



New Zealand Apples & Pears®

Research and Development (R&D) Strategic Plan

Introduction

New Zealand Apples & Pears maintains oversight of R&D investments that support industry strategic priorities:

- Improving market access
- Building and sustaining relationships
- Building people capability
- Information that adds value
- Managing and responding to crises

R&D strategy is aligned with the NZAPI strategies for trade, market access, capability and biosecurity. Strategic priorities are determined through consultation with stakeholders including apple and pear producers (growers, technical managers, exporters), researchers, consultants, merchants, government officials, Research Consultative Group (RCG), Agrichemical Advisory Group (AAG) and Market Access Advisory Group (MAAG) to reflect industry priorities.

Key activities to consult in the development of strategic priorities and decisions for R&D investment include strategic reviews, gap analysis, literature reviews, workshops with key stakeholders, project reviews and consultation with RCG, AAG and MAAG. The board maintain oversight for approving strategic direction and funding investments.

R&D is funded from the annual industry export levy. Existing levy funding investments for R&D 2022/23 is approximately \$1.5M leveraging a further \$1.3M co-investment from MBIE and SFF programmes totalling \$2.8M of R&D investment to the apple and pear industry.

R&D Strategic Plan

Purpose

- To provide direction and transparency for R&D investments
- To guide the undertaking of projects that align with NZ Apples & Pears strategy
- To guide the alignment of stakeholder and collaborator priorities and investment
- To attract co-investment
- To identify opportunity and capability for future investment

Strategic direction is provided by six R&D streams, each with Focus areas, Priority issues and Measures of success giving both short and long-term focus. The details of each determined and reviewed by the RCG in consultation with MAAG, before being presented to the NZAPI Board.



Strategic direction in 2023:

| R&D Stream One <ul style="list-style-type: none"> Long term (10+ years) vision for R&D needs and outcomes | Focus areas <ul style="list-style-type: none"> Broad priorities for the next 5 years | Priority issues <ul style="list-style-type: none"> New and existing issues to guide project funding (1-3 years) | Measures of success <ul style="list-style-type: none"> Desired outcomes |
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| <p>Ensuring market access requirements are met</p> <ul style="list-style-type: none"> Monitor and prioritise market driven regulatory requirements to ensure strategies maintain market access Develop tools and strategies to manage key pests and diseases that threaten market access Develop mitigation strategies for responding to new and unknown threats to market access as they arise including phytosanitary, food safety and sustainability Remain a global leader for low residue apples | <p>International regulatory requirements</p> <ul style="list-style-type: none"> Managing diverging and changing residue requirements Understanding the risk and control of foodborne pathogens <p>Pest and disease management</p> <ul style="list-style-type: none"> On orchard control and resistance management Risk management of rots Post-harvest disinfestation <p>Risk management</p> <ul style="list-style-type: none"> On orchard and in market analysis and forecasting <p>Residues</p> <ul style="list-style-type: none"> Ensure fresh knowledge on residue use Work towards residue free apples Reduce chemical usage | <p>Key pests and diseases</p> <ul style="list-style-type: none"> Systems for ALCM Systems for codling moth Systems for rots and black spot Systems for bronze beetle Systems for woolly apple aphid <p>Food safety</p> <ul style="list-style-type: none"> Sanitisers permitted in different markets Understanding the risk of apple foodborne pathogen contamination Management of foodborne pathogens in the supply chain <p>Disinfestation</p> <ul style="list-style-type: none"> Apple washer efficacy Methyl bromide alternatives (Codling moth, ALCM, N Alba) Detection tools | <ul style="list-style-type: none"> 50% reduction of apple leaf curling midge intercepts for 2024 20% reduction of apple leaf curling midge year on year for 5 years No rot intercepts in market Sustained reduction of WAA intercepts with 0 by 2033 Keep ahead of market sanitiser requirements Meet food safety requirements of importing markets No food safety responses Food safety best practice guidelines available for use Alternate method accepted in market One or more alternate disinfestation methods Continued access to existing markets Exceed market access requirements for residues |

| R&D Stream Two <ul style="list-style-type: none"> Long term (10+ years) vision for R&D needs and outcomes | Focus areas <ul style="list-style-type: none"> Broad priorities for the next 5 years | Priority issues <ul style="list-style-type: none"> New and existing issues to guide project funding (1-3 years) | Measures of success <ul style="list-style-type: none"> Desired outcomes |
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| Biosecurity <ul style="list-style-type: none"> Protect industry against new pest and disease threats Align biosecurity threats with other R&D streams Collaborate with other industry groups and GIA | Prevention <ul style="list-style-type: none"> Detection and surveillance Orchard hygiene Disinfestation Incursion preparedness <ul style="list-style-type: none"> Maintaining market access Crop management Eradication Risk management <ul style="list-style-type: none"> Identifying and mitigating threats On orchard and market access Work with markets <ul style="list-style-type: none"> Pre-border protection | Preventing incursions <ul style="list-style-type: none"> Border protection Detection and surveillance Risk management <ul style="list-style-type: none"> Desktop study priority pests, modelling and economic impact, quantify risks and pathway Orchard control and disinfestation of key threats <ul style="list-style-type: none"> BMSB Fruit fly Preventing pest and disease spread <ul style="list-style-type: none"> On orchard practice | <ul style="list-style-type: none"> On orchard control plan for BMSB Disinfestation treatment for fruit fly available Acceptance of new treatments in markets understood |

| R&D Stream Three <ul style="list-style-type: none"> Long term (10+ years) vision for R&D needs and outcomes | Focus areas <ul style="list-style-type: none"> Broad priorities for the next 5 years | Priority issues <ul style="list-style-type: none"> New and existing issues to guide project funding (1-3 years) | Measures of success <ul style="list-style-type: none"> Desired outcomes |
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| <p>Sustainability</p> <p>New Zealand is not only the most productive apple industry in the world, but also the most sustainable.</p> <p>Our industry has moved from being best in the world to being best for the world. As such, our apples and pears are recognised as premium products.</p> <p>To achieve this, we've reduced our emissions and adapted to the changing climate, we've improved soil and water health and reduced our reliance on agri-chemicals, there's been an increase in biodiversity and a decrease in waste, and our people are thriving.</p> <p>We are aligned to National Regulations.</p> | <ul style="list-style-type: none"> Climate – reducing emissions and adapting to a changing climate Soils – creating healthy soils Biodiversity – increasing biodiversity Agri-chemicals – reducing agri-chemical use Water – using water efficiently and restoring water quality Waste – reducing waste Social sustainability – working collaboratively to protect people across our supply chains | <p>Measure our environmental impact:</p> <ul style="list-style-type: none"> Complete the Lifecycle Assessment Create a digital Sustainability Calculator for Global G.A.P Develop a long-term solution/digital software to support the collection, analysis, and reporting of environmental data <p>Reduce our environmental impact:</p> <ul style="list-style-type: none"> Develop improvement strategies across the focus areas Design and support research projects across the focus areas <p>Educate:</p> <ul style="list-style-type: none"> Provide members with information and tools to help them reach sustainability goals <p>Communicate:</p> <ul style="list-style-type: none"> Tell our story locally and to the globe | <p>Success:</p> <ul style="list-style-type: none"> Established an approach for continuous environmental data collection, analysis, and reporting Developed and implemented ways to improve our environmental impact Supported capability in our industry to achieve this Communicated our sustainability story locally and globally |

| R&D Stream Four <ul style="list-style-type: none"> • Long term (10+ years) vision for R&D needs and outcomes | Focus areas <ul style="list-style-type: none"> • Broad priorities for the next 5 years | Priority issues <ul style="list-style-type: none"> • New and existing issues to guide project funding (1-3 years) | Measures of success <ul style="list-style-type: none"> • Desired outcomes |
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| <p>Increasing profitability and competitiveness</p> <ul style="list-style-type: none"> • Develop systems and tools to protect and maximise production efficiency • Develop systems and tools to consistently deliver high quality • Develop systems to grow industry value and competitiveness • Maximise new and existing orchards • New rootstocks and scions • Ensure production systems are sustainable | <p>Orchard systems</p> <ul style="list-style-type: none"> • Developing new and enhancing existing orchards that increase productivity (productivity, yield and quality) • Orchard practices that are applicable across multiple growing systems (different tree density, canopy structure, conventional, organic, regions, climates) <p>Fruit quality and storage potential</p> <ul style="list-style-type: none"> • Deliver consistent eating quality along with customer expectations • Maintain and enhance existing quality • Orchard and postharvest practices <p>Resistance breeding for key pests and diseases</p> <ul style="list-style-type: none"> • Blackspot, Fire blight, European canker, Woolly apple aphid | <p>Orchard productivity</p> <ul style="list-style-type: none"> • Adapting orchard systems to optimise light interception • Maintain and increase crop production • Pests and diseases (European canker and Fire blight) • Loss of soil fumigation option • Managing the production season to spread/flatten labour requirements <p>Fruit quality</p> <ul style="list-style-type: none"> • Always considered as an outcome of other priorities • Provide tools and understanding for controlling maturity to cope with lack of labour (PGRs, physiology, storage potential, quality and maturity measures) <p>Rootstocks</p> <ul style="list-style-type: none"> • Matrix guidelines for situation analysis/planting guidelines | <ul style="list-style-type: none"> • Benchmark packout rates and yields to measure increase in productivity • Best practice guidelines |

| R&D Stream Five <ul style="list-style-type: none"> • Long term (10+ years) vision for R&D needs and outcomes | Focus areas <ul style="list-style-type: none"> • Broad priorities for the next 5 years | Priority issues <ul style="list-style-type: none"> • New and existing issues to guide project funding (1-3 years) | Measures of success <ul style="list-style-type: none"> • Desired outcomes |
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| <p>Innovation</p> <ul style="list-style-type: none"> • Develop and undertake new ideas that add value, maintain and grow industry competitiveness • New technologies and systems are aligned with other R&D streams | <p>Monitoring for surveillance, early detection and management</p> <ul style="list-style-type: none"> • Pest and disease management • Crop management • Biosecurity planning and response <p>More efficient production systems</p> <ul style="list-style-type: none"> • Reduction in labour • Time efficiencies • Automation • Crop management • Quality control <p>Identify opportunities for accurate forecasting</p> <ul style="list-style-type: none"> • Precision • Data • Tools | <p>Opportunities to apply new technology compatible and integrated with existing systems</p> <ul style="list-style-type: none"> • Sensing disease • Orchard productivity • Smart phone applications • Robotics • Remote sensing <p>Opportunities for data collation and mining (managing Big Data)</p> <ul style="list-style-type: none"> • Mapping • Systems • Databases • Dashboards <p>Technology needs</p> <ul style="list-style-type: none"> • Objective measures of quality • Equipment adapted to new planting systems | <ul style="list-style-type: none"> • Complement measures of success for other streams |

| R&D Stream Six <ul style="list-style-type: none"> • Long term (10+ years) vision for R&D needs and outcomes | Focus areas <ul style="list-style-type: none"> • Broad priorities for the next 5 years | Priority issues <ul style="list-style-type: none"> • New and existing issues to guide project funding (1-3 years) | Measures of success <ul style="list-style-type: none"> • Desired outcomes |
|---|---|--|---|
| <p>Communicating best practice</p> <ul style="list-style-type: none"> • Ensure industry is empowered and upskilled • Extension of best practice that aligns all R&D streams • Providing effective communication formats | <p>Best practice for market access</p> <ul style="list-style-type: none"> • Management of key pests and diseases • Food safety practices • Risk management <p>Best practice for productivity</p> <ul style="list-style-type: none"> • Systems and tools • Pest and disease management <p>Biosecurity best practice</p> <ul style="list-style-type: none"> • Incursion prevention and response <p>Communication platforms</p> <ul style="list-style-type: none"> • Audience reach and engagement • Format, accessibility and interaction | <p>Better use of available technology for extension</p> <ul style="list-style-type: none"> • Website • Web applications • Seminars • Newsletters • Meetings • Field days <p>Ensuring best practice is implemented</p> <ul style="list-style-type: none"> • Market access <p>Technology transfer</p> <ul style="list-style-type: none"> • Food safety • Forecasting management practices for expected season • Best practice agronomy • Best practice postharvest | <ul style="list-style-type: none"> • Increased engagement demonstrated by website google analytics and attendance records • Success of outcomes for other streams |

