



Project 4 High performance orchards and improved genetic material

The objective is to provide:

- proven practices to maximise fruit yields and land use
- production of fruit with consistent quality irrespective of distance to market
- environmentally sustainable production systems that maximise water use and minimise reliance on agrichemicals
- successful varieties for commercial production

4.1 high performance growing systems

4.2 bringing forward genetic material

4.3 sustainable control of pests and diseases

4.4 consistent fruit set



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4.1 High performance growing systems

- will develop high performance growing systems to result in a paradigm shift in maximising consistent yields and quality
 - these changes will be widespread and will result in significant changes in the way the industry operates
 - there will be a change of production techniques on all fruit types (not just cherries), throughout the country
- improved harvesting options will manage future situations where harvest labour may be constrained
- the systems will also be designed to help combat the impacts of inclement weather which have previously constrained production and given rise to undesirable year to year variations on fruit quality

Activities	Milestones	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
4.1	High performance growing systems							
4.1.1	Production prediction models developed	✓	✓					
4.1.2	High performance growing systems developed		✓	✓	✓	✓	✓	✓
4.1.3	Advisory expert support		✓	✓	✓	✓	✓	✓



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4.2 Bringing forward genetic material

- will focus on:
 - bringing forward new genetic material to better meet market requirements, eg apricots and red flesh nectarines, peaches and plums
 - a number of flavourful apricot varieties specifically targeted at the Asian markets, will be evaluated in 2019
 - assessing the characteristics of those varieties selected for commercial release, eg low chill varieties that could be grown in a wider range of regions in New Zealand
 - identifying the further product development closely linked to storage and handling

Activities	Milestones	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
4.2 Bringing forward genetic material								
4.2.1	Evaluation of advanced selections	✓	✓	✓	✓	✓	✓	✓
4.2.2	Commercialisation potential identified	✓	✓	✓	✓	✓	✓	✓
4.2.3	Tree health and form evaluated	✓	✓	✓	✓	✓	✓	✓
4.2.4	Consumer sensory evaluation	✓	✓	✓	✓	✓	✓	✓



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4.3 Sustainable control of pests and diseases

- will deliver on the ongoing process to develop systems for sustainable control of damaging pests and diseases

The activity will cover the following:

- a systems approach to efficient control through better knowledge and management of:
 - pest biology
 - environmental factors
 - tree management
 - disease prediction models

- pursuit of new benign and soft compounds while reducing reliance wherever possible on agrichemicals

Activities	Milestones	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
4.3	Sustainable control of pests and diseases							
4.3.1	Improved knowledge		✓	✓	✓	✓		
4.3.2	Improved efficiency		✓	✓	✓	✓		
4.3.3	Reduced reliance on agrichemicals		✓	✓	✓	✓		
4.3.4	Inoculum quantification				✓	✓	✓	✓
4.3.5	Disease and prediction models			✓	✓	✓	✓	✓
4.3.6	Phytosanitary risks		✓	✓	✓	✓	✓	✓
4.3.7	Post harvest control	✓	✓	✓	✓	✓	✓	✓
4.3.8	Benchmarking agrichemical use	✓	✓	✓	✓	✓	✓	✓



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4.4 Consistent fruit set

- will focus on the management of fruit set factors including pollination to maximise consistent production
- novel pollination systems may be developed in combination with the requirements of the new high performance production systems
 - these will maximise consistent fruit set and crop load levels

Closely aligns with: 4.1 High performance growing systems

Activities	Milestones	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
4.4 Consistent fruit set								
4.4.1	Honeybee performance	✓	✓	✓	✓	✓	✓	✓
4.4.2	Hive optimisation	✓	✓	✓	✓	✓	✓	✓
4.4.3	New pollinators	✓	✓	✓	✓	✓	✓	✓



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Outputs

- Development and marketing of new varieties delivering consistent consumer appeal.
- High performance production systems.
- Development of production models and analysis tools that generate production efficiencies, consistency and yields.
- Increased returns per hectare.
- Consistent and reliable fruit set.
- Increased hectares planted and new plantings using new systems = increased volumes within five years.
- Reduced agrichemical use or alternatives identified.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Budget(000)	\$590	\$647	\$660	\$805	\$955	\$988	\$1,021
Total overall budget (000)						\$5,667	