allows New Zealand blueberry exports to be part of a branded, 12-month supply programme in high value markets, instead of seasonal trading arrangements. The first new commercial varieties could be launched in the next year, with fruit hitting supermarkets under T&G's Orchard Road brand from 2023.

### International Development

Our International Development Unit (IDU) enables Plant & Food Research to provide a tailored approach to our work in developing countries – building our reputation in partnering to develop and implement projects across the value chain that deliver sustainable impact, reduce poverty and improve lives.

Our current portfolio of projects focuses on the horticultural and seafood sectors, concentrated in South East Asia but our footprint also extends to Africa, the Caribbean and the Pacific. These projects contribute to and support the priorities of the New Zealand Government and the United Nations' Sustainable Development Goals (SDGs); expand the experience-base and worldliness of our scientific capability; create opportunities for New Zealand industry in rapidly developing economies; and expand our brand profile in new markets.

#### Vanilla sector development in Tonga

In June 2019, we commenced a new initiative funded by the New Zealand Aid Programme to develop the Tongan vanilla sector. The programme is designed to grow the sector through better agronomic practice and management to improve vanilla yield and quality. 2019–2024

#### Avocados in central highlands of Viet Nam

We are partnering with New Zealand G2G Know How and Sam Agritech to deliver technical know-how on avocado production, handling and processing. Critical to the success of this public-private partnership will be the benefits accruing to smallholder producers in the Dak Nong region and the establishment of new research partnerships with Vietnamese collaborators. 2018–2021



Plant & Food Research launched a new look on 1 July 2020, to better represent, particularly in an increasingly digital world, the organisation's new strategy for delivering a Smart Green Future for Aotearoa New Zealand.

### High quality horticulture in Cambodia

The Ministry of Foreign Affairs & Trade (MFAT)'s New Zealand Aid Programme-funded Cambodia Quality Horticulture project is a private sector-led initiative, looking to grow income and opportunities throughout the Cambodian horticultural value chain. The programme has a strong focus on training farmers and postharvest operators on best practice aligned with GAP (Good Agriculture Practice) and/or preferred supplier programmes. Human centred design is also being used to develop new agronomic and postharvest solutions, including the development of a new washing table to deliver clean product to consumers. We are also working closely with the Cambodian Government on the implementation of GAP systems.

2017–2021

### Expanding the Viet Nam dragon fruit sector

Plant & Food Research, the Southern Horticultural Research Institute (SOFRI) and the Sub-Institute of Agricultural Engineering and Post-Harvest Technology (SIAEP) are collaborating on a New Zealand Aid Programme to enhance the Vietnamese dragon fruit industry. The project has developed a range of novel dragon fruit varieties with new flavour and colour combinations, a new production system to enhance productivity, a protocol for the control of canker (a significant disease threatening the industry), and improved postharvest high pressure washing and cool-chain management systems. The emphasis in the last year has been scaling up of the technologies and practices to farmers and packhouses; and sharing of knowledge on controlled production commercialisation models with government and industry to provide the groundwork for the future release of proprietary varieties.

2013–2020



Income has tripled for Vietnamese dragon fruit farmers Mr & Mrs Vu thanks to a New Zealand Aid programme-funded research project.

### Market access for Samoan taro

In a project funded by the Australian Centre for International Agricultural Research (ACIAR) we are working with the Samoan taro industry to overcome current biosecurity constraints to gain access to the Australian market. This research-for-development project specifically looking at whether or not taro leaf blight can survive on corms in transit. If the disease can survive, then further work will be required to develop appropriate postharvest treatments. We are now looking at options for funding this second phase of the work.

2017–2020

### Improved sustainability for Vietnamese vegetable farming

A five-year development project in Binh Dinh Province funded through the New Zealand Aid Programme is drawing on our expertise in sustainable horticulture to improve the environmental and economic sustainability of vegetable farms, and safety outcomes for both farmers and consumers. A key development in 2019 was the launch of the La Lanh Viet-GAP certified vegetable brand which facilitates access to supermarkets.

2016–2021

### Developing horticulture in northern India

A partnership between New Zealand and the State of Himachal Pradesh, northern India, is working to improve production of the region's key fruit crops, with a particular focus on apples. Funded by the World Bank, the Himachal Pradesh Horticultural Development project involves a range of scientists from New Zealand organisations, including Plant & Food Research, with support from the New Zealand apple and pear industry and government agencies.

2018–2021

### Avocado farming in Kenya

We're working alongside New Zealand industry partner Olivado and the New Zealand Aid Programme to support sustainable economic development of small-holder avocado orchards in Kenya. In late 2019, we entered the extension phase of this programme, which looks to facilitate wider adoption and extend the results beyond the Olivado supply chain.

2013–2022

### Sargassum seaweed in the Caribbean

A new initiative in the Caribbean funded by the New Zealand Aid Programme is focused on the problem of Sargassum seaweed inundations and their impact on tourism, fisheries, human health and the environment (for example, beach erosion). In partnership with the Caribbean Regional Fisheries Mechanism (CRFM) we are looking at product development options for this seaweed.

2020–2023

**BY THE NUMBERS**

Brackets indicate target

**86%**Milestones  
completed to  
agreed timelines**\$228.3K**Annual Revenue  
per Science FTE**\$49.1K** (60.2K)Revenue per FTE  
from commercial  
sources**0.72** (0.71–0.75)Commercial reports  
per scientist FTE**\$3.3M** (\$3M)Revenue from  
new customers

## A new brand for New Zealand blackcurrants

Plant & Food Research has been working with the New Zealand Blackcurrant Co-operative to develop a new way of marketing products that contain New Zealand-grown blackcurrants, to support the premium offering of the New Zealand sector.

Adaptive™ New Zealand blackcurrants is a new brand that provides assurance to consumers that they are purchasing products containing genuine New Zealand blackcurrants at concentrations scientifically validated to have a biological effect. The brand can be licensed for use on products aligned with a health benefit where blackcurrants are known to have an effect, such as sports recovery or immunity.

In New Zealand, the brand can be used for food products with the general level health claim “manages moderate exercise-induced oxidative stress”; this claim is substantiated with a Food Standards Australia New Zealand (FSANZ)-compliant portfolio of evidence, generated by Plant & Food Research. This evidence has also been used in the USA to allow products to make health claims around sports performance, recovery and immunity.

2Before™, the first product to use the Adaptive brand, has been launched in the USA and New Zealand (see page 44).

The new brand will give New Zealand blackcurrants a unique selling proposition as a food ingredient, and is anticipated to increase sales and demand. The Adaptive brand recognises the effect generated by the unique combination of anthocyanins found in New Zealand-grown blackcurrants. These anthocyanins – the compounds that give fruit their red and blue colouring – activate the body’s adaptive pathways, improving its protective and defence systems.



New Zealand Blackcurrants



In January 2020 Plant & Food Research and Northwest Plant Co. evolved the joint venture Pacific Berries LLC from an IP holding company to a fully operational company with two employees based in Washington, USA, including breeder Dr Lisa Jones.

# Bringing better raspberries to the world

**The USA is the third-largest producers of raspberries. Since 2008, Plant & Food Research has been breeding and commercialising raspberry varieties in the Pacific North West of the USA, through a partnership with Northwest Plant Co, leading to the formation of a joint venture company Pacific Berries LLC in 2012.**

In 2009, the 'Wakefield' cultivar was launched, marketed as Wake®Field, and quickly became the most sought-after new variety in the region, the world's highest value process raspberry sector. The cultivar 'NN08002', marketed as Wake®Haven, followed in 2016. The cultivars are high-yielding process raspberries that can be machine harvested, and they fruit at different times in the season allowing growers to extend their harvest. Over the past six years, Wake® raspberry cultivars have accounted for 37% of the total reported plant sales to growers in Washington State, which produces 90% of frozen raspberries in the USA. In 2019 more than 50% of reported sales were Wake® raspberry varieties.

The Wake® family of raspberries are specifically bred to target the needs of growers, processors and consumers. The berries are very firm with good flavour, making them excellent for Individual Quick Frozen (IQF) processing – the highest processing grade for raspberries – and have high concentrations of compounds known to be good for health. Wake® varieties are more resilient to disease pressures and environmental weather challenges which often lead to supply challenges for other varieties. Wake® growers can grow more sustainably because of the high yield of high-quality fruit produced year after year with the same or fewer inputs than needed for traditional varieties and a lighter environmental impact due to longer replanting cycles.

Wake®Field is seeing increasing interest from growers wanting to meet demand for a sustainable, profitable, locally-grown product. It is now commercially planted in New Zealand, Australia and Chile. Commercialisation in Europe is also underway.





Our research is only useful if our customers can incorporate it into their own activities. The better we understand our customers, how our work helps them succeed, and how they interact with us and our research, the better placed we are to improve things further for them, for our organisation and, ultimately, for Aotearoa New Zealand. Having deep relationships with our customers is vital for us to be able to deliver on our smart green future strategy.

### Understanding the customer experience

Plant & Food Research uses a number of ways to understand the operating environments, strategy and research needs of customers, and their experiences in accessing and using our knowledge and technologies. One of these is a biennial survey which, since 2014 has consistently provided a wealth of information such as how we are performing – in terms of strategic relationship development and project-level interaction – and our competitive positioning against other research or professional services providers. It also identifies brand personality traits and overall customer satisfaction. The 2020 edition of this survey was designed and delivered in partnership with leading independent market research provider Nielsen during June and July.

Key top-line results are reported here. Detailed results and analysis are shared within Plant & Food Research to inform both strategic and relationship-level plans that support growth in customer success.

### Our customers and COVID-19

Most of our customers had projects running during COVID-19 restrictions. Of those customers who had projects affected, 68% said that Plant & Food Research had provided them suitable alternatives or mitigating actions.

### 2020 customer survey highlights

A high rate of advocacy has been maintained among customers since 2018 with 92% highly likely to recommend the services of Plant & Food Research

Testament to changes made within Plant & Food Research since the last survey, there has been a significant uplift in the proportion of customers saying that they are “very satisfied” across key project interaction measures.

#### % very satisfied

Project interaction measures	2018	2020
Overall project satisfaction	33	61
Flexibility to adapt	39	61
Post-project interactions	23	45
Responsiveness	34	55
Admin processes	23	44
Timely delivery	23	42
Foresight	24	38
Commercial savviness	22	34

Performance has been maintained since 2018 on established KPIs:

Customer satisfaction measures	2018	2020
Would speak highly of Plant & Food Research	74%	71%
Willingness to incorporate a Māori perspective into the way we do science	52%	52%
Delighted by our competence and knowledge	95%	96%

A number of new measures were introduced into this year's survey upon which very strong benchmark scores were established;

**71%** satisfaction with the “Extent to which customers recognise Plant & Food Research’s role in their innovation strategies/pipelines”

**95%** of customers agreed that their main contact was effective at getting things done

**93%** of customers indicated that they are satisfied with Plant & Food Research overall.





Our researchers, such as Bouche Jaques-Joseph, work with our Māori partners to better understand native crops like tāwiniwini (snowberry).

## Stronger partnerships with Māori

Māori, like many indigenous people, have knowledge systems that span thousands of years and oral traditions describing connection to the natural world. Mātauranga Māori (knowledge) and Māori taonga (treasures) are inherited and entrusted to the current generation to care for, to contribute to, and to evolve for future generations.



Two new staff have been appointed to our Māori engagement team. Barney Anderson (Waikato-Tainui) has joined as Senior Cultural Advisor, providing advice and expertise on Te Ao Māori. Te Aue Addison (Ngāti Tūwharetoa, Ngāi Tahu, Te Ātiawa-kī-te-Tau Ihu), Principal Advisor Māori, will take a lead role in roll-out of the Tono strategy across Plant & Food Research.

Plant & Food Research recognises the importance of Māori concepts such as taiao – the interconnection between all living things – and huatahi – mutually reciprocal relations and benefit sharing – and we are weaving these into our everyday mahi (work). These concepts support us in developing the best food systems in the world.

Many Māori organisations are guided by inherent responsibilities to deliver benefits to their people that go beyond immediate financial gain. We work together with our Māori partners, moving towards collaborative research models that weave together science and Mātauranga Māori. We are creating long-term relationships with Māori organisations that promote shared benefits and guide our research when working with taonga tuku iho (treasures to hand down to future generations). Working together with Māori we can create, innovate and preserve taonga – including our lands (whenua), oceans (moana) and plant and food species – for future generations.

We want to be a part of this value chain as a preferred collaborator to Māori organisations, conducting research that contributes to the long-term cultural, social and environmental wellbeing of Aotearoa New Zealand.

### Building stronger partnerships through Tono

We have initiated a new strategy for building stronger relationships with Māori, which takes a long-term view on how we can guide the development of our organisation to best understand and meet the aspirations of Māori.

Tono (to seek agreement) is the first phase of our strategy. There are three goals for Tono – to create an invested organisation (kia huakaha tātou) that understands and celebrates Te Ao Māori (the Māori world); to co-invest with Māori (te mahitahi) to build a shared understanding of how te ao pūtaiao (science) and mātauranga Māori work together; and to create new partnerships (te huatahi) and collaborations with Māori organisations to support their research aspirations.





Incoming Board Chair, Nicola Shadbolt, is welcomed to the Plant & Food Research whānau (family).



More than 40 of our Auckland-based staff graduated from our first Te Ao Māori course.

### Sharing Te Ao Māori with our staff

During the COVID-19 lockdown, we began an online course for staff to learn more about Te Ao Māori (the Māori world view). Across the organisation, 100 people completed the 10-week course, including both scientists and support staff.

The course was designed to introduce staff to concepts of Te Ao Māori, basic Te Reo Māori (Māori language) and to begin a journey to incorporate Māori in their everyday mahi (work). As a result, all 100 staff can now confidently introduce themselves with their pepeha (their story) and appreciate basic protocols for meetings involving Māori, such as traditional aspects of pōwhiri (formal welcome), mihi mihi (introduction) and karakia (prayer).



# The potential for tāwiniwini snowberry



Aotearoa New Zealand has a number of unique species of plants, many of which have been used as food or medicines by Māori for centuries. Plant & Food Research scientists are collaborating with Ngāi Tahu to investigate the potential of the tāwiniwini snowberry (*Gaultheria* species) as a new food crop.

The tāwiniwini is a relative of blueberries, and grows on the lowland to sub-alpine environments in the South and central North Islands of Aotearoa New Zealand. The eight indigenous species vary in growth habits — some are creeping plants whereas others grow in a more upright structure — and some have dry seed coats while others have seeds within succulent berries, with berry colour ranging from white and pink to dark red.

The team have investigated historical use, collected samples of several different tāwiniwini species and, using a combination of Western science and Mātauranga Māori methods, have developed seed germination and propagation techniques for cultivating the plants. The berries have a subtle sweet melon taste likely to appeal to consumers, particularly those who will pay a premium for good tasting foods from indigenous sources. Alongside this, analysis has shown the fruit to have a long shelf life, necessary for successful export to overseas markets, and to be high in anthocyanins, compounds known to be good for health.

More research is required to develop cultivation systems, but the tāwiniwini snowberry has been shown to have potential as a commercial crop. As it naturally grows in harsh environments and marginal soils, tāwiniwini may be also a high-value option for land areas not normally suitable for horticultural production.





Our research is supported by the Field Research Network, including Keith Short at our Te Puke Research Centre, who maintain the health of our fields and orchards.





A close-up photograph of an avocado tree. The image is filled with lush green leaves, some in sharp focus and others blurred in the foreground and background. Several green avocados are visible, hanging from the branches. The lighting is bright, suggesting a sunny day. The text "Share / Tuari" is overlaid in white on the right side of the image.

Share /  
Tuari





Our researchers, such as Research Associate Stephen Wallace, work with our customers to create resilient food supply chains.

## Profitable growth in science services

Our science is helping our customers create the world's best food production systems — addressing challenges including environmental sustainability, enhanced crop production, protection from pests and diseases, reducing waste, and understanding the consumer.

Our customers across the agrifood and seafood sectors – including government departments, industry bodies and commercial businesses – have very specific needs from our science to help them meet their strategic priorities.

We work with them to create R&D programmes that help answer some of the issues facing them now and in the immediate future.

Our international network means we can work with other science organisations to help customers with their global business, working with them in overseas markets to understand consumers and create resilient food supply chains.



Our consumer research group, including Emey George and Grace Ryan, help customers understand consumer purchase decisions in international markets.

## Successful funding applications

We apply for funding, either at an Institute level or in partnership with our customers, through the New Zealand Government's investment processes to support the development of research directly linked to our sectors' requirements.

In the 2019/20 financial year, Plant & Food Research was successful in a number of research funding applications.

- MBIE Endeavour Fund
  - Research Programmes
    - Re-imagining aquaculture – inventing low-impact, offshore mobile technology that transforms finfish production
  - Smart Ideas
    - Targeting Specialty: Taxonomically restricted genetics for faster selection
    - Understanding spore/host recognition to prevent plant infection from ascomycete fungal pathogens
    - Cellular agriculture of fish: premium seafood from immortalised cell lines
    - Sex pheromones of social wasps: From discovery to population disruption
    - Using plant-microbe interactions to manipulate dormancy for increased post-harvest value
- MBIE Unlocking Curious Minds
  - Understanding rusts – fungal invaders of Aotearoa
- MBIE Vision Mataranga Capability Fund
  - Contemporary kaitiakitanga of freshwater taonga in Aotearoa – exploring and demystifying cryopreservation and surrogacy tools to aid native fish conservation
  - The Uawanui Cultural Nursery Project
- MBIE Catalyst Fund
  - Advancing knowledge on host plant acceptance and management of Spotted Lantern Fly (*Lycorma delicatula*) for readiness of its arrival in New Zealand

# Controlling mealybugs to maintain wine quality

***Grapevine leafroll-associated virus 3 (GLRaV-3)* is regarded as the most serious disease for vineyards in Aotearoa New Zealand. The disease not only reduces grape yield, but also reduces sugar content and increases acidity in the grapes, affecting grape and, ultimately, wine quality. This is particularly important as our wine industry, which earns more than \$1.8 billion annually in exports, relies on a reputation for producing premium wines of high value.**

The wine industry has a target of reducing the incidence of GLRaV-3 to less than 1%, to maintain economic sustainability. Previous research has shown that an infection rate of 1% in the first year of production becomes uneconomic after five years without active management of the vines for GLRaV-3. Management methods for red wine grapes – where the disease is visible by a reddening of the leaves – include visual identification of virus-infected vines, and their removal in a process known as roguing. However, mealybugs – small insects that feed on plants – play an important, and unwanted, role in the spread of GLRaV-3 within and between vineyards.

**Mealybugs play an important, and unwanted, role in the spread of GLRaV-3 within and between vineyards.**

Research has found that high numbers of mealybugs result in an increase of average annual costs of more than \$4,000 per hectare when combined with roguing, and up to an annual average of \$6,700 per hectare with no GLRaV-3 management. Working with the industry, scientists are developing a protocol for targeted chemical control of mealybugs as part of an integrated vine management toolbox under development, which includes vine management, diagnostics and the natural ecosystem service of biological controls.

The research was funded through the Bragato Research Institute with contributions from Plant & Food Research's SSIF investment.





Winter forage crops, such as kale and fodder beet, produce high-yielding high quality feed for livestock during the winter, when pasture growth is low. However, during grazing, livestock urine adds large amounts of nitrogen back to the soil which can leach into waterways and affect water quality. Traditionally, once the forage crop has been eaten, the land has been left bare until the spring crop can be sown. Research has shown that incorporating fast-growing catch crops — such as oats and other cereals — immediately after winter grazing can reduce nitrogen leaching by up to 50%, as well as providing cost-effective feed for livestock.

Our research in Canterbury, where more than a third of New Zealand's fodder crops are grown, has shown that a catch crop of oats sown in July and harvested in November can remove up to 240kg of nitrogen per hectare and produce up to 12 tonnes of dry matter for green-chop silage per hectare. The performance of catch crops depends on a number of factors, including weather — more nitrogen leaches in times of high rainfall, but reductions of 35% are still possible in wet seasons; and cultivation method — for example, direct drilling of the oats can result in a lower yield, but gross margins of more than \$2000 per hectare can still be achieved. In Southland, the research investigated new tillage technology and showed that use of a single-pass cultivator and drill to sow the catch crop, rather than conventional cultivation that may not be possible because of wet soils, could result in returns of \$1600 per hectare.

The research was conducted as part of the DairyNZ-led Forages for Reduced Nitrate Leaching (FRNL) programme, a science-industry collaboration funded by MBIE and with a contribution from Plant & Food Research's SSIF investment. Further research funded by the MPI Sustainable Farming Fund is developing protocols for establishing catch crops across a range of soil types and climates. It is estimated that use of catch crops on half the area of land used for forage crops in Canterbury and Southland could create a net return from feed production of around \$150 million per year and reduce the environmental load of nitrogen by 6,000 tonnes.



Forage crops provide livestock with an alternative feed source when pasture growth is low.

# Reducing nitrogen through catch crops



Our scientists, such as Dr Brendon Malcolm, are finding new ways for farmers to incorporate crops into their rotations to reduce nitrate leaching and maintain good water quality





# Making decisions to water the crop

New regulations and public concern about freshwater quality have led to stringent controls on the use of water for irrigation of crops. Decision support tools help farmers make decisions about when and how much to irrigate soil to ensure optimal performance of the crop and minimise water runoff that may cause nutrient leaching.





Our researchers are helping farmers understand how best to irrigate crops to reduce nitrate leaching and optimise water usage.

**The Agricultural Production Systems sIMulator (APSIM) is an international modelling tool that allows farmers to make decisions based on geography, soil type and crop. The APSIM model is continually updated with new scenarios, with Plant & Food Research contributing data to models for key crops in New Zealand.**

As part of an MBIE-funded science-industry collaboration – led by Manaaki Whenua Landcare Research, Plant & Food Research and the Foundation for Arable Research – a new module was developed called spatial-APSIM. This module predicts crop productivity, environmental impacts and gross margins, while reproducing the constraints associated with soil variability, landscape geography, water availability and infrastructure that growers face in the real world when making decisions about how best to irrigate according to their climate and crop type.

In conjunction with six farms across Hawke's Bay and Canterbury, the new module was applied to ask what impact soil variability had and how best to irrigate. The research suggested that by not taking soil variability into account, significantly more irrigation was used and this resulted in increased drainage. By tailoring irrigation management to site constraints, on average irrigation could be reduced by around 35% and drainage reduced by around 40% while maintaining productivity and maintaining or increasing gross margins, which was around 10% in lower-value crops.

The knowledge generated from the research was shared with industry partners for the development of irrigation guidelines. The new functionality in APSIM also has potential to help address a number of key challenges facing farming and the environment, including making best use of water in a changing climate, evaluating the viability of future irrigation infrastructure, and minimising nitrogen leaching from farms with variable soils.





Our research into the sports performance benefits of New Zealand-grown blackcurrants has led to the launch of a new product, 2Before™.

## A world-class technology development business

We are never short of ideas. Sometimes it makes sense for us to use science and commercial expertise to take these ideas from concept through to a finished product. Sometimes we may decide we need a partner to co-invest and add their knowledge and commercialising capability into the mix. Other times, we may decide we've done what we can and need alternative ways take our idea through to market. If that is not looking likely then we pass it back into science to generate new science knowledge.

Through our Technology Development (TD) portfolio we invest in the development of new products or technologies that will have real-world impact. We aim to maximise Plant & Food Research's share of the value created, through well-defined routes to commercialisation such as licensing, partnerships or new commercial ventures.

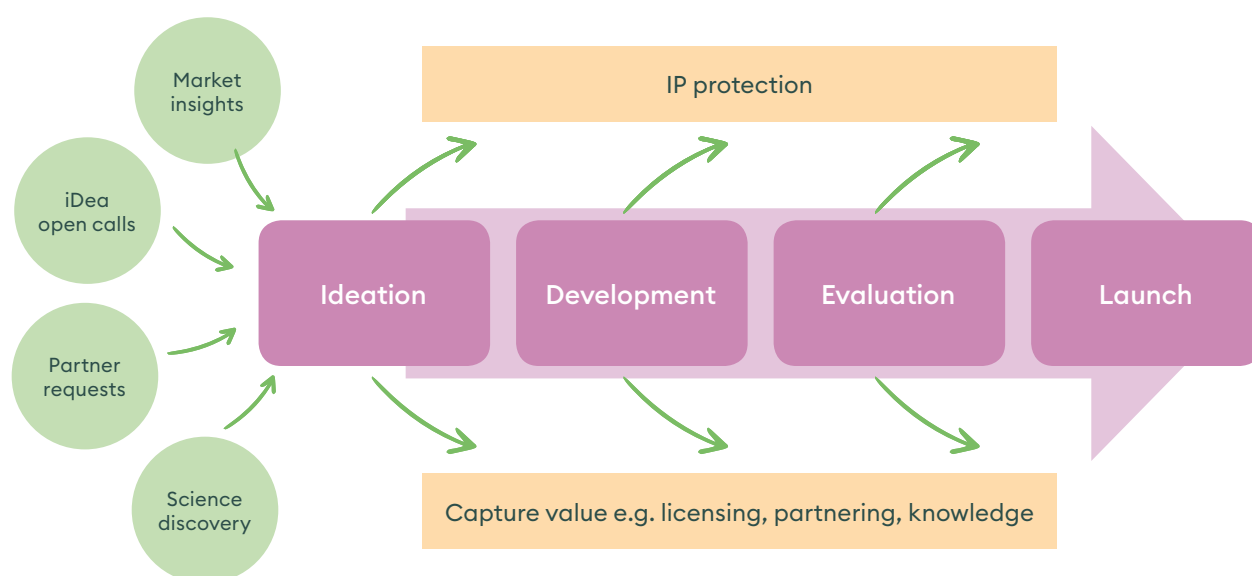
Our pipeline includes a wide range of TD "Missions" – including targeted breeding of crops, new technologies for pest and disease control, machine-learning software for integrating into digital food production and supply chains, and new food concepts. We have a range of new products and technologies at points across the pipeline.

### From ideation to reality

Using a licensed software platform adapted for our own purposes (iDea) we run an open innovation system across the Institute for the filtering and selection of Missions to invest in. This system is designed to bring transparency to the ideation process and provide a means of whole-of-organisation/peer review so that we can capture the full value of the collective knowledge and expertise within our organisation. It also brings a means for making more robust selection of investable opportunities based on a final step – the verbal pitch to senior commercial leaders.

Each Mission has a development timeline, with key stop-go points identified to support a "fast-fail" development process. Where possible we make full use of co-investment vehicles, such as KiwiNet or MBIE's PreSeed Accelerator Fund (PSAF), to further develop these Missions.

### Our Technology Development pipeline



## Ideation

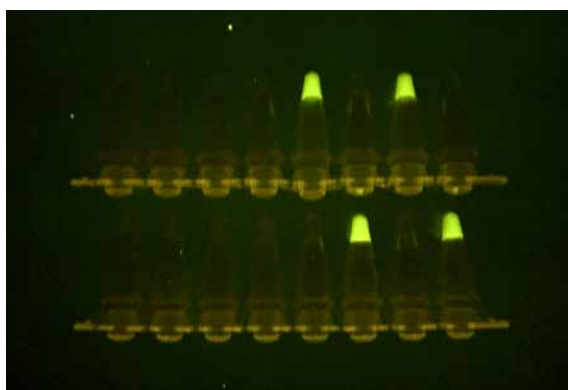
### Next generation barley

We have recently invested in breeding new high  $\beta$ -glucan (a soluble fibre) barley varieties designed to have applications for processing technologies and new, premium food products with wellness attributes. As consumer demand increases for food products that improve wellbeing, a high  $\beta$ -glucan barley is an attractive proposition for incorporation into a wide range of food products – for example, the US Food and Drug Administration has authorised use of a health claim recognising that diets containing  $\beta$ -glucan can reduce the risk of heart disease. In addition, the production of cereal crops leads to more favourable equivalents of CO<sub>2</sub> per serving than from many other dietary components, so are well positioned for consumers wishing to reduce the environmental impact of their diet.

The Mission builds on our existing germplasm resource and depth of knowledge around high  $\beta$ -glucan varieties as well as our expertise in product concept application and formulation. As part of the ideation process, we have identified a range of options for commercialisation and industry uptake.

### New plant disease DNA diagnostics

Current molecular laboratory diagnostics used in agriculture and environmental testing are slow, low-throughput, and labour-intensive. We are aiming to solve these market pain points using a new method of DNA diagnostics that can be potentially implemented in the laboratory, at the border, and real-time in the field or orchard.



We're developing a new DNA diagnostic test – in this example, showing the presence (bright) or absence (dark) of a gene important for our kiwifruit breeding programme – that can be deployed in the field as well as the lab, with results in less than an hour.

## Development

### Morphometric software

Plant & Food Research's Morphometric Software™ is a collection of software modules for image analysis, initially focused on marine species. The goal of the software is to facilitate high-throughput phenotyping and product quality assessments for both scientific and commercial applications using imaging technology.

Current applications being developed, in collaboration with international partners, include automated workflows focused on species identification and trait measurement.

## Evaluate

### Parix™ for skincare products

The global skincare market is estimated to exceed US\$180 billion by 2025. Plant & Food Research scientists have identified an extract from a Plant & Food Research-bred cultivar that provides skin protection from its high  $\beta$ -glucan and protein content. This extract, known as Parix™, could be used as an ingredient in natural skincare products that provide protection against, and potentially prevent skin damage from, environmental particles.

Plant & Food Research has developed and evaluated a prototype skincare application with a commercial partner that has licensed the extract for use in a range of skincare products.



# Tasty hops for craft brews



The Hop Lab, the research brewery at our Motueka site, where small volumes of beer can be made to trial the flavours of new hop cultivars from the breeding programme. Opened in 2014, the Hop Lab is a partnership between Plant & Food Research and NZ Hops Ltd, and was purpose-built by local Nelson craft brewery specialist Chris Little Engineering.

Craft brewers around the world love the unique citrus and tropical flavours that New Zealand hops impart to beer. Aotearoa New Zealand grows about 1% of hops produced globally, but cultivars like Nelson Sauvin™, Motueka™ and Riwaka™ are highly sought after by brewers worldwide. More than 80% of New Zealand's annual hop harvest is exported, to more than 20 countries, although the domestic craft beer industry is also expanding thanks to preferential access to hops and demand for New Zealand beers in overseas markets.

Plant & Food Research has been breeding hops since the 1950s. Originally focused on cultivars with resistance to phytophthora root rot, in the 1970s the programme changed direction to meet the global demand for cultivars with high alpha acids, used for their bittering properties in beer. In the 1980s, the programme began breeding cultivars with unique flavours.

Since the mid-1980s, the programme has released 14 cultivars, commercialised by grower cooperative NZ Hops Ltd, and only available to growers based in New Zealand. These cultivars are planted on around 95% of New Zealand's 1,000 hectares of hop production, which has almost tripled in size since 2013. The industry expects production to double again, to 2,000 hectares, by 2025.

The latest cultivar from the programme is 'Hort4337', marketed as Nectarone®. The new hop – named in part for Plant & Food Research hop breeder Ron Beatson – has intense tropical fruit, stonefruit and citrus aroma characteristics, and is already showing great promise when used in highly hopped beer styles such as IPAs.



## Launch

### A new product for sports performance

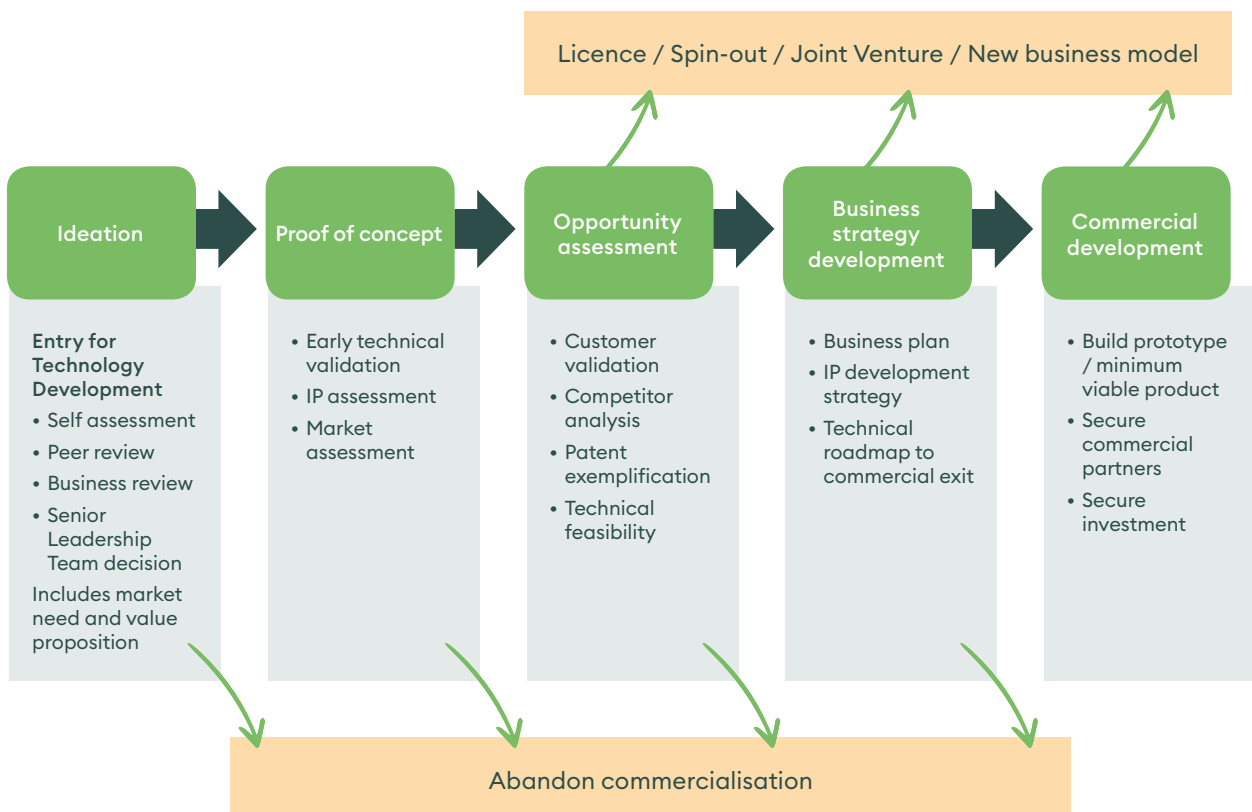
Our scientists have been studying blackcurrants for more than 10 years. Our research shows that taking 120mg of anthocyanins from New Zealand blackcurrants before exercise manages exercise oxidation stress and inflammation to enhance exercise recovery. Other research demonstrates that New Zealand blackcurrants offer a significant performance effect as well as helping to maintain immunity after exercise.

Plant & Food Research has subsequently developed a sports performance product, 2Before™ blackcurrant powder, for direct to consumer sales. Consuming the 2Before product two hours before exercise provides the maximum physiological effect. 2Before was launched in the USA and New Zealand in early 2020. A subsidiary company, 2Before Performance Nutrition Ltd, has been established to manage the product development and sales. 2Before is the first product to use the Adaptive™ New Zealand blackcurrants brand (see page 25).



2Before™ is the first product that Plant & Food Research has taken direct to market itself as part of our new Technology Development strategy. By leading the commercialisation of 2Before we can maximise the value from our science, as well as grow new markets for the New Zealand blackcurrant industry.

### Our pathway to commercialisation



## BY THE NUMBERS

1

Patent granted  
New Zealand

21

Patents granted  
international

9

Plant Variety  
Rights granted  
New Zealand

4

Plant Variety  
Rights granted  
international

16

New licences

In early 2020, consumers in Japan were able to enjoy Zespri™ Red Kiwifruit for the first time. Zespri Red, the latest release from the Zespri-Plant & Food Research breeding programme, had previously been tested in New Zealand and Singapore, and has now been commercialised by Zespri.

With its vibrant red flesh and tempting berry flavour, Zespri Red has proven itself to be a delicious alternative to other premium fruits currently available on the market. The addition of a red variety to the Zespri portfolio offers an all new eating experience to consumers and, combined with New Zealand's reputation for quality fruit, aims to attract even more new consumers to try Zespri Kiwifruit. Zespri has ambitions to reach global sales of \$4.5 billion by 2025, and extending its product range gives the company an opportunity to compete for a larger share of the global fruit bowl and be relevant to a larger group of consumers.

The cultivar 'Zes008' is the latest to be commercialised from the joint Zespri-Plant & Food Research kiwifruit breeding programme, which also released 'Zesy002', commonly known as Gold3 and marketed as Zespri™ SunGold Kiwifruit, and 'Hort16A', the original Zespri™ Gold Kiwifruit.

In 2010, when the kiwifruit disease Psa was discovered in New Zealand, many of the most promising red-fleshed selections in the kiwifruit breeding programme were found to be highly susceptible to the disease. Selections of promising varieties since then has resulted in the new Zespri Red Kiwifruit variety having good Psa tolerance, as well as the fruit size, taste, yield and storage characteristics required to meet Zespri's standards for quality.

Zespri has licensed to growers 150 hectares of commercial production in 2020, with plans to build this to 1,500 hectares by 2023 if market feedback remains positive. It is anticipated that 1,500 hectares of vines at full production will produce 15 million trays of Zespri Red Kiwifruit returning more than \$250 million per year in export earnings.

# New red kiwifruit for Zespri





Our fish production scientists, such as Dr Maren Wellenreuther, are exploring new species options for aquaculture.



A large green circular tank, likely a bioreactor or fermentation vessel, is shown. The tank is filled with a green liquid medium, and a thick layer of white foam is visible on the surface. White PVC pipes and blue hoses are connected to the tank, suggesting a controlled environment for cultivation. The background shows a white wall with horizontal lines.

Invest /  
Whakangao





Direction Leader Suzy Black and researcher Therese Wells are part of the team developing new technologies in our Open Ocean Aquaculture Growing Futures™ Direction.

# Investing in future science

The world is changing, with more people, shifting diets and a greater awareness of the impact humans are having on the planet. Our science needs to make sure that producing nutritious, tasty foods remains sustainable for future generations.

We have thought about how our science could help create more sustainably produced food for future generations. We have chosen areas of science in which we think Aotearoa New Zealand can lead the way — our Growing Futures™ Directions.



By 2050, feeding a population of more than nine billion people will require a 50% increase in agricultural production and 15% increase in water. Growing more food while we try to reduce the impact we have on the planet is a huge challenge.



Each of our Growing Futures™ Directions is focused on creating science for what we think Aotearoa New Zealand, and the world, will need in 20 years' time. We've come up with some big ideas and have long-term research plans that will help make these a reality. If for some reason we never reach, or need, our ambitions, we're still confident that each small step will create new technologies and scientific expertise that will help our industry partners better prepare for the future.

In the 2019/20 year, our Growing Futures Direction Leaders developed roadmaps to inform science decisions and appointed Programme Leaders to initiate the first tranche of research in each Direction.

## Our Growing Futures™ Directions — Ngā Tohu Pūtaiao

### Horticultural Production goes Urban — Hua ki te Ao:

creating the plants and systems needed to grow plant-based foods close to where people live

### Sustainability & Provenance Wins — Tuia ki te whenua:

creating new food production systems that do more than just produce food – they also give back to people and place

### Open Ocean Aquaculture — Ngā Tai Hōhonu:

understanding how to raise healthy fish in captivity in the open ocean.

We also invest in biosecurity research through the Better Border Biosecurity (B3) collaboration. This collaboration is vital in keeping New Zealand flora and fauna safe from invasive pests and diseases into the future.



## Horticultural Production goes Urban — Hua ki te Ao

By 2050, the global population will increase by an extra two billion people, and almost two-thirds of people will live in cities. What they will eat and where it comes from will have to change, particularly as we try to reduce the environmental impact of our food production.

One solution is to start growing food closer to the majority of the population, across the city landscape. It's reasonably common for inner city dwellers to have herbs, micro-greens and salad vegetables growing on their rooftops, balconies and windowsills. But what if we could create inner-city orchards and farms, selling their produce directly to their neighbours or where people could pick their own fruits, berries and vegetables throughout the year, no matter the season.

Creating a city farm requires a major shift in technology, which we're investigating in our Growing Futures™ Direction Horticultural Production goes Urban. We're looking into how we can breed new fruit and vegetable varieties that can grow in compact, covered environments and produce food continuously. Once we have them, we'll need to figure out the best way to grow them – the right light source, temperature, and water and nutrient requirements – and build new technologies to look after the plants for us.

While New Zealand is unlikely to have mega cities, we would be the suppliers of unique technologies to the world. Our industries would provide the technology, the plants and the instruction manuals for those setting up city orchards and farms, selling our knowledge to the world and feeding the planet nutritious, healthy fruits and vegetables.

Hua ki te Ao – by developing sustainable indoor production systems we take our fruits, products, benefits and abundance (hua) to the cities of the world (ki te Ao).

**Direction Leader: Dr Samantha Baldwin**

### Phase 1 Research Programmes:

- Future urban consumers (Lead: Dr Denise Conroy)
- Models for controlled environment growing (Dr Robert Schaffer)
- Traits for life indoors (Dr Kim Snowden)





## Sustainability & Provenance Wins — Tuia ki te whenua

Food production uses around half of the planet's habitable land and 70% of the world's fresh water, and is a major contributor to greenhouse gas emissions. By 2050, feeding a population of more than nine billion people will require a 50% increase in agricultural production and 15% increase in water. Growing more food while we try to reduce the impact we have on the planet is a huge challenge.

As consumers, we have a perception of the origin of our food based on the rules – set by local, regional and national authorities – that limit the impact that food production can have on land, water and the environment. But we now want to know more than just where our food comes from – we want the full story of how our food is produced, so we can choose the products that best meet our personal values. We want food that doesn't negatively affect the environment or the people involved in its production.

Making food production systems do more than just produce healthy and sufficient food, but actually enhance the environment and the community, requires a new way of thinking. Our Growing Futures™ Direction Sustainability and Provenance Wins will create new food production systems that give back to people and place. These systems will restore the natural environment while producing better foods, as well as creating new high value jobs as we build the workforce needed to manufacture and maintain new technologies. We'll also create new ways of monitoring how food is grown, stored, transported and sold, so we know what we're growing is exactly what consumers want, and linked to all the information they need about how their food was made.

Consumers around the world will want to buy, and pay more for, New Zealand foods as they will be certified as highly environmentally sustainable, as well as telling the stories of how producers provide for their staff and protect local communities and environments.

The Māori proverb “Tuia ki te rangi, tuia ki te whenua, tuia ki te moana, tuia te here tangata” acknowledges our relationship to the land (whenua), oceans (moana) and te taiao, the wider environment.

**Direction Leaders: Dr Paul Johnstone and Dr John Mawson**

### Phase 1 Research Programmes:

- Digital twins – designing the framework (Lead: Dr Jo Sharp)
- The lightest tread (Dr Beccy Ganley)
- Rejuvenating crop ecosystems (Dr Robin MacDiarmid)
- Ambient supply chains (Dr Jason Johnston)

## Open Ocean Aquaculture — Ngā Tai Hōhonu

Seafood is widely recognised as a nutritious source of protein, and by 2030 we will need an extra 46 million tonnes to feed a growing population. Sourcing fish from wild populations is limited and warming seas due to climate change means that areas currently used for aquaculture may become unusable. Keeping seafood in our diets means we must find ways to grow fish sustainably in new regions and new ways.

Aotearoa New Zealand is an island nation with a large ocean territory. As a people, we have a special relationship with the sea, which is home to unique fish species not found elsewhere in the world. The ocean is a wild place, and different fish species behave in different ways, swim at different speeds, prefer different water depths or temperatures, and feed on different foods. To extend aquaculture into the open ocean we need to understand what each fish species needs and how they behave so we can create homes that keep them healthy and safe.

Our Growing Futures™ Direction Open Ocean Aquaculture will develop aquaculture systems that work with nature, rather than against it. We will breed fish to live in these systems and create new technologies that make sure they have everything they need to thrive, within systems that monitor the environment. In the future, we'll also look at how we can create systems to grow other marine species – like seaweeds and shellfish – and how we can make sure we're making the most of everything we grow.

New Zealand will be a world leader in open ocean aquaculture, providing new technologies and sustainably produced fish to the world.

Ngā Tai Hōhonu – developing open ocean production systems in the deep seas (ngā tai hōhonu).

**Direction Leader: Dr Suzy Black**

### Phase 1 Research Programmes:

- Appropriate species selection (Lead: Dr Peter Morrison-Whittle)
- Aquafeed (Dr Damian Moran)
- Performance measurement (Dr David Ashton)

## Better Border Biosecurity (B3)

Keeping New Zealand free from damaging pests and diseases from overseas is important in safeguarding our horticulture, agriculture and forestry industries. Not only can pests and diseases devastate crops, but the presence of certain pests and diseases in New Zealand can result in overseas countries refusing to accept our food and other exports.

The Better Border Biosecurity (B3) collaboration creates new knowledge and technologies to protect the New Zealand border from plant pests and diseases. This science is used to understand how new pests and diseases could affect New Zealand flora and fauna, as well as to find new ways for border agencies to detect and respond to pests and diseases that reach or cross our borders.

Plant & Food Research contributes to the B3 collaboration with research to help New Zealand prepare for possible incursions by major horticultural pests that can affect a number of different crops, including:

- Brown Marmorated Stink Bug (BMSB), including developing new detection tools and gaining a better understanding of a natural enemy of the BMSB, *Trissolcus japonicus*
- Queensland Fruit Fly, including developing new detection tools.

We are also investigating, with other B3 partners such as Scion, ways to screen winegrape plants for the fungal disease *Phytophthora*, and creating new tools for analysing risk, detecting pests and diseases at the border, and early detection of incursions.

***Xylella fastidiosa* (Xf) is a bacterial disease of plants regarded as one of the most important plant biosecurity threats to Aotearoa New Zealand. Xylella can be hosted, sometimes with no symptoms, by more than 500 plant species, including grapevines, summerfruit, citrus and olive.**

Overseas, Xf has had a devastating effect on horticultural production, especially Californian winegrapes, Italian olives and Brazilian oranges. It is estimated that, should the disease establish in Aotearoa New Zealand, crops worth close to \$400 million are grown in areas highly suitable for Xf infection – including 20% of winegrape production and almost all citrus crops – with an additional \$1.35 billion of horticultural industry value generated in areas classified as partially suitable. It is also anticipated that some of Aotearoa New Zealand's unique native species, such as pōhutukawa and koromiko, would be infected by the bacterium.

Through the B3 collaboration, Plant & Food Research is working with scientists at Manaaki Whenua Landcare Research and MPI to develop systems to predict the risks associated with and potential impact of Xf on Aotearoa New Zealand. We are exploring how, through a network of overseas botanical gardens and arboreta in areas where Xf is established, plants from Aotearoa New Zealand can be screened for the presence of Xf and disease symptoms. Samples from plants are being used to improve existing molecular diagnostic techniques and adopt new bioinformatics tools. Ultimately, this knowledge and the technologies developed could be incorporated into revised testing procedures for importation of high-risk plant material into Aotearoa New Zealand.

# On alert for Xylella

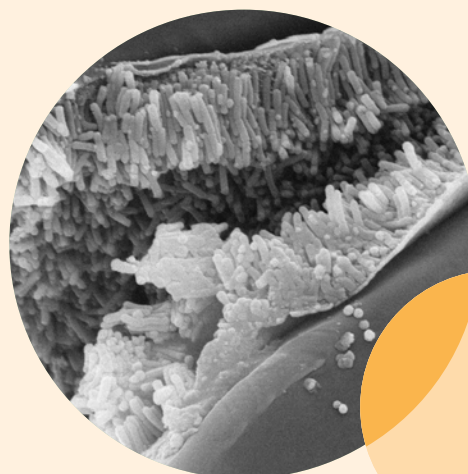


Photo: Dr Rodrigo Almeida  
– U.C. Berkeley.



**B3**

Science Solutions for  
Better Border Biosecurity  
AOTEAROA NEW ZEALAND



## Ensuring our science quality

The quality of our science underpins all our activities. We have a network of collaborators, across New Zealand and internationally, that allows us to access the best teams and facilities globally to support our own research activities. We routinely benchmark our research against the world's leading science organisations, guided by our Science Advisory Panel (see page 65), to ensure we continue to deliver the best science for our customers and our partners.

In the 2019/20 year, we undertook two science reviews, covering the management of plant genetics and the production of perennial crops. A third science review, looking at our chemistry expertise, has been postponed owing to the COVID-19 pandemic.

We also host internal workshops that provide our scientists with the opportunity to learn from one another about research activities and to identify potential areas for collaboration. This year, our annual Emerging Research Forum was held in Napier, bringing together 60 of our junior science staff to present their research to their peers and learn more about the Institute's research priorities. Our annual Senior Scientist Forum was unfortunately cancelled because of COVID-19.

## Impact planning and monitoring

The seven CRIs are working together to increase the impact of their science by strengthening their ability to plan, monitor, evaluate and learn from the work done for Aotearoa New Zealand. Staff from across the CRIs have contributed to a baseline needs assessment survey, which involved 103 face-to-face interviews and 468 online responses. Plant & Food Research is using the findings to guide a range of initiatives to build capacity in evaluation across our organisation, including training in developing Monitoring & Evaluation plans for significant projects, and use of programme logics to guide our Growing Futures investments.

Recognising the unique contributions of Mātauranga Māori and Te Ao Māori to CRI research, science and innovation, this work also includes a work stream to develop an Aotearoa-New Zealand impact evaluation framework co-led by Te Ara Pūtaiao (senior Māori managers in the CRIs).

## BY THE NUMBERS

Brackets indicate target

**339**  
Peer-reviewed  
publications

**3.98** (2.8–3.0)  
Impact of science  
publications  
(SciMago)

**6** (5–15)  
International  
awards

**20** (20–40)  
Invitations for  
international  
committees

**29** (5–15)  
Invitations for  
editorial boards

**86.4%** (70–80%)  
Publications  
co-authored with  
collaborators

A new 275-metre wide end-tow lateral irrigator was purchased for use on the Lincoln farm. The new irrigator will improve efficiency of irrigating the land across the 176-hectare farm.



## Investing in facilities & information

We know ideas need the right environment to flourish. Providing the right tools, equipment, technology and resources is the best way we can help our staff do what they do to the best of their abilities. We have long-term plans to make sure our infrastructure is constantly refreshed so we have the specialist facilities, leading-edge equipment and information management systems that we need to deliver world-class science for our customers.

## Redevelopment of Motueka

Our Motueka site, at the top of the South Island, is home to our berry and hops research programmes, as well as running trials for other crops such as kiwifruit and pears. The site was established in the 1950s, and, as research activities have expanded, the original buildings have been repurposed to best meet the demands of our activities.

As part of our capital development programme, we signed an agreement with our Motueka site landlord, Wakatū Incorporation, to build a new purpose-built laboratory and office complex. The redevelopment of the site will create better equipped laboratory spaces dedicated to specific areas of science – including pathology, tissue culture and molecular biology – so scientists can work more efficiently and extend their research activities without compromising quality.

Construction on the new site began in April 2020 (delayed owing to the COVID-19 lockdown), and is expected to be completed by the end of 2020.



A new tunnel house at our Motueka Research Centre will support extended research in berry crops.

## Extending the Lincoln farm

In October 2019, Plant & Food Research purchased 80 hectares of arable land, primarily from Lincoln University. The new land, much of which had been leased from the University previously, will be used for planting arable crops such as barley, oats, wheat and potatoes.

Our research programmes include breeding of arable crops tailored to grow in New Zealand conditions and developing new technologies that help farmers make decisions about how to grow their crops more sustainably – particularly making sure they can use water and nitrogen in the best way with minimal environment impact. The extended farm will mean that scientists have more security about the availability of land for longer-term research programmes.

## Enabling remote working during lockdown

Leaving our sites during the COVID-19 lockdown required a large amount of work to ensure our organisation could still operate as a virtual institute. The stars of our lockdown preparation were the Information Knowledge Services (IKS) team and those responsible for managing our facilities.

With very short notice, the IKS team instigated a number of projects across the organisation to enable staff to work from home effectively. This included creating guides for using existing IT remotely, as well as new online programmes such as Zoom, extending the organisation's network capability to allow staff access to files and ensuring existing programmes (such as payroll and finance) could be accessed and managed offsite.

Alongside this, our Assets team worked with scientists to ensure laboratory equipment could be monitored from off-site, ensured safe access for any staff required to be on-site during the lockdown period, and made sure sites were secured. The team also activated a mobile app to track staff access and movements on-site during the COVID-19 response levels for contact tracing needs. One of the most involved projects was ensuring our containment facilities and laboratories were managed appropriately during the lockdown, with limited staff approved to be on site, to meet the Ministry for Primary Industries' standards.





Our Summer Studentship programme provides students with real-life science experience over the three-month summer period.

## Investing in people

Our performance and reputation as a good employer is underpinned by our commitment to fostering a positive workplace culture that is characterised by three shared values.

- The creative application of our knowledge
- Achievement through leadership
- Relationships based on mutual respect and trust.

Our values capture what is important for us and provide a framework for our people-related initiatives and decision-making.

### Good employer responsibilities

We are committed to the practice of equality of opportunity, which provides for equal access, consideration and encouragement in recruitment, selection, promotion, conditions of employment and career development for both current and prospective employees.

We view our diverse workforce, comprising people from many different cultures and nationalities, as a strength that aligns well with the increasingly international nature of our research and development programmes.

### Best practice recruitment, selection and induction

We use best practice selection procedures for all appointments, with line managers being supported throughout the selection process by our HR Advisory team. All vacancies are advertised internally to provide opportunities for career development and advancement. When advertising externally we use web-based technologies to access a diverse range of communities and candidates. A comprehensive induction and orientation programme ensures all new recruits are supported to become effective contributors as early as possible.

In 2019/20 we appointed 71 people from 14 different nationalities (42 female, 29 male), including 31 from within the organisation.

### Promoting equal employment opportunities

Our EEO initiatives are directed at increasing the percentage of women at senior levels, both in science and in other areas of the Institute and increasing the opportunities for groups who are historically under-represented in our workforce including Māori, Pacifica and people with disabilities. Progress is reviewed annually through a set of workplace demographic metrics and data covering gender, ethnicity, nationality and disability collected from new recruits.

The proportion of senior women scientists including those in group leadership roles continues to increase, largely through internal promotions, and we expect that further progress will continue to be made over the next decade as significant numbers of our senior scientists retire.

Our Māori business unit Te Raranga Ahumara is focused on leading the implementation of Māori research and innovation objectives. This is supported by performance indicators for developing capability and increasing understanding within Plant & Food Research and among Māori regarding the opportunities to work more closely.



Each year, we offer scholarships for Māori and Pacifica students, such as Karangawai Paringatai-Hare, for our Summer Studentship Programme.

Our annual Summer Studentship Programme provides promising science students from across New Zealand with their first experience of working in science. In 2019, 14 of the 41 studentships were awarded to Māori and Pacifica people as part of a broader initiative for increasing participation from groups that are under-represented in the science workforce.

### Progressive conditions of employment

The Plant & Food Research General Terms & Conditions of Employment include provisions promoting equal employment opportunities, career development and employee participation in the development of the workplace. They provide a wide range of benefits including superannuation, medical insurance and generous leave provisions supporting work life balance.

Our partnership agreement with the PSA serves as an effective mechanism for involving staff in the ongoing development of a high quality work environment in line with the principles of partnership and EEO.

Additional paid parental leave, on-site child care facilities at our larger sites and flexible and part-time hours of work enable people to balance their work and family responsibilities and minimise disruption to their careers. 18% of our salaried staff work part-time, including a significant number who have reduced their hours while they care for dependents.

Career and associated remuneration structures utilise standard job evaluation methodologies and peer review to ensure equity and transparency in both pay and progression opportunities. The historic pay gap between male and female science staff is reducing, with median female pay rates now at 99% of the median pay rates for males across our eight science salary ranges. This ratio is repeated across our six salary ranges for general staff.

Staff working towards retirement have the option of progressively reducing their hours and responsibilities.

Retraining and outplacement support is available to staff affected by change in the workplace.

## Engaging our people

In October 2019 Plant & Food Research changed from biannual to continuous pulse surveying as our primary way of measuring engagement. A sample of our staff are invited to complete the survey each month (linked to their birthday). A complete cycle of surveying (12 months) will be completed by 30 September 2020. This method of surveying allows us to continually track engagement levels and see trends as they emerge, and provides the opportunity to focus attention more rapidly, rather than waiting for data from a biannual survey.

We are currently tracking our data against three benchmarks. These include the same survey completed by Plant & Food Research in a two-week period in 2018, the Gartner New Zealand membership of approximately 12 New Zealand organisations of a similar size to us, and internationally based Research and Development employees within 100 organizations in the Gartner global mid-size organisation membership.

Our continuous pulse surveying tells us that our workforce remains stable and committed to Plant & Food Research, with high intention to stay. Levels of pride remain strong, and recommending our Institute as a great place to work is now 6% higher in the period 1 October 2019 – 30 June 2020 than it was in 2018. Belief in our values is 5% more favourable than in 2018.

Overall engagement scoring is 2% ahead of both the Gartner New Zealand membership and Research and Development benchmarks, and has remained consistent with the Plant & Food Research 2018 benchmark. Trend analysis shows us that engagement scoring is strengthening over the last quarter.

## Developing potential

Our strengths-based Leadership Programme provides development opportunities for current and future leaders at all levels of the organisation.

Over the past year, 49 people have participated in the programme. Thirty-seven of these were in the Cornerstones of Leadership option, which is targeted

at people who have yet to have line management responsibilities. Twelve participated in a Team Leadership programme, which is designed to support leaders taking responsibility for leading a team or group of people for the first time.

We have continued to implement an internal mentoring programme, with 22 new mentoring relationships established over the last year. The mentoring programme has a focus on clarifying career aspiration, creating a supporting plan and enhancing support networks. The mentoring relationship is actively supported over a one-year period.

Our Performance, Planning and Review process has recently been refreshed to further emphasise development planning. All staff have work and development plans that are reviewed annually with their manager. All staff have the opportunity to be supported in studying toward qualifications that align with the Institute's requirements. Women across the organisation have the opportunity to apply for financial support through the Margaret Hogg-Stec scholarship, with up to three being awarded annually.

## A safe and healthy culture

Following recommendations from an external audit of the organisations safety culture in 2017, the Institute was encouraged to ensure our people were more actively engaged in their health and safety. To this end, nine critical risk groups are now firmly established. Participants are drawn from people that work in specific areas or circumstances, under the sponsorship of a senior leader, engaging in developing and monitoring controls in areas that pose the greatest health and safety risk for our people.

The National Health & Safety Committee, comprising staff and management representatives, is responsible for reviewing the Institute's health and safety progress, in line with continuous improvement principles. The programme includes safety and wellbeing objectives developed by the local health and safety committees drawn from staff at each of the Institute's sites.

The Institute's ongoing efforts are reflected in decreasing rates of injury, including those requiring medical treatment or time off over the last three years, and a continuing improvement in the Institute's position relative to industry benchmarks.

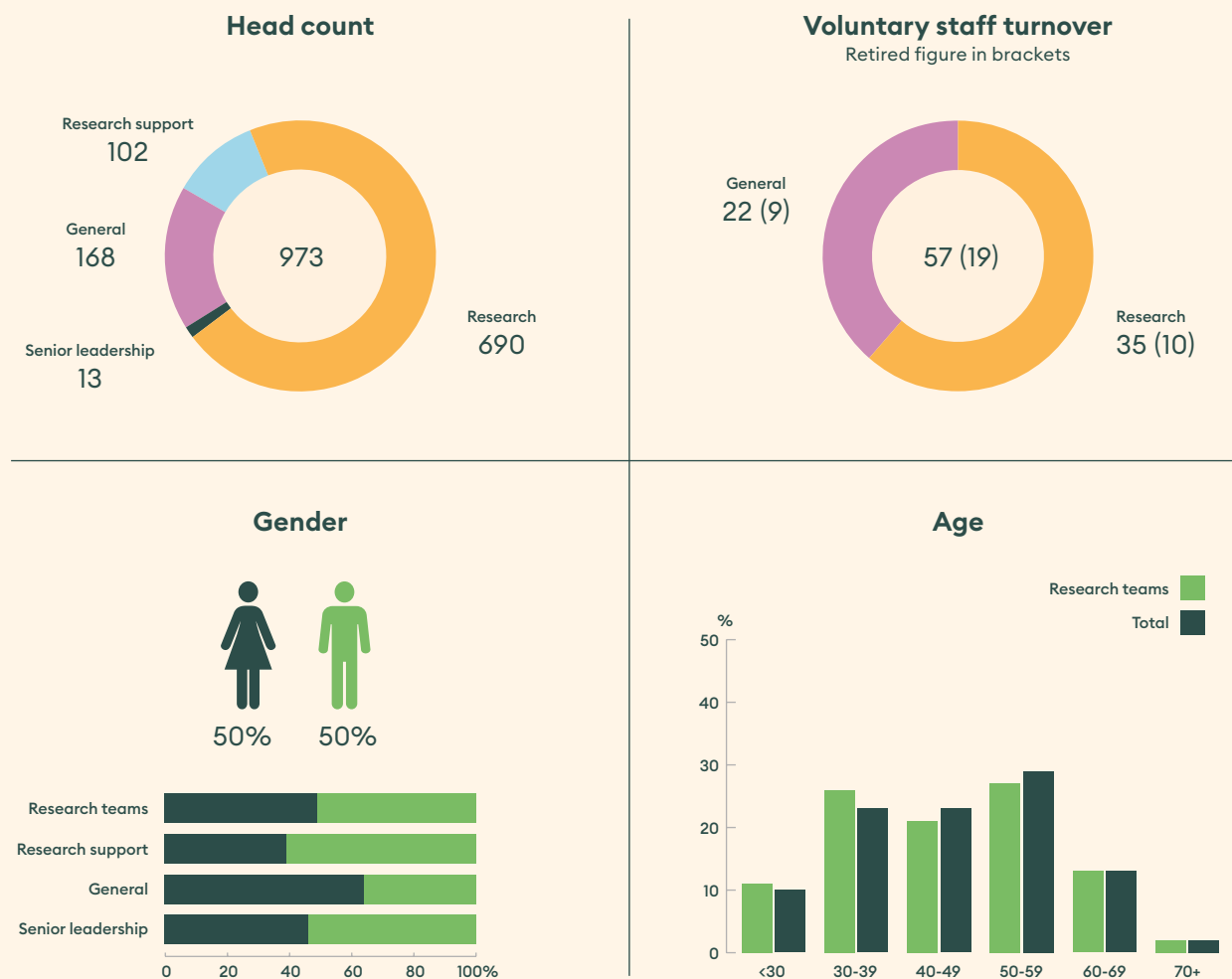
Our Code of Conduct & Ethics and Policy on Unacceptable Behaviour define those actions including harassment, bullying and unlawful discrimination that will not be tolerated and provide processes for responding to situations where unacceptable behaviour may have occurred. A network of trained contact people provides confidential support and advice on the Policy.



## National/ethnic origin of new recruits at 30 June

	2015	2016	2017	2018	2019	2020
African	1	0	1	1	0	0
Asian	11	22	24	22	22	9
Latin American	4	4	1	6	4	0
Māori	2	1	2	7	1	6
Middle Eastern	0	5	4	1	5	1
New Zealand European	26	46	53	53	47	37
Other	2	1	0	2	1	2
Other European	14	22	23	23	23	16
Pacific Peoples	1	0	1	1	0	0
Total	61	101	109	116	103	71

## New Zealand workforce profile as at 30 June 2020





We work with customers across the horticulture industry, including the viticulture sector, to ensure sustainable production of crops.





An aerial photograph of a terraced vineyard. The terraces are covered with black plastic mulch, and rows of young grapevines are planted in neat lines. White trellis structures are visible, supporting the vines. The overall scene is a lush green landscape with a structured agricultural layout.

# Our Governance



# Corporate governance

The Plant & Food Research Board, appointed by the Minister of Science & Innovation, sets the Institute's strategic direction and delegates responsibility for the management of the Institute to the Chief Executive.

## Statement of Core Purpose

The Statement of Core Purpose (SCP) outlines the clear, explicit and enduring strategic role for Plant & Food Research as determined by the New Zealand Government. The SCP outlines the Institute's roles and responsibilities and how these will benefit New Zealand, and is used by the Crown to evaluate performance on a four-year rolling basis.

Plant & Food Research's SCP can be found online at [plantandfood.co.nz/file/pfr-scp.pdf](https://plantandfood.co.nz/file/pfr-scp.pdf)

## Statement of Corporate Intent

The Statement of Corporate Intent (SCI) outlines the Institute's five-year strategy, including the nature and scope of activities and performance targets. The SCI includes plans to contribute to the outcomes described in the SCP and outlines key performance indicators to support their delivery.

Plant & Food Research's SCI 2020/21 to 2022/23 can be found online at [plantandfood.co.nz/file/SCI-2020-21.pdf](https://plantandfood.co.nz/file/SCI-2020-21.pdf)

## Legal obligations

Plant & Food Research is subject to (amongst others):

- Crown Research Institutes Act 1992
- Commerce Act 1986
- Crown Entities Act 2003
- Crown Entities Amendment Act 2013
- Health & Safety in Employment Act 1992
- Official Information Act 1982
- Public Audit Act 2001
- State Sector and Public Finance Reform Act 2012.

## Board of Directors

The Board of Directors, appointed by the Minister of Science & Innovation according to the Crown Research Institutes Act, sets the Institute's strategic direction and delegates responsibility for the management of the Institute to the Chief Executive.

The Board acts under a Charter which formalises and sets out the manner in which the Board's powers

and responsibilities will be exercised and discharged, adopting principles of good corporate governance and practices that accord with best practice and the application of laws in the jurisdictions in which the company operates. In line with best practice, the Board completes an annual Board performance evaluation.

The Board regularly reviews key policies across the Institute. "Deep-dive" reviews are also periodically undertaken, including most recently a review of the organisational risk framework and supporting risk registers.

## For the 2019/20 year

Number of meetings held: 7

Meetings held at: Nelson, Kerikeri, Auckland and via Zoom.

- Nicola Shadbolt, Chair (7)  
Appointed: 1 September 2019
- Greg Gent, Deputy Chair (1)  
Term ended: 30 September 2019
- Parmjot Bains (7)
- Colin Dawson (7)
- Andrew von Dadelzen (7)  
Term ended: 30 June 2020
- Dean Moana (4)  
Appointed: 16 March 2020
- Nadine Tunley (4)  
Appointed: 16 March 2020
- Wendy Venter (7)

(number in brackets indicates number of meetings attended during the 2019/20 year)

Profiles of the current Board of Directors can be found on page 64 or on the [plantandfood.co.nz](https://plantandfood.co.nz) website. Remuneration details for the Directors can be found on page 71.

## Schedule of major annual activities

- August – Annual Report
- October – Annual Risk Review (including Biosafety and Environmental Compliance)
- October – Insurance Renewal
- October – Strategy review and Science Advisory Panel (including review of Growing Futures Roadmaps)
- October – Annual General Meeting
- November – Full year reforecast
- December – Annual Health & Safety review
- March – Strategy review
- April/May – SCI and Business Plan.

## Committees

There are currently two standing Committees operating under the direction of the Board Chair:

### Audit & Risk Management Committee

Andrew von Dadelszen, Greg Gent, Dean Moana, Nicola Shadbolt, Wendy Venter

Number of meetings/ teleconferences in 2019/20: 4

The primary objective of the Audit & Risk Management Committee is to act as the main conduit with the company's auditors, to serve as an independent and objective party in reviewing financial information, auditing, accounting, compliance and financial reporting strategies and processes.

In the 2019/20 year, the Committee reviewed and approved the Institute's:

- Internal Audit Programme
- External Audit Programme
- Insurance Policy.

### Appointments & Remuneration Committee

Colin Dawson (Chair), Parmjot Bains, Greg Gent, Nadine Tunley

Number of meetings in 2019/20: 1

The purpose of the Appointments & Remuneration Committee is to oversee the appointment, performance review and remuneration of the Chief Executive Officer and senior executives who report directly to the CEO.

## Science Advisory Panel

The Board also receives advice from the Institute's external Science Advisory Panel.

The purpose of the Panel is to provide objective strategic advice to the Board to promote its decisions on research strategies, future science activities and development associated with achieving Plant & Food Research's Core Purpose.

Members of the Science Advisory Panel are:

- Professor Gillian Dobbie (University of Auckland)
- Dr Ernst van den Ende (Wageningen University & Research Centre, The Netherlands)
- Professor Cathie Martin (John Innes Centre, UK)
- Professor Alastair Robertson (Australia).

Profiles of the Science Advisory Panel members can be found on page 65 or on the [plantandfood.co.nz](http://plantandfood.co.nz) website.

## Managing risk effectively

Plant & Food Research has an established framework for managing risk in an effective, efficient and consistent manner, to inform strategic and business planning processes, optimise allocation of resources and allow

Plant & Food Research to effectively recognise, prioritise and respond to risks. The Risk Management Framework adopts processes consistent with those established in the ISO 31000:2009 Standard: Risk Management – Principles & Guidelines.

Plant & Food Research has a Business Continuity Plan (BCP) which acts as a framework for organisational preparedness, emergency response and recovery after disruption by a significant natural or man-made incident. The BCP focuses on the response and recovery of critical assets and operations to mitigate the potential impact of an incident to the Institute's ability to deliver on its business and strategic plan and to protect Institute staff and the wider community. The BCP also includes a framework for site-specific Emergency Response Plans.

## Code of Conduct & Ethics

Plant & Food Research's reputation is determined to a large degree by perceptions of the conduct and performance of its staff. The Code of Conduct & Ethics is intended to inform and guide the Institute's staff on the standards of conduct, decision-making and ethical behaviour that are important at Plant & Food Research.

The Code of Conduct & Ethics includes guidelines on:

- Acting with honesty and integrity
- Consistently demonstrating professionalism
- Respecting and acting within the law
- Maintaining confidentiality
- Avoiding conflicts of interest
- Being socially responsible.

Plant & Food Research operates its scientific research activities in accordance with national legislation, including ethics approvals for all human and animal studies (coordinated by the Institute's Biosafety Advisory Committee).



# Board of Directors



**Nicola Shadbolt, Chair**  
(Appointed 1 September 2019)

Nicola Shadbolt has worked in government, agribusiness, consultancy and academia and is a Professor of Farm and Agribusiness Management at Massey University. She serves on the Executive Committee and the Board of the International Food & Agribusiness Association and is a Climate Change Commissioner. She was an elected member of the Fonterra Board for nine years, was Chair of the Risk Committee and member of the Audit & Finance Committee, and served on the Board of the Manager of the Fonterra Shareholders' Fund. She is managing director with her husband of four farming and forestry equity partnerships based in the Manawatu. Nicola was made an officer of the New Zealand Order of Merit for services to agribusiness in 2018.



**Greg Gent, Acting Chair**  
(Acting Chair from 1 July 2019; resigned 30 September 2019)

Greg Gent is a senior commercial director with dairy farming interests in Northland. He has strong governance expertise having spent a decade on the Fonterra Board, and holding other directorships in the dairy, insurance and financial services.

## For the 2019/20 year

Number of meetings: 7

Meetings held at: Nelson, Kerikeri, Auckland and via Zoom.



**Colin Dawson, Deputy Chair**  
(Appointed Deputy Chair 1 July 2020)

Formerly CEO of Otago Innovation, Colin has held directorships with a number of biotechnology and medical companies including NZX-listed companies BLIS Technologies and Pacific Edge. He currently chairs the Boards of Tiro Lifesciences, Upstream Medical Technologies and sits on the MARS Bioimaging Board.



**Parmjot Bains**

Parmjot Bains has strategy and science commercialisation experience in New Zealand and globally. She has held roles in strategy with McKinsey and Company, biotechnology as the former CEO of Neuren Pharmaceuticals, in agribusiness with Fonterra and more recently in the pharmaceutical industry. She trained as a medical doctor in New Zealand and has a Masters degree from the University of Cambridge, UK.



**Nadine Tunley**  
(Appointed 16 March 2020)

Nadine Tunley is currently the CEO of Oha Honey LP. In 2006 she founded her own business, Energie Produce Ltd, which was sold to Freshmax NZ Ltd in 2013. She is currently a director of Scales Corporation Ltd and Te Pitau Ltd, and was a member of the Primary Sector Council. She was previously Chair and director of NZ Apples & Pears Inc (formerly Pipfruit NZ Inc), and a director of Quality NZ Ltd, NZ Food Basket and BLinc Ltd. She was also Associate Director of Ngāi Tahu Seafood and Ngāi Tahu Holdings.



**Dean Moana**  
(Appointed 16 March 2020)

Dean Moana is a director of the New Zealand Food & Beverage Group Ltd and Ngāti Porou Holding Company Ltd, and a trustee of Te Runanganui o Ngāti Porou and Whangaokena ki Onepoto Kaitiaki Takutai Trust. He was previously Managing Director and Chair of Prepack Ltd, CEO of Prepared Foods Ltd and General Manager of Pacific Marine Farms Ltd.



**Andrew von Dadelszen**  
(Resigned 30 June 2020)

Andrew von Dadelszen has held diverse governance and leadership roles, including central and local government and corporate governance, finance and investment advice, large-scale farming, service industries and the not-for-profit sector. He has previously been a member of the Board of the Environmental Protection Authority – a Crown Agency.



**Wendy Venter**

Wendy Venter is a former partner at EY, deputy chief executive at the Ministry of Social Development and assistant auditor-general. Wendy chairs the Stats NZ Risk and Assurance Committee and sits on its Governance Advisory Board. She is a trustee of Wellington's Nikau Foundation and chairs the Parliamentary Counsel Office's Audit and Risk Committee.

# Science Advisory Panel

Our Science Advisory Panel is an important part of ensuring our science continues to have a focus on high quality, and is open to new international developments and ideas. The panel provides our Board with their insights on Plant & Food Research's science quality, strategy, and involvement in and uptake of new international developments.

## Professor Gillian Dobbie

PhD  
Department of Computer Science  
University of Auckland, New Zealand



Gillian Dobbie is a Professor of Computer Science at the University of Auckland, and the Director of the Auckland ICT Graduate School. She is science lead on the Precision Driven Health joint research partnership and chairs the Science Advisory Group for the PlantTech Research Institute. Her main research interests are big data, stream data mining, machine learning, data management, and software engineering, and she has published more than 130 international peer reviewed papers. She convenes the Mathematical and Information Sciences panel for the Marsden Fund of the New Zealand Royal Society.

## Dr Ernst van den Ende

PhD  
Managing Director,  
Plant Sciences Group (PSG),  
Wageningen University, The Netherlands



Dr Ernst van den Ende has an extensive international background in agricultural science, particularly in management of urban green areas, plant diseases, plant pathogenic fungi and plant and crop protection. He has responsibility for the Plant Sciences Group at Wageningen, which conducts plant-related research and teaching programmes from the molecular through to the population level. Professor van den Ende has particular experience in the Wageningen University/PRI structure, which provides a relevant model for University/Research Institute collaboration and interaction. This is seen in the cluster of the Plant Sciences Group (PSG) which embodies applied research (Wageningen Plant Research) and fundamental research and education (Wageningen University).

Dr van den Ende brings to the panel particular understanding of research collaboration and development of interacting research structures. He also provides an important link with European organisations of interest to Plant & Food Research and an international perspective on sustainable plant production.

## Professor Cathie Martin

PhD FRS  
Group Leader, Department of  
Cell and Developmental Biology,  
John Innes Centre, UK



Professor Cathie Martin is an international leader in plant science, focusing on cellular specialisation and differentiation, particularly in relation to gene function. She has an extensive background in University and Research Institute research processes and programmes. Professor Martin, in addition to her position at the John Innes Centre, has a background in University visiting professorships and University relations. As former Editor-in-Chief of the world's leading plant science journal, *Plant Cell*, she has particular experience in identifying current and future international trends in plant science, and in evaluating science quality. Currently she is an Associate Editor for *Plant Physiology*. Her own research interests in cellular and metabolic regulation and functionality, particularly in the areas of nutritional properties of plants, are of particular importance to Plant & Food Research's research interests.

Professor Martin brings to the panel particular experience in leading international plant science, science evaluation, and an in-depth understanding of current and future trends and developments in both research technologies and science disciplines. She also strengthens Plant & Food Research's links with UK and European research organisations of interest.

## Professor Alastair Robertson

PhD FFSC CChem FIFST  
Group Executive Food, Health & Life  
Science Industries,  
CSIRO, Australia

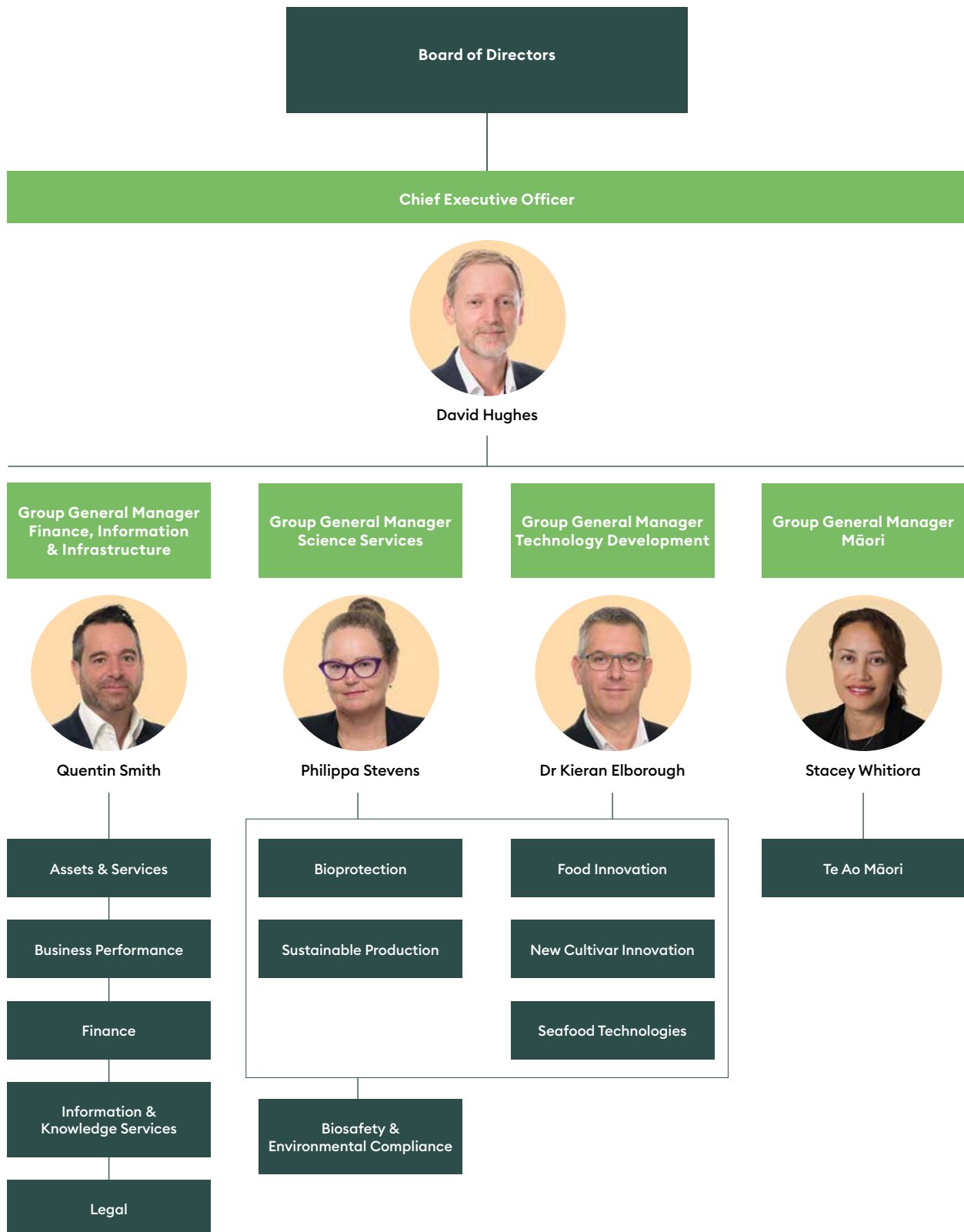


Professor Alastair Robertson is a leading international expert in food science. His career has involved research positions in both industry (in the UK) and in research institutes. These positions have included Director of the UK's Institute of Food Research (IFR), CEO of Food Science Australia, a joint venture between CSIRO and the Victorian Government, and CSIRO Executive Director (and subsequently Deputy Chief Executive), Science Strategy and Investment. He led the consolidation of the Australian National Research Flagships and oversaw the integration of the CSIRO Science Investment Process and Performance Management Framework as strong governance mechanisms to underpin CSIRO's delivery of impact from mission directed research. Professor Robertson currently holds an Honorary Professorship at the University of East Anglia (UK) and is a Research Professor at the University of Tasmania.

Professor Robertson brings to the panel wide international expertise in food science, and in developing and managing research structures based on science excellence and delivery. He also helps to consolidate Plant & Food Research's developing interaction with key Australian research centres and science initiatives.



# Organisational chart



Group General Manager  
People & Culture



Kath Clarke

Health & Safety

Human Resources

Organisational Development

Payroll

Group General Manager  
Marketing & Innovation



Dr Gavin Ross

Business Development

Customer & Brand

Impact Evaluation

Intellectual Property

International Development

Plant Varieties

Chief Scientist



Professor Richard Newcomb

Our Senior Leadership Team oversees all aspects of Plant & Food Research and is accountable to the Board of Directors via the CEO. Collectively the team ensure the delivery of all research activities, finance and legal requirements, assets and services, human resources, commercial functions and science quality.



We work internationally, including with  
raspberry growers in the Pacific North West,  
to develop new cultivars and growing systems  
tailored for local conditions.



A photograph of a dirt road winding through a vineyard at sunset. The sky is a mix of orange, pink, and blue. On the left side of the road, there are several white wine crates stacked. The vines are lush and green, and a line of trees is visible in the distance.

# Financial Statements



Our research develops new crops and growing systems to future-proof Aotearoa New Zealand's plant-based food industry.



## Financial performance

Plant & Food Research experienced a more challenging financial year ended 30 June 2020. Total revenue was largely flat with the prior year at \$169 million after recognition of COVID-19 recovery funding provided by the Government. Commercial research revenues were softer than expected with the result compounded by the disruption caused by the COVID-19 pandemic. More positively, royalty revenues continued to grow strongly, finishing the year at \$51.6 million (vs \$44.6 million in the prior year).

Expenditure was well maintained in light of the challenges to revenue capture. This, coupled with recognition of a significant gain on sale of assets (\$2.9 million), helped deliver a profit before tax of \$10.0 million.

Plant & Food Research continues to benefit from a strong balance sheet, with year-end net assets of \$124.7 million. Borrowings at year end were significantly lower than budget and the prior year as a direct result of actions taken to strengthen financial resilience in response to COVID-19. Given the elevated risk profile associated with the current operating environment we expect to continue to maintain more conservative borrowing settings over the short-medium term.

We have continued to make good progress with our investment programme to replace end-of-life buildings and equipment. Unfortunately the impact of COVID-19 resulted in many capital projects been delayed or reprioritised, especially during the last quarter of the financial year. Subject to financial performance over the coming year meeting budgeted expectations, we would hope to restart many of these delayed capital projects. This will allow us to continue to make meaningful progress as we deliver against our long-term capital plan.

## DIRECTORS' REPORT

THE DIRECTORS ARE PLEASED TO PRESENT THE FINANCIAL STATEMENTS OF THE NEW ZEALAND INSTITUTE FOR PLANT & FOOD RESEARCH LIMITED FOR THE YEAR ENDED 30 JUNE 2020.

	2020 Actual \$000	2020 Budget \$000	2019 Actual \$000
<b>RESULTS OF GROUP OPERATIONS</b>			
Revenue	168,956	179,586	168,879
Profit before taxation	9,966	8,719	8,309
Less taxation expense	118	1,765	2,443
Profit attributable to Owners	9,848	6,954	5,866

### PRINCIPAL ACTIVITY OF THE GROUP

The Group's principal activity is to provide scientific research that benefits New Zealand, within the horticulture, arable, seafood and processed food industries; in accordance with the purpose and principles for the operation of Crown Research Institutes as set out in sections 4 and 5 of the Crown Research Institutes Act 1992. The Company is a company limited by shares and incorporated in accordance with the Companies Act 1993.

### REVIEW OF OPERATIONS

A review of the operations accompany this report on page 13.

### SHARE DEALINGS

The Directors have not, and are unable to, trade in shares of the Company as all shares of the Company are held by the Shareholding Ministers on behalf of the Crown. Accordingly the Board has received no notices of dealings in relevant interests in shares of the Company.

### DIRECTORS' INSURANCE

Directors' and Officers' liability insurance was effected for the Directors and certain employees of the Company. The insurance is in respect of certain specified liabilities, not including criminal liability, incurred by a Director or employee in respect of any act or omission in his or her capacity as a Director or employee of the Company. The Company has indemnified Directors and certain employees of the Company for costs and proceedings and for liabilities incurred by the Director or employee in respect of any act or omission in his or her capacity as a Director or employee of the Company. The indemnity for liabilities incurred does not extend to criminal liability or liability for breach of a fiduciary duty owed to the Company.

### AUDITORS

Troy Florence, with the assistance of PricewaterhouseCoopers, is the appointed auditor on behalf of the Auditor-General. The Auditor-General is the statutory auditor pursuant to section 14 of the Public Audit Act 2001 and section 21 of the Crown Research Institutes Act 1992.

### SIGNIFICANT CHANGES

On 11 March 2020 the World Health Organisation declared a global pandemic as a result of the COVID-19 outbreak.

COVID-19 impacted commercial science research revenue in 2020 and may continue to impact in 2021.

The Directors consider the Group's long term business remains strong.

### DIRECTORS' REMUNERATION

During the year the following remuneration was paid or payable to Directors in accordance with the schedule approved by the Shareholding Ministers:

	Group \$	
N Shadbolt	59,733	(commenced 1 September 2019)
W Venter	37,187	
C Dawson	36,521	
P Bains	36,188	
A von Dadelszen	36,188	(ceased 30 June 2020)
G Gent	15,463	(ceased 30 September 2019)
D Moana	10,500	(commenced 16 March 2020)
N Tunley	10,500	(commenced 16 March 2020)

### REMUNERATION OF EMPLOYEES

The number of employees and ex-employees whose total remuneration, including benefits and severance payments, on an annualised basis, was in excess of \$100,000 in \$10,000 bands, is:

Remuneration bands in \$000	Number of employees	Remuneration bands in \$000	Number of employees
100 - 109	59	200 - 209	1
110 - 119	48	220 - 229	2
120 - 129	40	230 - 239	3
130 - 139	38	250 - 259	3
140 - 149	22	290 - 299	2
150 - 159	19	300 - 309	1
160 - 169	12	370 - 379	1
170 - 179	6	380 - 389	1
180 - 189	4	420 - 429	2
190 - 199	4	650 - 659*	1

\* Includes the Chief Executive's remuneration

For and on behalf of the Board of Directors:



Nicola Shadbolt, Chair  
27 August 2020



# INDEPENDENT AUDITORS' REPORT

TO THE READERS OF THE NEW ZEALAND INSTITUTE  
FOR PLANT & FOOD RESEARCH LIMITED'S FINANCIAL  
STATEMENTS FOR THE YEAR ENDED 30 JUNE 2020

The Auditor-General is the auditor of The New Zealand Institute for Plant & Food Research Limited (the Group). The Auditor-General has appointed me, Troy Florence, using the staff and resources of PricewaterhouseCoopers, to carry out the audit of the financial statements of the Group, on his behalf.

## OPINION

We have audited:

- the financial statements of the Group on pages 74 to 100, that comprise the balance sheet as at 30 June 2020, the statement of comprehensive income, statement of changes in equity and cash flow statement for the year ended on that date and the notes to the financial statements that include accounting policies and other explanatory information.

In our opinion,

- the financial statements of the Group:
- present fairly, in all material respects:
  - its financial position as at 30 June 2020; and
  - its financial performance and cash flows for the year then ended; and
- comply with generally accepted accounting practice in New Zealand in accordance with New Zealand Equivalents to International Financial Reporting Standards (NZ IFRS) and International Financial Reporting Standards (IFRS).

Our audit was completed on 27 August 2020. This is the date at which our opinion is expressed.

The basis for our opinion is explained below. In addition, we outline the responsibilities of the Board of Directors and our responsibilities relating to the financial statements, we comment on other information, and we explain our independence.

## BASIS FOR OUR OPINION

We carried out our audit in accordance with the Auditor-General's Auditing Standards, which incorporate the Professional and Ethical Standards and the International Standards on Auditing (New Zealand). Our responsibilities under those standards are further described in the Responsibilities of the auditor section of our report.

We have fulfilled our responsibilities in accordance with the Auditor-General's Auditing Standards.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

## EMPHASIS OF MATTER – COVID-19

Without modifying our opinion, we draw attention to notes 2(B), 7, 9 and 11 to the financial statements, which explain the impact of the COVID-19 pandemic on the Group. Primarily the Group's commercial science research was negatively impacted. The Government provided funding under the COVID-19 Response and Recovery Fund to replace the revenue forecast to be impacted by COVID-19. Additionally there were tax changes in response to the pandemic, which reinstated tax depreciation on buildings resulting in a deferred tax asset being recognised.

## RESPONSIBILITIES OF THE BOARD OF DIRECTORS FOR THE FINANCIAL STATEMENTS

The Board of Directors is responsible on behalf of the Group for preparing financial statements that are fairly presented and that comply with generally accepted accounting practice in New Zealand. The Board of Directors is responsible for such internal control as it determines is necessary to enable it to prepare financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors is responsible on behalf of the Group for assessing the Group's ability to continue as a going concern. The Board of Directors is also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting, unless the Board of Directors has to cease operations, or has no realistic alternative but to do so.

The Board of Directors' responsibilities arise from the Crown Research Institutes Act 1992.

## RESPONSIBILITIES OF THE AUDITOR FOR THE AUDIT OF THE FINANCIAL STATEMENTS

Our objectives are to obtain reasonable assurance about whether the financial statements, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but it is not a guarantee that an audit carried out in accordance with the Auditor-General's Auditing Standards will always detect a material misstatement when it exists. Misstatements are differences or omissions of amounts or disclosures and can arise from fraud or error. Misstatements are considered material if, individually or in the aggregate, they could reasonably be expected to influence the decisions of readers taken on the basis of these financial statements.

For the budget information reported in the financial statements, our procedures were limited to checking that the information agreed to the Group's statement of corporate intent.

We did not evaluate the security and controls over the electronic publication of the financial statements.

As part of an audit in accordance with the Auditor-General's Auditing Standards, we exercise professional judgement and maintain professional scepticism throughout the audit. Also:

- We identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- We obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- We evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Board of Directors.
- We conclude on the appropriateness of the use of the going concern basis of accounting by the Board of Directors and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- We evaluate the overall presentation, structure and content of the financial statements, including the disclosures and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- We obtain sufficient appropriate audit evidence regarding the financial statements of the entities or business activities within the Group to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

We communicate with the Board of Directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any

significant deficiencies in internal control that we identify during our audit.

Our responsibilities arise from the Public Audit Act 2001.

#### OTHER INFORMATION

The Board of Directors is responsible for the other information. The other information comprises the information included on pages 1 to 71 and pages 101 to 102 but does not include the financial statements, and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of audit opinion or assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information. In doing so, we consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on our work, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

#### INDEPENDENCE

We are independent of the Group in accordance with the independence requirements of the Auditor-General's Auditing Standards, which incorporate the independence requirements of Professional and Ethical Standard 1: International Code of Ethics for Assurance Practitioners issued by the New Zealand Auditing and Assurance Standards Board.

Other than the audit, we have no relationship with, or interests in, the Group.



Troy Florence

PricewaterhouseCoopers  
On behalf of the Auditor-General  
Auckland, New Zealand





# STATEMENT OF COMPREHENSIVE INCOME

for the year ended 30 June 2020

		GROUP		
		2020	2020	2019
		Actual	Budget	Actual
			Unaudited	
Note		\$000	\$000	\$000
<b>PROFIT AND LOSS</b>				
<b>Revenue</b>				
	Strategic funding	43,081	43,103	43,103
(2B)	COVID-19 recovery funding	8,780	-	-
	Crown-funded research contracts	13,138	16,830	15,888
(4)	Commercial science research contracts	102,026	118,270	107,589
	Other income	1,931	1,383	2,299
		168,956	179,586	168,879
(4a)	<b>Less operating costs</b>			
	Personnel costs	98,845	98,069	93,761
(5)	Depreciation expense	13,303	12,023	11,890
(5)	Amortisation expense	1,196	1,270	1,078
	(Gain) on sale of assets	(2,917)	(2,550)	(487)
(6)	Other operating expenses	47,119	59,340	53,549
		157,546	168,152	159,791
	<b>Profit before interest &amp; taxation</b>	11,410	11,434	9,088
	Finance income	117	39	146
	Finance costs	(1,340)	(714)	(497)
(15)	Share of loss of associates and joint ventures	(221)	(2,040)	(428)
	<b>Profit before taxation</b>	9,966	8,719	8,309
(7)	Taxation expense	118	1,765	2,443
	<b>Profit after taxation attributable to owners</b>	9,848	6,954	5,866
<b>OTHER COMPREHENSIVE INCOME</b>				
Items that may be reclassified subsequently to profit or loss:				
	Currency translation differences	39	-	(18)
(18)	Cash flow hedges	(2)	-	83
	Other comprehensive income	37	-	65
	<b>Total comprehensive income attributable to owners</b>	9,885	6,954	5,931

The accompanying notes form part of these financial statements.

# STATEMENT OF CHANGES IN EQUITY

for the year ended 30 June 2020

## ATTRIBUTABLE TO OWNERS OF THE GROUP

	Note	Share capital \$000	Retained earnings \$000	Foreign currency translation \$000	Cash flow hedge \$000	Total Equity \$000
<b>Balance as at 01 July 2018</b>		17,436	91,519	(20)	(91)	108,844
<b>Changes in equity for</b>						
Profit for the year			5,866			5,866
Other comprehensive income, net of taxes						
Currency translation				(18)		(18)
Revaluation of cash flow hedges	(18)				83	83
<b>Balance as at 30 June 2019</b>		17,436	97,385	(38)	(8)	114,775
<b>Changes in equity for</b>						
Profit for the year			9,848			9,848
Other comprehensive income, net of taxes						
Currency translation				39		39
Revaluation of cash flow hedges	(18)				(2)	(2)
<b>Balance as at 30 June 2020</b>		17,436	107,233	1	(10)	124,660

The accompanying notes form part of these financial statements.



# BALANCE SHEET

as at 30 June 2020

			GROUP	
		2020	2020	2019
		Actual	Budget	Actual
			Unaudited	Restated
Note		\$000	\$000	\$000
<b>Current assets</b>				
	(8)	2,888	2,733	2,456
	(9)	38,170	41,344	42,619
		-	406	969
		367	206	243
		41,425	44,689	46,287
<b>Total current assets</b>				
<b>Current liabilities</b>				
	(10)	21,650	22,443	21,497
	(11)	11,917	11,431	10,635
	(8)	4,200	21,650	14,400
	(13)	804	-	-
		2,575	234	661
		41,146	55,758	47,193
<b>Total current liabilities</b>				
<b>Working capital</b>				
		279	(11,069)	(906)
<b>Non-current assets</b>				
	(12)	116,098	125,854	113,950
	(13)	16,093	-	-
	(14)	3,467	3,745	1,550
	(15)	2,589	2,532	1,748
		49	50	49
		286	-	-
	(16)	3,289	1,059	59
		141,871	133,240	117,356
<b>Total non-current assets</b>				
<b>Non-current liabilities</b>				
	(13)	15,615	-	-
	(11)	1,875	1,659	1,675
		17,490	1,659	1,675
<b>Total non-current liabilities</b>				
<b>NET ASSETS</b>				
		124,660	120,512	114,775
<b>Represented by:</b>				
<b>Equity</b>				
	(17)	17,436	17,436	17,436
		107,233	103,102	97,385
		1	(26)	(38)
	(18)	(10)	-	(8)
<b>TOTAL SHAREHOLDERS EQUITY</b>				
		124,660	120,512	114,775

For and on behalf of the Board of Directors:



Nicola Shadbolt, Chair  
27 August 2020



Wendy Venter, Director  
27 August 2020

The accompanying notes form part of these financial statements.

# CASH FLOW STATEMENT

for the year ended 30 June 2020

		GROUP	
	2020	2020	2019
	Actual	Budget	Actual
		Unaudited	
Note	\$000	\$000	\$000
<b>Cash flows from/(applied to) operating activities</b>			
Receipts from customers	173,864	179,701	165,606
Interest and dividends received	117	39	227
Payments to employees and suppliers	(145,093)	(157,348)	(146,624)
Interest paid	(1,245)	(714)	(426)
Tax paid	(774)	(1,647)	(2,888)
<b>Net cash flows from operating activities</b>	(20) 26,869	20,031	15,895
<b>Cash flows from/(applied to) investing activities</b>			
Sale of property, plant and equipment	3,974	3,100	675
Purchase of property, plant and equipment	(16,557)	(24,130)	(15,267)
Purchase of intangible assets	(1,840)	(1,680)	(539)
Purchase of investments	(1,051)	(3,100)	(1,325)
<b>Net cash flows (applied to) investing activities</b>	(15,474)	(25,810)	(16,456)
<b>Cash flows from/(applied to) financing activities</b>			
Proceeds from borrowings	-	5,750	1,050
Repayment of borrowings	(10,200)	-	-
Repayment of leases	(778)	-	-
Repayment of mortgage	-	-	(168)
<b>Net cash flows from financing activities</b>	(10,978)	5,750	882
<b>Net cash flow</b>	417	(29)	321
Effect of foreign currency translation adjustment	15	9	(8)
Opening cash and cash equivalents	2,456	2,753	2,143
<b>Closing cash and cash equivalents</b>	(8) 2,888	2,733	2,456

The accompanying notes form part of these financial statements.

# NOTES TO THE FINANCIAL STATEMENTS

for the year ended 30 June 2020

## 1. REPORTING ENTITIES

The New Zealand Institute for Plant & Food Research Limited (the “Company” or “Plant & Food Research”) and its subsidiaries (the “Group”) is a Crown Research Institute governed by the Crown Research Institute Act 1992 and is a limited liability company incorporated and domiciled in New Zealand. The whole of the share capital is held by Ministers of the Crown on behalf of the New Zealand Government. The Company’s registered office is 120 Mt Albert Road, Sandringham, Auckland 1025.

The Group is primarily involved in research services.

The Group is designated as a profit-oriented entity for financial reporting purposes.

These financial statements have been approved for issue by the Board of Directors on 27 August 2020.

## 2. BASIS OF PREPARATION

The financial statements are presented in New Zealand dollars (NZD), which is the Company’s functional and presentation currency. All financial information presented in New Zealand dollars has been rounded to the nearest thousand dollars (\$000).

The financial statements have been prepared under the historical cost convention, as modified by the revaluation of certain financial assets and financial liabilities (including derivative instruments) at fair value.

### (A) Statement of Compliance

These financial statements have been prepared in accordance with the requirements of the Crown Research Institutes Act 1992, the Public Finance Act 1989, the Companies Act 1993 and the Financial Reporting Act 2013.

The financial statements have also been prepared in accordance with New Zealand generally accepted accounting practice (NZ GAAP). They comply with New Zealand Equivalents to International Financial Reporting Standards (NZ IFRS), and other Financial Reporting Standards, as appropriate for profit-oriented entities. They comply with International Financial Reporting Standards (IFRS).

The Group is a Tier 1 entity.

### (B) Use of Estimates

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses. Although these estimates are based on management’s knowledge of current events and actions that may be undertaken in the future, actual results may ultimately differ from estimates. It also requires management to exercise its judgement in the process of applying the Group’s accounting policies.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to estimates are recognised in the period in which the estimate is revised and in any future periods affected. Use of estimates and assumptions is disclosed further in note 3(V).

### COVID-19 Pandemic

On 11 March 2020 the World Health Organisation declared a global pandemic as a result of the COVID-19 outbreak. Following this the New Zealand Government imposed significant restrictions around travel. On 25 March 2020 the New Zealand Government raised its alert level to Level 4, a full nationwide lockdown of non-essential services, for a period of nearly 5 weeks.

As a result of lockdown, and on-going restrictions on international travel, our commercial science research was negatively impacted in the year ended June 2020, refer Note 4. The Group was able to resume limited science operations during Alert Level 3 and resumed the majority of operations under Alert Level 2, under managed COVID-safe conditions. The Government provided funding under the COVID-19 Response and Recovery Fund of \$8.8M to replace the revenue forecast to be impacted by COVID-19, refer Note 3 (B). There is no other material impact on the financial statements.

Depending on the duration of the COVID-19 crisis and resulting travel restrictions, the Group may continue to experience an impact on commercial science research for the year ending June 2021, particularly those that require overseas travel. Continuing Government COVID-19 funding is expected to reduce the impact of any potential reduction in commercial revenue.

### (C) New and Amended Standards and Interpretations Adopted by the Group

The following new standards and amendments to standards became effective in the current period financial statements:

#### NZ IFRS 16 Leases

Effective from 1 January 2019 NZ IFRS 16 replaced the current guidance in NZ IAS 17. NZ IFRS 16 requires a lessee to recognise a lease liability reflecting future lease payments and a ‘right-of-use asset’ for virtually all lease contracts.

The Group adopted NZ IFRS 16 from 1 July 2019 using the simplified approach method. Comparatives are not restated and there is no adjustment to opening retained earnings at 1 July 2019.

On adoption of NZ IFRS 16, the Group recognised lease liabilities in relation to leases which had previously been classified as ‘operating leases’ under the principles of IAS 17 Leases. These liabilities were measured at the present value of the remaining lease payments, discounted using our incremental borrowing rate as of 1 July 2019. The weighted average incremental borrowing rate applied to lease liabilities on 1 July 2019 was 5.1%.



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

In applying NZ IFRS 16 for the first time, the Group has used the following practical expedients permitted by the standard:

- accounting for operating leases with a remaining lease term of less than 12 months as at 1 July 2019 as short-term leases; and
- using hindsight in determining the lease term where the contract contains options to extend or terminate the lease.

The Group has also elected not to reassess whether a contract is, or contains a lease at the date of initial application. Instead, for contracts entered into before the transition date the Group relied on its assessment made applying IAS 17.

### (D) Standards and Interpretations Issued and not yet Adopted

There are new standards and amendments to standards that have been issued but are not yet effective and have not been early adopted by the Group. These standards are not expected to have a material impact on the Group in the current or future reporting periods.

## 3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accounting policies set out below have been applied consistently to all periods presented in these financial statements.

### (A) Basis of Consolidation

#### (i) Subsidiaries

The consolidated financial statements of the Group include the parent entity, Plant & Food Research, and its controlled entities. The Group controls an entity when the Group is exposed to, or has right to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. This power exists where the Group controls the majority voting power on the governing body or where such policies have been irreversibly predetermined by the Group or where the determination of such policies is unable to materially impact upon the level of potential ownership benefits that arise from the activities of the subsidiary. The financial statements of subsidiaries are included in the consolidated financial statements from the date which the Group obtains control and until such time as the Group ceases to control the entity.

The Group measures the cost of a business combination as the aggregate of fair values, at the date of exchange, of assets given, liabilities incurred or assumed, in exchange for control of the subsidiary plus any costs directly attributable to the business combination.

Any excess of the cost of the business combination over the Group's interest in the net fair value of the identifiable assets, liabilities and contingent liabilities is recognised as goodwill. If the Group's interest in the net fair value of the identifiable assets, liabilities and contingent liabilities recognised exceeds the cost of the business combination, the difference will be recognised immediately in the Statement of Comprehensive Income.

The purchase method of accounting is used to prepare the consolidated financial statements of the Group. In preparing the consolidated financial statements, the effects of all transactions, balances and unrealised gains and losses on transactions between entities in the Group have been eliminated. The Group's investment in its subsidiaries are initially carried at cost in the Parent's financial statements subject to any write down arising from an annual impairment review.

#### (ii) Associates

Associates are those entities over which the Group has significant influence, but not control, of the financial and operating policies. Investments in associate companies have been accounted for using the equity method of accounting and are initially recognised at cost and the carrying amount is increased or decreased to recognise the Group's share of the surplus or deficit of the associate after the date of acquisition. The Group's share of the surplus or deficit of the associate is recognised in the Group's Statement of Comprehensive Income. Distributions received from an associate reduce the carrying amount of the investment.

If the Group's share of deficits of an associate equals or exceeds its interest in the associate, the Group discontinues recognising its share of further deficits. After the Group's interest is reduced to zero, additional deficits are provided for, and a liability is recognised, only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate. If the associate subsequently reports surpluses, the Group will resume recognising its share of those surpluses only after its share of the surpluses equals the share of the deficits not recognised.

The Group's share in the associate's surplus or deficits resulting from unrealised gains on transactions between the Group and its associates is eliminated.

### (B) Revenue

Revenue is recognised at the fair value of consideration received or receivable to the extent that it is probable, that economic benefits will flow to the Group. Revenue is shown net of GST, returns and discounts and after eliminating sales within the Group. The following specific recognition criteria must be met before revenue is recognised:

#### (i) Government grants

##### *Strategic funding*

Strategic funding from the Crown, was established 1 July 2011 and is recognised as a Government grant in accordance with NZ IAS 20. Government grants are assistance provided by the Government in the form of transfers of resources to the Group in return for past or future compliance with certain conditions relating to the operating activities of the Group.

The primary condition is that the Group will deliver science research as specified in the strategic funding contract.

Strategic funding is recognised in the Statement of Comprehensive Income on a systematic basis in the year it is received.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### *COVID-19 funding*

The Government provided funding to the Group under the COVID-19 Response and Recovery Fund to replace revenue forecast to be impacted by COVID-19. This funding is recognised as a Government grant in full in the current year as this was a grant to provide financial support. Government grants are assistance provided by the Government in the form of transfers of resources to the Group in return for past or future compliance with certain conditions relating to the operating activities of the Group.

The primary condition is that the Group will maintain its national science capability and provision of services as specified in the funding contract.

COVID-19 funding is recognised in the Statement of Comprehensive Income in the year it is received.

### (ii) Crown-funded research contracts

Crown-funded research contracts have one performance obligation and therefore the full transaction price is allocated to that one performance obligation. Crown-funded revenue is recognised over time using the input method. The input method is based on the Company's efforts to satisfy the performance obligation with revenue recognised by reference to the stage of completion of the performance obligation, assessed on the basis of the actual service provided as a proportion of the total services to be provided.

### (iii) Commercial science research contracts

#### *Sale of goods*

Revenue from the sale of goods is recognised at the point in time when the significant risks and rewards of ownership of the goods have passed to the buyer and the amount of revenue can be reliably measured. Risks and rewards are considered passed to the buyer at the time of delivery of the goods to the customer.

#### *Sale of research services*

Research services are provided on a fixed-price contract, with contract terms generally ranging from less than a year to five years.

Commercial research contracts have one performance obligation and therefore the full transaction price is allocated to that one performance obligation. Commercial science revenue is recognised over time using the input method. The input method is based on the Company's efforts to satisfy the performance obligation with revenue recognised by reference to the stage of completion of the performance obligation, assessed on the basis of the actual service provided as a proportion of the total services to be provided.

If circumstances arise that may change the extent of the progress toward completion, the estimates are revised. These revisions may result in increases or decreases in estimated revenues or costs and are reflected in income in the period in which the circumstances that give rise to the revision become known by management.

### *Royalties*

Royalty revenue is recognised when the performance obligation to which the sales-based royalty has been allocated has been satisfied.

### (iv) Other income

#### *Rental income*

Lease receipts under an operating lease are recognised as revenue on a straight-line basis over the lease term.

### (v) Interest revenue

Interest revenue is recognised on a time-proportion basis using the effective interest method.

## **(C) Foreign Currency Translation**

Foreign currency transactions are translated into New Zealand dollars using the exchange rates prevailing at the dates of the transactions, except when forward currency contracts have been taken out to cover short-term forward currency commitments. Where short-term forward currency contracts have been taken out, the transaction is translated at the rate contained in the contract. Foreign currency denominated monetary assets and liabilities are translated at the exchange rate prevailing at the period end. Foreign exchange gains or losses resulting from the settlement of such transactions and from the translation at balance date of foreign denominated monetary assets and liabilities are recognised in the Statement of Comprehensive Income, except when deferred in equity as qualifying cash flow hedges.

The results and balance sheets of all foreign operations that have a functional currency different from New Zealand dollars are translated into the presentation currency as follows:

The assets and liabilities of foreign controlled entities are translated by applying the rate ruling at balance date and revenue and expense items are translated at the average rate calculated for the period. The exchange differences arising on the re translation are taken directly to equity in the foreign currency translation reserve.

On consolidation, exchange differences arising from the translation of the net investment in foreign operations, and of borrowing and other currency instruments designated as hedges of such investments, are taken to shareholder's equity.

## **(D) Borrowing Costs**

Borrowing costs are recognised as an expense in the period in which they are incurred.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### (E) Cash

Cash and cash equivalents includes cash in hand, deposits held at call with banks, other short-term highly liquid investments with maturities of three months or less from date of acquisition, and bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities in the Balance Sheet.

### (F) Trade and Other Receivables

Trade receivables are recognised initially at fair value, plus any transaction costs, and subsequently measured at amortised cost using the effective interest method, less any provision for loss allowance.

Collectibility of trade receivables is reviewed on an ongoing basis. Debts which are known to be uncollectible are written off when identified. A provision for loss allowance has been calculated using the simplified approach allowed under NZ IFRS 9 (see Note 9).

When a trade receivable is uncollectible, it is written off against the provision if it has been provided for or immediately recognised in the Statement of Comprehensive Income, within other operating expenses, if not. Any recoveries of trade receivables written off are credited against bad debts in the Statement of Comprehensive Income.

#### (i) Accrued income (contract asset)

Accrued income is the right to consideration in exchange for services transferred to the customer, conditioned on something other than the passage of time. Accrued income is recognised for the earned consideration that is conditional. The right to consideration is dependent on acceptance by the customer.

### (G) Property, Plant and Equipment

The Group has four classes of property, plant and equipment:

- Land
- Buildings
- Plant and equipment
- Motor vehicles

Land is recorded at cost. All other property, plant and equipment is shown at cost less accumulated depreciation and any accumulated impairment losses, except for assets transferred from the Crown. Property, plant and equipment transferred from the Crown has been included in the accounts at values established by independent valuers which is the deemed cost. All subsequent expenditure has been initially recorded at cost.

Cost includes expenditures that is directly attributable to the acquisition of the asset. Subsequent costs are included in the asset's carrying amount only when it is probable that future economic benefits or service potential associated with the asset will flow to the Group and the cost of the item can be measured reliably. All other costs are recognised in the Statement of Comprehensive Income when the expense is incurred. Where an asset is acquired at no cost, or for a nominal cost, it is recognised at fair value as at the date of acquisition. The Group constructs some items of plant for use in research. These have been brought into the accounts at the cost of direct labour and materials plus an appropriate proportion of direct overheads.

Land transferred to the Group cannot be freely traded. Section 30 of the Crown Research Institutes Act 1992 requires that prior to sale sections 40-42 of the Public Works Act 1981 be complied with. These sections require that land offered for sale must be offered to the original owner of that land or their successors. An arbitration clause is included to establish fair values for such offers.

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount of the asset. Gains and losses on disposal are included in the Statement of Comprehensive Income.

#### (i) Non-current Assets Held for Sale

Non-current assets are classified as assets held for sale when their carrying amount is to be recovered principally through a sale transaction and a sale is considered highly probable. They are stated at the lower of carrying amount and fair value less costs to sell if their carrying amount is to be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable.

### (H) Depreciation

Depreciation on assets, except land, is calculated using the straight-line method, at rates calculated to allocate the asset's cost, less estimated residual value, over its estimated useful life. Leasehold improvements are depreciated over the shorter of the unexpired period of the lease and the estimated useful life of improvements.

The useful lives of major asset classes of property, plant and equipment have been estimated as follows:

Buildings	10 - 100 years
Plant and equipment	3 - 10 years
Motor vehicles	3 - 10 years

The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at each financial year-end.

The assets' carrying value is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### (I) Intangible Assets

#### (i) Software

The cost of software, databases and related items, either acquired or internally generated, is recognised as an expense when incurred, except for:

The cost of software, databases and related items, either acquired or internally generated, which are unique and controlled by the Group, and that will probably generate measurable economic benefits exceeding costs beyond one year is capitalised as intangible assets.

Costs associated with maintaining computer software are recognised as an expense when incurred.

The carrying value of software is amortised on a straight-line basis over its useful life. Amortisation begins when the asset is available for use and ceases at the date that the asset is derecognised. The amortisation charge for each period is recognised in the Statement of Comprehensive Income.

The useful lives and associated amortisation rates of major classes of intangible assets have been estimated as follows:

Software 3 - 5 years

#### (ii) Trademarks and licenses

The cost of acquired trademarks and licenses are capitalised as intangible assets where they will probably generate measurable economic benefits exceeding costs beyond one year. Trademarks and licenses have a finite useful life and are carried at cost less accumulated amortisation.

Amortisation is calculated using the straight-line method to allocate the cost over their estimated useful lives, which is between 10 and 15 years.

#### (iii) Research and development

Research and development is the business of the Company. Most work is performed under contract for others, and in most cases intellectual property rights are retained. All research and development costs are expensed in the period they are incurred.

When a project reaches the stage where it will probably generate future measurable economic benefits exceeding development cost, development cost is recognised as an intangible asset. The asset is amortised from the commencement of commercial production of the product to which it relates, on a straight-line basis, over the period of expected benefit.

### (J) Financial Assets

#### (i) Classification

The Group classifies its financial assets in the following measurement categories: those to be measured at amortised cost and those to be measured subsequently at fair value (either through other comprehensive income, or through profit or loss). The classification depends on the group's business model for managing the financial assets and the contractual terms of the cash flow.

For assets measured at fair value, gains and losses will be either recorded in profit or loss or other comprehensive income. For investments in debt instruments, this will depend on the business model in which the investment is held. For investments in equity instruments, this will depend on whether the Group has made an irrevocable election at the time of initial recognition to account for the equity investment at fair value through other comprehensive income.

The Group reclassifies debt investments when and only when its business model for managing those assets changes.

#### (ii) Measurement

At initial recognition, the Group measures financial assets at fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss.

#### (iii) Financial assets at fair value through profit or loss

This category has two sub-categories: financial assets held for trading, and those designated at fair value through profit or loss at inception. A financial asset is classified in this category if acquired principally for the purpose of selling in the short term or if so designated by management. Derivatives are also categorised as held for trading unless they are designated as hedges. Assets in this category are classified as current assets if they are either held for trading or are expected to be realised within 12 months of the balance sheet date. After initial recognition they are measured at their fair values. Gains or losses on remeasurement are recognised in the Statement of Comprehensive Income.

Financial assets in this category include derivatives, see note 3 (R).

#### (iv) Financial assets at amortised cost

The Group classifies its financial assets at amortised cost only if both of the following criteria are met:

- the asset is held to collect the contractual cash flows, and
- the contractual terms give rise to cash flows that are solely payments of principal and interest.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### (K) Leased Assets

The Group leases various land, offices and research facilities. The terms of the leases vary, with land and buildings leases ranging from 2 – 28 years.

Contracts may contain both lease and non-lease components. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. The lease agreements do not impose any covenants other than the security interest in the leased assets that are held by the lessor. Leased assets may not be used as security for borrowing purposes.

Assets and liabilities arising from a lease are initially measured on a present value basis. Right-of-use assets are depreciated on a straight line-basis over the period of the lease.

Lease payments include any renewal periods that are likely to be exercised. The lease payments are discounted using the Group's incremental borrowing rate which ranges from 3% to 6% and is the rate the Group would borrow the funds required to purchase an asset of a similar value to the right-of-use asset in a similar economic environment with similar terms, security and conditions.

The Group is exposed to potential future increases in land and building lease payments based on contractual market rent reviews that are not included in the lease liability until the rent review takes effect.

Lease payments are allocated between principal and lease interest. The lease interest is charged to the profit and loss over the term of the lease.

Payments associated with short-term leases of 12 months or less are recognised as an expense in the profit or loss.

### (L) Impairment of Financial Assets

The Group assesses on a forward looking basis the expected credit losses associated with its assets carried at amortised cost and fair value through other comprehensive income. The impairment methodology applied depends on whether there has been a significant increase in credit risk. Note W details how the Group determines whether there has been a significant increase in credit risk.

For trade receivables only, the Group applies the simplified approach permitted by NZ IFRS 9, which requires expected lifetime losses to be recognised from initial recognition of the receivables.

### (M) Trade Payables

Trade payables are initially measured at fair value and subsequently measured at amortised cost using the effective interest method.

#### (i) Revenue in advance (contract liability)

Revenue in advance is the obligation to transfer services to a customer for which the Group has received consideration from the customer. Revenue in advance is recognised as revenue when the Group performs under the contract.

### (N) Provisions

Provisions are recognised when the Group has a present obligation (either legal or constructive), as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. Provisions are not recognised for future operating losses.

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the balance sheet date, the discount rate used to determine the present value reflects current market assessments of the time value of money and the risks specific to the liability. The increase in the provision due to the passage of time is recognised as an interest expense.

### (O) Employee Benefits

#### (i) Wages and salaries, annual leave, sick leave and other benefits

Provision is made for employee benefits accumulated as a result of employees rendering services up to balance date including related oncosts.

The benefits include wages and salaries, annual leave, sick leave, incentives and other benefits. The provision for employee benefits is measured at the remuneration rates expected to be paid when the liability is settled.

The Group recognises a liability for sick leave to the extent that absences in the coming year are expected to be greater than the sick leave entitlements earned in the coming year. The amount is calculated based on the unused sick leave entitlement that can be carried forward at balance date, to the extent that the Group anticipates it will be used by staff to cover those future absences.

The Group recognises a liability and an expense for bonuses where contractually obliged or where there is a past practice that has created a constructive obligation.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### *(ii) Long service leave and retirement leave*

Service leave and retirement leave entitlements are calculated based on the employee's entitlement and their current pay rate. The liability for long service leave is recognised in the provision for employee benefits and measured as the present value of expected future payments to be made in respect of services provided by employees up to the reporting date. Consideration is given to expected future wage and salary levels, experience of employee departures and periods of service.

Long term benefits expected to be settled within 12 months are classified as employee entitlements under current liabilities.

### *(iii) Pension and post retirement benefits*

The Group operates a defined contribution superannuation plan. A defined contribution plan is a pension plan under which the Group pays fixed contributions to a separate entity. The Group has no legal or constructive obligations to pay further contributions if the fund does not hold sufficient assets to pay all employees the benefits relating to employee service in the current and prior periods.

The Group's contributions made to defined contribution superannuation plans are recognised as an expense in the Statement of Comprehensive Income when they are due.

## **(P) Income Tax**

### *(i) Current tax*

Income tax expense comprises both current tax and deferred tax, and is calculated using tax rates that have been enacted or substantially enacted by balance date. Current tax and deferred tax are charged or credited to the Statement of Comprehensive Income, except when they relate to items charged or credited directly to equity, in which case the tax is dealt with in equity. Current tax is the amount of income tax payable based on the taxable profit for the current year, plus any adjustments to income tax payable in respect of prior years.

### *(ii) Deferred tax*

Deferred tax is the amount of income tax payable or recoverable in future periods in respect of temporary differences calculated using the liability method and unused tax losses. Deferred tax is not accounted for if it arises from initial recognition of goodwill or from initial recognition of an asset or liability in a transaction, other than a business combination, that at the time of the transaction affects neither accounting nor taxable profit or loss.

Deferred tax is recognised if it arises from investments in subsidiaries and associates, and interests in joint ventures, except where the company can control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

Deferred tax is measured using the tax rates (and laws) that have been enacted or substantively enacted by the balance sheet date and are expected to apply when the related deferred income tax asset is realised or the deferred income tax liability is settled. A deferred tax asset is recognised to the extent that it is probable that future taxable profits will be available against which the temporary differences can be utilised. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realised.

## **(Q) Goods & Services Tax (GST)**

The Statement of Comprehensive Income has been prepared so that all components are stated exclusive of GST. All items in the Balance Sheet are stated net of GST, with the exception of receivables and payables which include GST invoiced. Where GST is not recoverable as input tax then it is recognised as part of the related asset or expense. The net amount of GST recoverable from, or payable to, the Inland Revenue Department is included as part of receivables or payables in the Balance Sheet.

The net GST paid to, or received from the IRD, including the GST relating to investing and financing activities, is classified as an operating cash flow in the Cash Flow Statement.

Commitments and contingencies are disclosed exclusive of GST.

## **(R) Derivative Financial Instruments**

Derivatives are initially recognised at fair value on the date a derivative contract is entered into and are subsequently re-measured to their fair value at the end of each reporting period. The accounting for subsequent changes in fair value depends on whether the derivative is designated as a hedging instrument, and if so, the nature of the item being hedged and the type of hedge relationship designated.

The Group designates their derivatives as hedges of foreign exchange risk associated with the cash flows of highly probably forecast transactions (cash flow hedges).

The Group documents at the inception of the hedging transaction the economic relationship between hedging instruments and hedged items including whether the hedging instrument is expected to offset changes in cash flows of hedged items. The Group documents its risk management objective and strategy for undertaking various hedge transactions at the inception of each hedge relationship.

## **(S) Borrowings**

Borrowings are initially recognised at their fair value net of transaction costs. After initial recognition all borrowings are measured at amortised cost using the effective interest method.



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### **(T) Budget Figures**

The budget figures are derived from the Statement of Corporate Intent as approved by the Board, and the Shareholder, at the beginning of the financial year. The budget figures have been prepared in accordance with NZ IFRS, using accounting policies that are consistent with those adopted by the Group for the preparation of these financial statements. The budget figures are unaudited.

### **(U) Critical Accounting Estimates and Assumptions**

In preparing these financial statements the Group has made estimates and assumptions concerning the future. These estimates and assumptions may differ from the subsequent actual results. Estimates and assumptions are continually evaluated and are based on historical experience and other factors, including expectation of future events that are believed to be reasonable under the circumstances. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below:

#### *(i) Retirement and long service leave*

The present value of the retirement and long service leave obligations depend on a number of factors that are determined on an actuarial basis using a number of assumptions. Two key assumptions used in calculating this liability include the discount rate and the salary inflation factor. Any changes in these assumptions will impact on the carrying amount of the liability.

In determining the appropriate discount rate the Company considered the interest rates on NZ government bonds which have terms to maturity that match, as closely as possible, the estimated future cash outflows. The salary inflation factor has been determined after considering historical salary inflation patterns. A weighted average discount rate of 0.9% and a salary inflation factor of 3.5% were used.

If the discount rate were to differ by 1% from the Company's estimates, with all other factors held constant, the carrying amount of the liability would be an estimated \$65,000 higher / lower.

If the salary inflation factor were to differ by 1% from the Company's estimates, with all other factors held constant, the carrying amount of the liability would be an estimated \$11,000 higher / lower.

The carrying amount of employee entitlements are disclosed in the Balance Sheet.

### **(V) Critical Judgements in Applying the Company's Accounting Policies**

Management has exercised the following critical judgement in applying the Company's accounting policies for the period ended 30 June 2020:

#### *(i) Revenue recognition*

In determining the revenue to be recognised from a contract to provide services judgement is required in respect of assessing the percentage of completion of the project. In making this judgement the actual service provided as a proportion of the total services to be provided is reviewed.

If circumstances arise that may change the extent of the progress the estimates are revised.

#### *(ii) Impairment provisions*

The impairment provisions for financial assets disclosed in Note 9 are based on assumptions about risk of default and expected loss rates. The Company uses judgement in making these assumptions and selecting the inputs to the impairment calculation, based on the Company's past history, existing market conditions as well as forward looking estimates at the end of each reporting period.

#### *(iii) Leased assets*

The valuation of right-of-use assets and lease liabilities requires judgement to determine the incremental borrowing rate and the likelihood of exercising any rights of renewal to extend the lease term. The Group has assumed that all rights of renewal will be exercised consistent with the Group's usual practice.

# NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

	GROUP	
	2020	2019
Note	\$000	\$000
<b>4. COMMERCIAL SCIENCE RESEARCH CONTRACTS</b>		
Royalties	51,648	44,559
Other commercial science research contracts	50,378	63,030
<b>Total commercial science research contracts</b>	<b>102,026</b>	<b>107,589</b>

As a result of COVID-19 lockdown, and on-going travel restrictions, our commercial science research was negatively impacted.

The table below details how much of the revenue recognised in the current report period relates to carried-forward revenue-in-advance.

Revenue recognised that was included in revenue-in-advance at the beginning of the period		
Commercial science research contracts	6,172	5,981

## 4A. OPERATING COSTS

Includes:

Auditors' remuneration

Audit fees for financial statement audit

Other services - international market research and sales training

Severance payments\*

Directors fees

Employer contributions to defined contribution plans

Unrealised foreign exchange losses/(gains)

	134	131
	-	30
	132	165
	242	262
	1,672	1,615
	(235)	(65)

\* Payments were made to 4 employees in 2020 (2019: 3 employees).

## 5. DEPRECIATION AND AMORTISATION

Depreciation

Buildings

Plant and equipment

Motor vehicles

**Total depreciation on property, plant and equipment**

(12)

**Total depreciation on right-of-use assets**

(13)

Amortisation

Software and databases

Patents, trademarks and licences

**Total amortisation of intangible assets**

(14)

	3,806	3,856
	7,880	7,566
	512	468
	12,198	11,890
	1,105	-
	1,196	1,078
	-	-
	1,196	1,078

## 6. OTHER OPERATING EXPENSES

Other operating expenses

Materials

Research & services contracts

Property expenses\*

Travel

Other general operating costs

**Total other operating expenses**

	5,086	5,898
	14,257	15,803
	7,656	8,993
	4,656	6,534
	15,464	16,321
	47,119	53,549

\* Property expenses in 2019 included rent of \$2,094,000 the majority of which are now recognised as leases under NZ IFRS 16.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

	Note	GROUP	
		2020 \$'000	2019 \$'000
<b>7. TAXATION</b>			
Profit before taxation		9,966	8,309
Prima facie taxation @ 28%		2,791	2,327
Plus/(less) taxation effect:			
Non-assessable income		(845)	(138)
Non-deductible expenditure		119	204
Prior period adjustment		37	135
Imputation credits on dividends received		(39)	(37)
Reintroduction of building depreciation*		(1,919)	-
Utilisation of tax losses		(26)	(48)
		118	2,443
The taxation charge is represented by:			
Current taxation		3,348	3,182
Deferred tax benefit	(16)	(3,230)	(739)
		118	2,443

The Company is not required to maintain an Imputation Credit Account pursuant to section OB1(2)(d) of the Income Tax Act 2007.

\* This is a result of the COVID-19 Response (Taxation and Social Assistance Urgent Measures) Bill enacted on 25 March 2020 which impacted the deferred tax as shown in Note 16.

## 8. CASH AND BORROWINGS

Cash on hand and at bank	2,888	2,456
Short-term deposits	-	-
Cash and short-term deposits	2,888	2,456

The carrying value of short-term deposits with maturity dates of three months or less approximates their fair value.

Current portion of borrowings	4,200	14,400
Borrowings	4,200	14,400

The Group has the following borrowing facilities at 30 June 2020:

	Expiry	Facility	Drawdown
Multi option credit facility No. 1	17 September 2021	6,000	4,200
Multi option credit facility No. 2	31 December 2020	7,000	-
	17 March 2024	19,000	-

The borrowings are secured by a first ranking general security agreement over the Group's assets and subject to two financial covenants. The general security agreement means that the Group may not grant a security interest greater than 5% of total tangible assets to another party or dispose of assets greater than \$1,000,000 without the consent of the bank.

The Group is required to ensure that the following financial ratios are met:  
 (i) Shareholder funds of not less than 50% of adjusted tangible assets; and  
 (ii) Earnings for the year not less than 3.00 times its consolidated funding costs.

The Group complied with these ratios during the year ended 30 June 2020 (2019: complied).

As at 30 June 2020, the total facilities drawn of \$4.2M are classified as current as they are payable on demand or on call. The interest rate for borrowings was 2.1% for 2020 (2019: 3.01%).



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 9. RECEIVABLES AND PREPAYMENTS

Trade receivables

Loss allowance

Accrued income

Prepayments and other receivables

GROUP	
2020	2019
\$000	\$000
24,807	29,007
(376)	(286)
24,431	28,721
10,768	10,842
2,971	3,056
38,170	42,619

The carrying value of receivables approximates their fair value. The carrying amount of receivables that would otherwise be past due, but not impaired, whose terms have been renegotiated is \$2,035,000 (2019: \$1,732,000).

The Group applies the NZ IFRS 9 simplified approach to providing for expected credit losses, which uses the lifetime expected loss allowance for all trade receivables.

To measure the expected credit losses trade receivables have been grouped based on days past due. The expected loss rates are based on our historical credit losses since 2010, adjusted for any significant known amounts that are not receivable. Forward looking information, and the impact of COVID-19, has also been incorporated as appropriate. The impact of COVID-19 on expected credit losses during the year is not considered to be material.

On this basis, the loss allowance at 30 June 2020 is as follows:

	Expected loss rate	Gross carrying amount	Loss allowance provision
Not past due	0.43%	22,493	(97)
Past due 1 - 30 days	0.75%	1,289	(10)
Past due 31 - 60 days	1.50%	62	(1)
Past due 61 - 90 days	5.00%	206	(10)
Past due > 91 days	34.10%	757	(258)
<b>Total</b>		<b>24,807</b>	<b>(376)</b>

Movements in the loss allowance provision for receivables are as follows:

Balance at 01 July  
Additional provisions made during the year  
Receivables written-off during the year

**Balance at end of year**

GROUP	
2020	2019
\$000	\$000
(286)	(286)
(100)	-
10	-
(376)	(286)

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### GROUP

#### 10. ACCOUNTS PAYABLE AND ACCRUALS

Trade payables  
Other payables and accruals  
Revenue in advance

2020	2019
\$000	\$000
7,845	10,737
4,582	4,015
9,223	6,745
21,650	21,497

Accounts payable and accruals are non-interest bearing and are normally settled on 30-day terms, therefore the carrying value of accounts payable and accruals approximates their fair value.

#### 11. EMPLOYEE ENTITLEMENTS

Annual leave  
Service leave  
Retirement leave  
Other leave and accruals

Total employee entitlements

Comprising:

Current  
Non-current

6,812	5,916
1,231	1,076
3,375	3,279
2,374	2,039
13,792	12,310
11,917	10,635
1,875	1,675
13,792	12,310

The travel restrictions imposed by COVID-19 impacted on the amount of leave taken during March to June 2020. This resulted in higher annual leave entitlements owing at 30 June 2020.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 12. PROPERTY, PLANT AND EQUIPMENT

	GROUP				
	Land	Buildings	Plant and Equipment	Motor Vehicles	Total
	\$000	\$000	\$000	\$000	\$000
<b>Cost</b>					
Opening balance 01 July 18	8,564	103,576	122,514	6,140	240,794
Additions	-	3,782	10,857	625	15,264
Disposals	(66)	(148)	(212)	(421)	(847)
Transfers	(236)	(964)	215	-	(985)
Foreign exchange movement	-	-	(3)	-	(3)
Closing balance 30 June 19	8,262	106,246	133,371	6,344	254,223
<b>Accumulated depreciation</b>					
Opening balance 01 July 18	-	32,972	91,955	4,359	129,286
Additions	-	3,856	7,566	468	11,890
Disposals	-	(89)	(200)	(371)	(660)
Transfers	-	(243)	-	-	(243)
Closing balance 30 June 19	-	36,496	99,321	4,456	140,273
<b>Net book value</b>	8,262	69,750	34,050	1,888	113,950

	GROUP				
	Land	Buildings	Plant and Equipment	Motor Vehicles	Total
	\$000	\$000	\$000	\$000	\$000
<b>Cost</b>					
Opening balance 01 July 19	8,262	106,246	133,371	6,344	254,223
Additions	5,593	1,327	8,268	519	15,707
Disposals	(92)	(28)	(399)	(381)	(900)
Transfers	-	79	(1,352)	-	(1,273)
Foreign exchange movement	-	-	1	-	1
Closing balance 30 June 20	13,763	107,624	139,889	6,482	267,758
<b>Accumulated depreciation</b>					
Opening balance 01 July 19	-	36,496	99,321	4,456	140,273
Additions	-	3,806	7,880	512	12,198
Disposals	-	(79)	(399)	(333)	(811)
Transfers	-	-	-	-	-
Closing balance 30 June 20	-	40,223	106,802	4,635	151,660
<b>Net book value</b>	13,763	67,401	33,087	1,847	116,098

The Company holds numerous germplasm collections of horticultural material for research purposes. Due to the nature of the collections their value can not be measured reliably for financial purposes, however they have a fundamental importance to the Company's research.



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 13. LEASES

As a result of the adoption of NZ IFRS 16 from 1 July 2019, the Group is required to report all leases on the balance sheet with the exception of low value leases and leases less than 12 month.

The Group leases relate to land and buildings. Right-of-use assets are measured at cost, comprising the amount of the initial measurement of the lease liability. These assets are subsequently depreciated using the straight-line method from the commencement date to the end of the lease term. Lease liabilities represent the net present value of fixed payments.

The following table details leases where the Group is a lessee:

	GROUP	
	2020 \$000	2019 \$000
<b>Right-of-use lease assets</b>		
Opening balance	14,100	-
Additions and modifications	3,098	-
Depreciation	(1,105)	-
Closing balance	16,093	-
<b>Represented by:</b>		
Cost	17,198	-
Accumulated depreciation	(1,105)	-
	16,093	-
<b>Lease liabilities</b>		
Current	804	-
Non-current	15,615	-
	16,419	-
<b>The movements for the year are as follows:</b>		
Opening balance	14,100	-
Additions	3,098	-
Lease payments	(1,600)	-
Interest of leases	821	-
Closing balance	16,419	-
<b>Reconciliation to operating lease commitments:</b>		
Operating lease commitments at 30 June 2019	19,822	
Effect of discounting commitments	(8,865)	
Value of future lease options expected to be exercised	3,422	
Short term and low value leases	(279)	
Lease liabilities 1 July 2019	14,100	

# NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

## 13. LEASES (CONTINUED)

### Impact of adoption of NZ IFRS 16

The table below provides further detail in relation to the impacts of NZ IFRS 16 on the statement of comprehensive income, the statement of financial position and the statement of cash flows.

	Pre NZ IFRS 16 \$000	NZ IFRS 16 adjustment \$000	30 June 2020 as presented \$000
<i>Impact of adoption on the statement of comprehensive income:</i>			
Revenue	168,956	-	168,956
Depreciation	12,198	1,105	13,303
Other	145,843	(1,600)	144,243
Profit before interest and taxation	10,915	495	11,410
Finance expense	(519)	(821)	(1,340)
Profit after taxation attributable to owners	10,174	(326)	9,848

### Impact of adoption on the statement of financial position:

Right-of-use assets	-	16,093	16,093
Impact on total assets	-	16,093	16,093
Current lease liabilities	-	804	804
Non-current lease liabilities	-	15,615	15,615
Impact on total liabilities	-	16,419	16,419
Impact on net assets	-	(326)	(326)

### Impact of adoption on the statement of cash flow:

Interest paid on leases (operating activities)	(821)
Payments for lease liabilities (financing activities)	(778)
Total cash outflows from leases	(1,600)

Total  
\$000

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 14. INTANGIBLE ASSETS

	GROUP			
	Software, Databases \$000	Patents, Trademarks \$000	Goodwill \$000	Total \$000
<b>Cost</b>				
Opening balance 01 July 18	11,111	467	19	11,597
Additions	539	-	-	539
Disposals	-	-	-	-
Transfers	179	-	-	179
Closing balance 30 June 19	11,829	467	19	12,315
<b>Accumulated amortisation</b>				
Opening balance 01 July 18	9,201	467	19	9,687
Additions	1,078	-	-	1,078
Disposals	-	-	-	-
Transfers	-	-	-	-
Closing balance 30 June 19	10,279	467	19	10,765
<b>Net book value</b>	1,550	-	-	1,550

	GROUP			
	Software, Databases \$000	Patents, Trademarks \$000	Goodwill \$000	Total \$000
<b>Cost</b>				
Opening balance 01 July 19	11,829	467	19	12,315
Additions	1,840	-	-	1,840
Disposals	-	-	-	-
Transfers	1,273	-	-	1,273
Closing balance 30 June 20	14,942	467	19	15,428
<b>Accumulated amortisation</b>				
Opening balance 01 July 19	10,279	467	19	10,765
Additions	1,196	-	-	1,196
Disposals	-	-	-	-
Transfers	-	-	-	-
Closing balance 30 June 20	11,475	467	19	11,961
<b>Net book value</b>	3,467	-	-	3,467



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 15. INVESTMENTS

(i) Subsidiaries	Principal Activity	Balance Date	Interest Held %
CropSeed Limited	Seed growing services	30 June	100
2before Performance Nutrition Limited	Sports performance nutrition online retailer	30 June	100
Berryfruit Holdings Limited (previously PFR-Miro Plant Breeding)	IP holding company	31 March	100
Plant & Food Research (USA) Corporation	Marketing and consultancy services in the USA	30 June	100
Plant & Food Research Australia Pty Limited	Science, marketing and consultancy services in Australia	30 June	100

Plant & Food Research Australia Pty Limited is incorporated in Australia. Plant & Food Research (USA) Corporation is incorporated in the USA. All other subsidiaries are incorporated in New Zealand.

### (ii) Associates

The Group's share of (loss) in its associated companies and joint ventures for the year was (\$221,000) (2019: \$428,000).

30 June 2020	Principal Activity	Interest Held	Total Assets	Total Liabilities	Revenue	Profit/(Loss)
Pacific Berries LLC	Developing & commercialising IP	50.0%	1,130	24	531	223
Forage Innovations Limited	Developing & commercialising IP	49.0%	1,649	656	1,708	322
Biopolymer Network Limited	Developing & commercialising IP	42.7%	603	37	531	(273)
Prevar Limited	Developing & commercialising IP	29.0%	5,806	943	3,544	(1,175)

### 30 June 2019

Pacific Berries LLC	Developing & commercialising IP	50.0%	832	-	435	400
PFR-Miro Plant Breeding Limited	Developing & commercialising IP	50.0%	-	-	-	(549)
Forage Innovations Limited	Developing & commercialising IP	49.0%	1,382	712	1,847	268
Biopolymer Network Limited	Developing & commercialising IP	33.3%	766	226	1,961	(94)
Prevar Limited	Developing & commercialising IP	29.0%	6,564	525	279	(780)
BlinC Innovation Limited*	Developing Lincoln hub complex	20.0%	466	386	1,881	15

\* Exited shareholding in December 2019

	GROUP	
	2020 \$000	2019 \$000
Pacific Berries LLC	544	416
Forage Innovations Limited	466	308
Biopolymer Network Limited	184	151
Prevar Limited	1,393	834
Other associates & joint ventures	2	39
<b>Total associate and joint venture investments</b>	<b>2,589</b>	<b>1,748</b>

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 16. DEFERRED TAX ASSET/(LIABILITY)

	Property, plant equipment \$000	Investments- associates \$000	Derivative financial instruments \$000	Employee entitlements \$000	Other provisions \$000	Tax losses \$000	Total \$000
<b>GROUP</b>							
Balance at 30 June 2018	(2,478)	(103)	(26)	2,725	(798)	-	(680)
Charged to statement of comprehensive income	736	99	24	95	(215)	-	739
Balance at 30 June 2019	(1,742)	(4)	(2)	2,820	(1,013)	-	59
Charged to statement of comprehensive income	2,888	94	(1)	319	(70)	-	3,230
<b>Balance at 30 June 2020</b>	<b>1,146</b>	<b>90</b>	<b>(3)</b>	<b>3,139</b>	<b>(1,083)</b>	<b>-</b>	<b>3,289</b>

### 17. SHARE CAPITAL & RESERVES

Ordinary shares (000's)

On issue opening balance

Issued for cash

**On issue at closing balance 30 June**

#### GROUP

2020  
\$000

2019  
\$000

17,436	17,436
-	-
<b>17,436</b>	<b>17,436</b>

All issued shares are fully paid and have no par value.

The holders of ordinary shares are entitled to receive dividends as declared from time to time and are entitled to one vote per share at meetings of the Company.

All shares rank equally with regard to the Company's residual assets.

### 18. CASH FLOW HEDGE RESERVE

Opening balance at 01 July

Transferred to cost of sales

Revaluations

**Closing balance at 30 June**

(8)	(91)
-	-
(2)	83
<b>(10)</b>	<b>(8)</b>

The hedge reserve is used to record fair value gains or losses on foreign exchange forward contracts that qualify as cash flow hedges.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 19. COMMITMENTS

The following amounts have been committed to by the Group, but are not recognised in the financial statements:

#### a) Capital commitments

Property, plant and equipment

#### b) Operating commitments (excluding leases)

#### c) Operating lease income

Lease income under non-cancellable operating leases are as follows:

Not later than one year

Later than one year and not later than five years

Later than five years

### GROUP

2020  
\$000

2019  
\$000

3,474	9,918
141	575
151	162
145	64
-	117
296	343

The Group received rental income of \$822,000 during the year (2019: \$819,000). Rental income is included within Other income in the Statement of Comprehensive Income.

### 20. RECONCILIATION OF PROFIT AFTER TAX WITH CASH FLOW FROM OPERATING ACTIVITIES

Profit after tax

#### Add/(less) non-cash items:

Share of retained loss of associates and joint ventures

Depreciation and amortisation

Movement in foreign exchange

Decrease in future tax liability

Increase in employee entitlements

#### Add/(less) items classified as investing activities:

(Gain) on sale of property, plant and equipment

Dividends received from joint venture

#### Movements in working capital:

Decrease/(increase) in receivables and prepayments

Decrease/(increase) in inventory

Increase in trade payables and accruals

Increase/(decrease) in taxation payable

#### Net cash flow from operating activities

9,848	5,866
221	428
14,499	12,968
6	(12)
(3,230)	(739)
1,482	583
12,978	13,228
(2,917)	(487)
-	81
4,250	(3,237)
(124)	88
920	686
1,914	(329)
6,960	(2,792)
26,869	15,895



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 21. RELATED PARTY TRANSACTIONS

The Company is a wholly owned entity of the Crown. The government significantly influences the role of the Company in addition to being a major source of revenue.

The Group enters into transactions with government departments, state-owned enterprises and other Crown entities.

These transactions occur within a normal customer / supplier relationship on terms and conditions no more or less favourable than those which it is reasonable to expect the Group would have adopted if dealing with that entity at arm's length in the same circumstances. Such transactions have not been disclosed as related party transactions.

Strategic funding amounting to \$43,103,000 was received from MBIE (a government department) during the year to 30 June 2020. (2019: \$43,103,000).

Strategic funding is disclosed on the face of the Statement of Comprehensive Income.

	Sale of services		Due from	
	2020	2019	2020	2019
	\$000	\$000	\$000	\$000
Transactions with:				
Associates	4,304	4,730	1,142	557

For the year ended 30 June 2020, the Group has impaired a related party receivable for \$224,000 (2019: \$250,000).

The Group contracted with parties associated with certain directors during the year. These are as detailed below. These transactions were all at normal commercial rates.

		GROUP	
		2020	2019
		\$000	\$000
Parties associated with Directors:	Nature of the transaction:		
Southern Cross Healthcare	Health insurance	-	706

### Executive remuneration

Plant & Food Research's remuneration policy has four objectives:

- (i) Establish and maintain fair and competitive salaries;
- (ii) Recognise and reward difference in individual ability and performance;
- (iii) Enable positions to be assessed to both internal and external value; and
- (iv) Provide appropriate pay ranges for positions requiring different levels of responsibility, experience, skill and knowledge.

Executive remuneration is set having regard to:

- Prevailing market and economic conditions
- Organisational performance and individual experience and contribution;
- Internal equity and pay parity
- Accurate benchmark position and job size
- Market benchmark survey results

	GROUP	
	2020	2019
	\$000	\$000
Salaries and other short term employee benefits of the Chief Executive and other members of the Senior Leadership Team	3,110	2,369

Total executive remuneration detailed above includes other benefits (employer contributions to superannuation and health insurance) totalling \$98,000 (2019: \$109,000).

There were 8 members of the Senior Leadership Team (including the Chief Executive) during the twelve months ending 30 June 2020 (2019: 8).

From 1 July 2019 executive remuneration consists of base salary and employer contributions to superannuation and health insurance. Prior to this there was an at risk component included in executive remuneration. Base salaries were increased in 2020 by \$390,000 to recognise the removal of the at risk component from the total remuneration package. The 2020 total executive remuneration also includes the prior year contractual at risk component paid in the 2020 financial year.

A number of key management personnel provide directorship services to subsidiaries and other entities as part of their employment without receiving any additional remuneration.

The Group purchases directors and officers insurance for the benefit of key management personnel in relation to the services they provide to the Group.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 21. RELATED PARTY TRANSACTIONS (CONTINUED)

#### Chief Executive remuneration

The Chief Executive's remuneration is approved by the Board on the recommendation of the Appointments & Remuneration Committee on an annual basis.

		Salary	Benefits	At Risk	Total
The Chief Executive's remuneration for 2019 and 2020 was:					
2020		566,182*	-	91,362	\$657,544
2019		460,392	-	86,063	\$546,455

\* As noted above, the 2020 salary was increased to recognise the removal of the at risk component.

\*\* The at risk payments made represent the prior year contractual bonus owing. The bonus component included company and personal performance objectives designed to motivate and reward performance in the financial year.

David Hughes was appointed CEO on 20 December 2017. Total remuneration paid to the prior CEO for the year ended 30 June 2017 was \$622,000.

### 22. FINANCIAL INSTRUMENTS

The Group's activities expose it to a variety of financial instrument risks, including market risk, credit risk and liquidity risk. The Group has a series of policies to manage the risks associated with financial instruments and seeks to minimise exposure from financial instruments. These policies do not allow any transactions that are speculative in nature.

#### Market risk

##### Currency risk

Currency risk is the risk that the fair value or future cash flows will fluctuate due to changes in foreign exchange rates. The Group purchases goods and services overseas which require it to enter into transactions denominated in foreign currencies. The Group also holds small balances of AUD, EUR and USD at call in order to settle transactions denominated in foreign currencies. As a result of these activities, some limited exposure to currency risk arises.

It is the Group's policy to manage foreign currency risks arising from contractual commitments and liabilities by entering into foreign exchange forward contracts to hedge the foreign currency risk exposure. All of the forward exchange contracts have maturities of less than one year at the balance sheet date.

##### Sensitivity analysis

The Group's results are not sensitive to changes in foreign exchange rates.

#### Credit risk

Credit risk is the risk that a third party will default on its obligations to the Group, causing the Group to incur a loss.

Due to the timing of its cash inflows and outflows, the Group invests surplus cash with registered banks with a Standard & Poor's credit rating of A- or above. The Group's investment policy limits the amount of credit exposure to \$10M with any one institution.

The largest credit exposure with any one institution at balance date is \$1.9M (2019: \$1.7M).

The Group's maximum credit exposure for each class of financial instrument is represented by the total carrying amount of cash and short-term deposits (note 8), net receivables (note 9) and derivative financial assets. There is no collateral held as security against these financial instruments.

Management has a credit policy in place under which each new customer is individually analysed for credit worthiness and assigned a credit limit before the standard payment and delivery terms and conditions are offered. Where available the Group reviews external ratings and references are obtained. Credit limits are reviewed on a regular basis.

Net receivables includes two customers who represent 55% (2019:46%) of the total trade receivables at balance date. The Group is not exposed to any other concentrations of credit risk.

## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 22. FINANCIAL INSTRUMENTS (CONTINUED)

#### Liquidity risk

Liquidity risk is the risk that the Group will encounter difficulty raising liquid funds to meet commitments as they fall due. Prudent liquidity risk management implies maintaining sufficient cash, the availability of funding through an adequate amount of committed credit facilities and the ability to close out market positions. The Group aims to maintain flexibility in funding by keeping committed credit lines available. It is the Group's policy to provide credit and liquidity enhancement only to wholly owned subsidiaries.

The table below analyses the Group's derivative financial instruments and other financial liabilities that will be settled on a gross basis into relevant maturity groupings based on the remaining period at the balance sheet date to the contractual maturity date. The amounts disclosed are the contractual undiscounted cash flows.

	Carrying amount	Contractual cash flow	GROUP 2020		
			Up to 12 months	1-2 years	3 years +
Trade and other payables	9,130	9,130	9,130	-	-
Borrowings	4,200	4,200	4,200	-	-
	13,330	13,330	13,330	-	-
Forward exchange contracts					
Inflow	(10)	3,510	3,510	-	-
Outflow	-	-	-	-	-

	Carrying amount	Contractual cash flow	GROUP 2019		
			Up to 12 months	1-2 years	3 years +
Trade and other payables	12,230	12,230	12,230	-	-
Borrowings	14,400	14,400	14,400	-	-
Mortgage					
	26,630	26,630	26,630	-	-
Forward exchange contracts					
Inflow	(8)	2,727	2,727	-	-
Outflow	-	-	-	-	-

#### Fair value estimation

The group uses various methods in estimating the fair value of a financial instrument.

- The fair value is calculated using quoted prices in active markets (Level 1)
- The fair value is estimated using inputs other than quoted prices included in Level 1 that observable for the asset or liability either directly (as prices) or indirectly (derived from prices) (Level 2); and
- The fair value is estimated using inputs for the asset or liability that are not based on observable market data (Level 3).

The Group's derivative financial instruments are all level 2 forward foreign exchange contracts with a fair value of (\$10,000) (2019: (\$8,000)).

These have been fair valued using forward exchange rates that are quoted in an active market.



## NOTES TO THE FINANCIAL STATEMENTS (CONTINUED)

for the year ended 30 June 2020

### 23. CATEGORIES OF FINANCIAL ASSETS AND LIABILITIES

The carrying amounts of financial assets and liabilities by classification are as follows:

		GROUP	
		2020	2019
	Note	\$000	\$000
<i>Financial assets measured at amortised cost</i>			
Cash and cash equivalents	(8)	2,888	2,456
Trade and other receivables	(9)	35,199	39,563
Total financial assets at amortised cost		38,087	42,019
<i>Financial liabilities measured at amortised cost</i>			
Accounts payable and accruals	(10)	9,130	12,230
Employee entitlements	(11)	11,917	10,635
Borrowings	(8)	4,200	14,400
Lease liabilities	(13)	804	-
Total financial liabilities at amortised cost		26,051	37,265

The fair value of the financial assets and liabilities approximate their carrying value.

### 24. CAPITAL MANAGEMENT

The Company's capital is its equity, which comprises share capital and accumulated funds. Equity is represented by net assets.

The Company is subject to the financial management and accountability provisions of the Crown Research Institutes Act 1992, which imposes restrictions in relation to borrowings, acquisition of securities, issuing guarantees and indemnities and the use of derivatives.

The Company manages its equity as a by-product of prudently managing revenues, expenses, assets, liabilities and general financial dealings to ensure the Company effectively achieves its objectives and purpose, whilst remaining a going concern.

The Group's objectives when managing capital are to safeguard the Group's ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital. The Group recognises the need to maintain a balance between the higher returns that might be possible with greater gearing and the advantages and security afforded by a sound capital position.

### 25. CONTINGENCIES

#### *Contingent Liabilities*

A number of organisations within New Zealand have identified issues with the calculation of leave entitlement under the Holidays Act 2003. Plant & Food Research has contracted an external consultant to complete an analysis of its payroll system. Preliminary findings of this review have identified some issues in the calculation of certain leave entitlements. Further detailed analysis now needs to be undertaken as at present there is insufficient information to quantify any potential liability (2019: \$0).

#### *Contingent Assets*

There were no contingent assets known to exist at balance date (2019: \$0).

## PERFORMANCE INDICATORS

for the year ended 30 June 2020

	2020 Actual	2019 Actual
<b>RESEARCH COLLABORATION</b>		
<i>Peer reviewed publications</i>	339	384
<i>Book chapters</i>	11	12
<b>TECHNOLOGY &amp; KNOWLEDGE TRANSFER</b>		
Licences - new	16	13
Client reports	473	555
Plant variety rights		
Granted in NZ	9	7
Granted overseas	4	13
Patents	22	12
Trademarks		
Registered	14	7
<i>Requests for information from databases and collections</i>	37	23
<b>SCIENCE QUALITY</b>		
Science reviews	2	3
International awards	6	9
Invitations for international committees	20	19
Invitations for editorial boards	29	18

## STATEMENT OF RESPONSIBILITY

for the year ended 30 June 2020

In the financial year ended 30 June 2020, the Board and management of The New Zealand Institute for Plant & Food Research Limited were responsible for:

- the preparation of the financial statements and the judgements used therein.
- establishing and maintaining a system of internal control designed to provide reasonable assurance as to the integrity and reliability of financial and non-financial performance reporting.

In the opinion of the Board and management of The New Zealand Institute for Plant & Food Research Limited, these financial statements fairly reflect the financial position and operations of The New Zealand Institute for Plant & Food Research Limited for the year ended 30 June 2020.



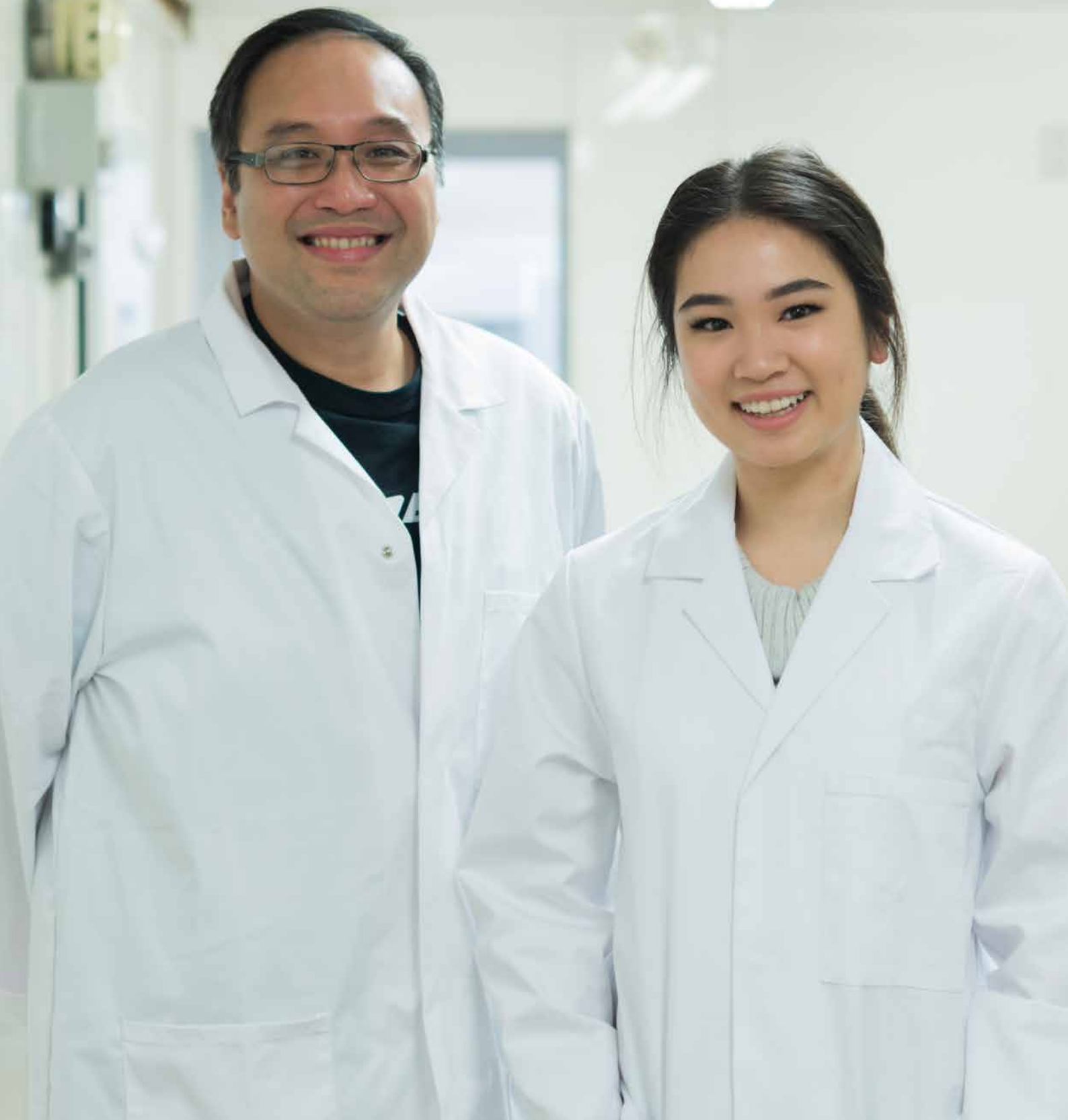
Nicola Shadbolt, Chair  
27 August 2020



Wendy Venter, Director  
27 August 2020



We provide opportunities for undergraduate and postgraduate students, such as summer student Michelle Joeng (right) with team member Research Associate Reginald Abisino, to undertake real-world research.



# Directory

## New Zealand

### AUCKLAND

120 Mt Albert Road  
Sandringham  
Auckland 1025  
Private Bag 92169  
Auckland 1142  
Tel 09 925 7000  
Fax 09 925 7001

### CLYDE

990 Earnscleugh Road  
RD 1, Alexandra 9391

### DUNEDIN

Dept of Chemistry  
University of Otago  
Box 56  
Dunedin 9054

### HAWKE'S BAY

30 Crosses Road  
Havelock North 4130  
Private Bag 1401  
Havelock North 4157

### KERIKERI

121 Keri Downs Road  
RD 1, Kerikeri 0294

### LINCOLN

74 Gerald Street  
Lincoln 7608  
Private Bag 4704  
Christchurch 8140

### MARLBOROUGH

85 Budge Street  
Blenheim 7201  
PO Box 845  
Blenheim 7240

### MOTUEKA

55 Old Mill Road  
RD 3, Motueka 7198

### NELSON

297 Akersten Street  
Port Nelson  
Nelson 7010  
Box 5114  
Port Nelson  
Nelson 7043

### PALMERSTON NORTH

23 Batchelar Road  
Palmerston North  
Private Bag 11600  
Palmerston North 4410

### PUKEKOHE

Cronin Road  
RD 1, Pukekohe 2676

### RUAKURA

Bisley Road  
Hamilton 3214  
Private Bag 3230  
Hamilton 3240

### TE PUKE

412 No 1 Road  
RD 2, Te Puke 3182

### WELLINGTON

Level 6  
17 Whitmore Street  
Wellington 6011

## Australia

School of Agriculture and Wine  
University of Adelaide  
Waite Campus  
Urrbrae  
SA 5064, Australia

## USA

430 F Street, Suite F  
Davis CA 95616, USA

## Directors

Nicola Shadbolt  
Chair

Parmjot Bains

Colin Dawson

Dean Moana

Nadine Tunley

Wendy Venter

## Chief Executive Officer

David Hughes

## Senior Leadership Team

Kath Clarke  
Group General Manager  
People & Culture

Dr Kieran Elborough  
Group General Manager  
Technology Development

Professor Richard Newcomb  
Chief Scientist

Dr Gavin Ross  
Group General Manager  
Marketing & Innovation

Quentin Smith  
Group General Manager,  
Finance, Information & Infrastructure

Philippa Stevens  
Group General Manager  
Science Services

Stacey Whitiora  
Group General Manager  
Māori

## Registered office

120 Mt Albert Road  
Sandringham  
Auckland 1025

## Auditors

PricewaterhouseCoopers on behalf of  
the Auditor-General

## Bankers

ANZ Bank New Zealand Ltd

Westpac New Zealand Ltd

# Science working for New Zealand

The Crown Research Institutes (CRIs) proudly work,  
individually and collectively, to create a more prosperous,  
sustainable and innovative New Zealand



[www.sciencenewzealand.org](http://www.sciencenewzealand.org)

3,600

SMART AND  
PASSIONATE PEOPLE

50

SITES ACROSS  
NEW ZEALAND

6,000

SCIENCE PROJECTS  
EACH YEAR

40

NATIONALLY SIGNIFICANT  
DATABASES & COLLECTIONS



A smart  
green  
future.  
Together.

# Plant & Food Research Annual Report 2020