Second year report

# Horticulture Impact Assessment Program:
## 2020 Aggregate Report (2018/19 Sample)


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# Executive Summary

### What the report is about

This report describes a process for evaluating a series of project investments in research, development and extension (RD&E) by Horticulture Innovation Australia Limited (Hort Innovation). The process has been used to identify and report the impacts from, and economic performance of, 15 individual project investments. These 15 project investments were drawn at random from a population of completed projects that was defined as projects that had a final deliverable submitted during the year ending June 2019 that included Hort Innovation levy funds and had a total project value greater than, or equal to, $80,000 over each project's lifetime.

### Methodology

The sample of RD&E projects was drawn at random using a random number technique. The sample was stratified by six, pre-defined investment value ranges to represent the spectrum of Hort Innovation RD&E investments by size. Further, the stratified, random sample was constructed to make up at least 10% by value of the total project population investment (Hort Innovation investment only, in nominal terms).

Each of the 15 projects was evaluated using a logical framework approach that reported project objectives, activities and outputs, outcomes, and impacts. Impacts for each project were categorised and described in a triple bottom line framework. Some of the impacts identified were then valued in monetary terms. Project Principal Investigators, Hort Innovation personnel and industry personnel were consulted and assisted with information relevant to the project descriptions as well as to assumptions relevant to the impact valuations.0

Impacts were valued for 14 of the 15 randomly selected RD&E investments. For the 14 projects where impacts were valued the investment criteria reported included the present value of costs (PVC), the present value of benefits, net present value, Benefit-Cost Ratio (BCR), Internal Rate of Return (IRR) and Modified IRR. One project was deemed not to have quantifiable impacts, for this project only the PVC was reported.

The investment criteria that were estimated and reported include the investment criteria for each project investment and the aggregate investment criteria for all 15 projects. The aggregate analysis included benefits from the 14 projects where impacts were valued and the costs for all 15 project investments yielding a lower bound estimate of the investment criteria for the 2018/19 sample.

### Results/key findings

The 15 RD&E projects subjected to impact assessment were found to have produced a range of economic, environmental and social impacts. Sixty-four (64) individual impacts were subjectively identified. Of these, approximately 41% were identified as economic (26), 9% environmental (6) and 50% social (32)

Across the 15 projects assessed, the leverage ratio (defined as the ratio of non-Hort Innovation investment to Hort Innovation investment) varied from 0 to 2.27 on an individual project basis (nominal terms). The weighted average leverage ratio for all 15 projects was approximately 0.37 (nominal terms).

### Aggregate investment criteria

Total funding from all sources for the 15 project investments totalled $11.79 million (present value terms) and produced estimated total expected benefits of $40.50 million (present value terms). This gave an aggregate weighted average BCR of approximately 3.4 to 1 after 30 years at a 5% discount rate. The results are consistent with other, similar evaluations of agricultural RD&E investments conducted by the evaluation team where average BCRs have been estimated between 2 and 6 to 1.

### Conclusions

The 2018/19 sample was considered largely representative of the investment in Hort Innovations overall RD&E porfolio for the same period. Therefore, the impacts and aggregate investment criteria estimated are indicative of impacts and performance across the broader suite of RD&E undertaken by Hort Innovation. Thus, the positive results reported should be viewed with confidence by Hort Innovation, the various Australian horticulture industries represented (including their levy payers and managers), and policy personnel responsible for allocation of public funds.

## Keywords

Impact assessment, cost-benefit analysis, aggregate assessment, investment criteria, RD&E performance

# Introduction

Horticulture Innovation Australia Limited (Hort Innovation) required a series of impact assessments to be carried out annually on a number of investments in the Hort Innovation research, development and extension (RD&E) portfolio. The assessments were required to meet the following Hort Innovation evaluation reporting requirements:

- Reporting against the Hort Innovation's current Strategic Plan and the Evaluation Framework associated with Hort Innovation's Statutory Funding Agreement with the Commonwealth Government.
- Reporting against strategic priorities set out in the Strategic Investment Plan for each Hort Innovation industry fund.
- Annual Reporting to Hort Innovation stakeholders.
- Reporting to the Council of Rural Research and Development Corporations (CRRDC).

To meet these reporting requirements, the first series of impact assessments was conducted in calendar year 2019 and included 15 randomly selected Hort Innovation RD&E investments (projects) worth a total of approximately $9.31 million (nominal Hort Innovation investment).

The second series of impact assessments also included 15 randomly selected Hort Innovation RD&E investments. The investments were selected from a new population of 85 Hort Innovation investments worth an estimated $44.64 million (nominal Hort Innovation investment) where a final deliverable had been submitted in the 2018/19 financial year. The 15 investments were selected through a stratified, random sampling process such that investments chosen represented at least 10% of the total Hort Innovation RD&E investment in the overall population (in nominal terms) and was representative of the Hort Innovation investment across six, pre-defined project size classes.

This report presents a summary and the aggregate results for the second series of annual impact assessments of RD&E investments made by Hort Innovation (hereafter referred to as the 2018/19 sample).

# Population & Sample Selection

### Defining the Population

The population of Hort Innovation projects from which the second annual impact assessment sample was drawn was defined as all Hort Innovation projects that:

(a) Were completed in the 2018/19 financial year (a completed project was defined as an RD&E investment where a final deliverable had been submitted and subsequently accepted by Hort Innovation by 30 June 2019),
(b) Included Hort Innovation levy funds, and
(c) Had a total Hort Innovation managed investment value of $\geq$ $80,000.

Based on this population definition, Hort Innovation personnel provided the evaluation team (AgEconPlus and Agtrans Research) with a population dataset that contained 85 individual project investments with a total Hort Innovation investment value of approximately $44.64 million (whole population).

For each project in the population a suite of project data was captured to support selection of the stratified random sample. Data included the project code, project title, project fund code, start date, and completion date. The data for each project also included financial data (total investment over each project's life) for Hort Innovation and its funding partners.

The data were integrated and rationalised by the evaluation team so that all relevant information (e.g. project code, completion date, and total Hort Innovation managed investment) could be observed and used in the sampling process.

### Sample Selection Criteria

The sample of projects to be subjected to impact assessment (evaluation) was selected against the following criteria:

1. A total of 15 projects in the sample.
2. The total sample to represent at least 10% of the total Hort Innovation managed investment in the overall population ($44.64 million in nominal terms).
3. Sample projects must be randomly selected from the population (defined above).
4. The sample to be stratified across a set of pre-determined, Hort Innovation investment value ranges according to the proportion of projects (by Hort Innovation investment value) in each value range in the population (see Table 1 below).

*Table 1: Hort Innovation RD&E Investment Value Ranges*

| Range Identifier | Value Range | Total Project Value[(a)] in each Value Range ($) | No. of Projects in Population | Value Range as a Proportion of Population (% by value) |
|---|---|---|---|---|
| 1 | $50,000 and under[(b)] | 0 | 0 | 0.0 |
| 2 | $50,000 - $100,000 | 536,807 | 6 | 1.2 |
| 3 | $100,000 - $200,000 | 2,359,916 | 16 | 5.3 |
| 4 | $200,000 - $500,000 | 10,912,679 | 31 | 24.4 |
| 5 | $500,000 - $1M | 14,428,740 | 21 | 32.3 |
| 6 | $1M and above | 16,399,884 | 11 | 36.7 |
| Total | | 44,638,025 | 85 | 100.0 |

(a) Hort Innovation managed investment.
(b) Excluded based on population definition.

Hort Innovation also requested that, where possible, within each value range strata, each project should represent a unique Hort Innovation program area (also known as investment themes[1]).

### Sample Selection Process

The sample selection was initiated using a spreadsheet that utilised only the project code, value range identifier, total Hort Innovation managed investment, and program data for each of the projects in the population. A random number technique then was applied to the 85 unique Hort Innovation RD&E projects in the population to generate the first random sample of 15 projects for 2018/19 evaluations.

The first set of 15 randomly selected projects was checked against the sample selection criteria (described previously). Where a criterion was not met (for example, the total Hort Innovation investment in the sample did not meet the 10% minimum value hurdle), individual projects were progressively removed based on the sample criteria required and then replaced with alternative, randomly drawn projects until all stratification criteria were met. The final sample is shown in Table 2.

The final stratified, random sample of 15 Hort Innovation RD&E projects had a total Hort Innovation managed investment value of approximately $7.11 million (nominal dollars) representing approximately 15.9% of the overall Hort Innovation managed investment in the population ($44.64 million). Further, for the value range criterion, each value range target for the sample (described by column four of Table 1) was met within 1.5% of the target proportions. Table 3 describes how the sample met the value range criterion. Each of the 15 projects drawn were attributable to a unique Hort Innovation program area.

[1] Hort Innovation's Program Framework identifies 11 cross-sectoral investment themes: (1) pest and disease management, (2) crop production, (3) sustainability, (4) novel technologies, (5) data insights, (6) industry development, (7) domestic market development, (8) international market development, market access and trade, (9) product integrity, (10) corporate services, and (11) strategic drive. For more information see Hort Innovation's 2017/18 annual report, available at: https://www.horticulture.com.au/hort-innovation/funding-consultation-and-investing/investment-documents/company-annual-report/

*Table 2: Stratified Random Sample of 15 RD&E Projects Selected for Impact Assessment (by Project Code)*

| No. | Project Code | Project Title | Total Hort. Innovation Investment ($) | Start Date | End Date | Portfolio Name | Value Range (Identifier) |
|---|---|---|---|---|---|---|---|
| 1 | AL14006 | Managing Almond production in a variable and changing climate | 437,273 | 2/03/15 | 29/05/19 | Natural Resources | 4 |
| 2 | AL16004 | Development of high health status mother plantings for new Australian almond varieties | 92,047 | 3/01/17 | 15/12/18 | Breeding | 2 |
| 3 | CT15006 | Development of national strategies to manage citrus gall wasp | 358,250 | 1/09/15 | 30/11/18 | IPDM - 1 | 4 |
| 4 | CT15013 | Citrus Quality Standards (Stage 3) | 530,298 | 18/01/16 | 31/12/18 | Post-Harvest | 5 |
| 5 | CY16011 | Implementing brown sugar flotation for assuring freedom in fruit fly | 102,801 | 1/03/17 | 1/03/19 | Biosecurity & Market Access R&D | 3 |
| 6 | NY15001 | Evaluation of Nursery Tree Stock Balance Parameters | 377,900 | 25/08/15 | 31/12/18 | Emerging Technologies | 4 |
| 7 | MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 461,090 | 18/01/15 | 29/03/19 | Industry Analysis | 4 |
| 8 | OL16004 | Olive Oil Food Service | 143,846 | 16/05/17 | 16/05/19 | Human Nutrition | 3 |
| 9 | VG15004 | Regional capacity building to grow vegetable businesses - Bowen Gumlu and FNQ | 505,409 | 22/04/16 | 30/06/19 | Technology Transfer and Adoption | 5 |
| 10 | VG15013 | Improved management options for Cucumber green mottle mosaic virus | 1,147,129 | 11/01/16 | 11/03/19 | Plant Health: Pathology / Virology / Nematodes | 6 |
| 11 | VG15030 | Growing Leaders 2015 | 605,542 | 11/01/16 | 31/12/18 | Training & Leadership | 5 |
| 12 | VG16005 | ProbiSafe - Development of biocontrol agents to inhibit pathogen growth | 636,629 | 1/09/16 | 22/05/19 | Product Integrity | 5 |
| 13 | VG16018 | Educational opportunities around the perceptions and aversions to vegetables through digital media | 1,473,838 | 30/09/16 | 30/09/19 | Industry Market Research | 6 |
| 14 | VG16035 | Training growers to enhance their consumer engagement | 108,170 | 20/10/16 | 22/10/18 | Vegetable Industry Development | 3 |
| 15 | VG16084 | Vegetable Market Price Reporting Pilot Program - Reporting | 127,528 | 7/08/17 | 19/05/19 | Industry Analysis | 3 |
| **Total Hort Innovation Managed Investment** | | | **7,107,750** | | | | |

*Table 3: Hort Innovation 2018/19 Impact Assessment Sample – Value Range Criterion*

| Range Identifier | Proportion of Population[(a)] (Sample Target) (%) | Total Project Value (for Sample) in each Value Range[(b)] ($) | Value by Range as a Proportion of Total Investment in the Sample (%) | Difference from Population Value Range Target (%) | No. of Projects Selected |
|---|---|---|---|---|---|
| 1 | 0.0 | 0 | 0.0 | 0.00 | 0 |
| 2 | 1.2 | 92,047 | 1.3 | 0.09 | 1 |
| 3 | 5.3 | 482,345 | 6.8 | 1.50 | 4 |
| 4 | 24.4 | 1,634,513 | 23.0 | -1.45 | 4 |
| 5 | 32.3 | 2,277,878 | 32.0 | -0.28 | 4 |
| 6 | 36.7 | 2,620,967 | 36.9 | 0.14 | 2 |
| Total | 100.0 | 7,107,750 | 100.0 | 0.00 | 15 |

(a) See Table 1.

(b) Hort Innovation managed investment.

## General Evaluation Method

The individual impact assessments followed general evaluation guidelines that are well entrenched within the Australian primary industry research sector including Research and Development Corporations, Cooperative Research Centres, State Departments of Agriculture, and some universities. The approach included both qualitative and quantitative assessments that are in accord with the impact assessment guidelines of the CRRDC (CRRDC, 2018). The quantitative assessments used cost-benefit analysis as its principal tool.

The evaluation process involved identifying and briefly describing project objectives, activities and outputs, outcomes, and impacts for each RD&E investment selected for the 2018/19 sample. The principal economic, environmental and social impacts were then summarised in a triple bottom line framework.

Some, but not all, of the impacts identified were then valued in monetary terms. The decision not to value certain impacts was due either to a shortage of necessary evidence/data, a high degree of uncertainty surrounding the potential impact, or the likely low relative significance of the impact compared to those that were valued. The impacts valued are therefore deemed to represent the principal benefits delivered by the project. However, as not all impacts were valued, the investment criteria reported for individual investments potentially represent an underestimate of the performance of that investment.

# Impacts

### Summary of Project Impacts

The following section summarises the key qualitative results for the 15 randomly selected projects that were subjected to impact assessment as part of the Hort Innovation annual impact assessment program. The impacts and potential impacts from each project investment were identified, described, and then classified into economic, environmental, and social impacts, on an individual project basis. The principal impacts and potential impacts for each project are shown in Table 4 (economic impacts), Table 5 (environmental impacts), and Table 6 (social impacts).

*Table 4: Principal Economic Impacts by Project*

| | | |
|---|---|---|
| Economic | AL14006 | • Progress towards the industry goal of increasing average yield from 3 to 4 t/ha. Increased yield achieved through avoided crop loss as a result of improved weather / climate risk management. |
| | AL16004 | • More profitable and lower risk almond orchards sooner (increased quality and yield with reduced operating costs) than would have occurred in the absence of mother plantings. |
| | CT15006 | • Potential for increased value of orange production in southern Australia, driven by both yield and quality (fruit size) improvements due to improved control of Citrus Gall Wasp.<br>• Potential for increased value of other citrus types including grapefruit, lemon/limes, and oranges in non-southern Australian states. |
| | CT15013 | • A potential increase in consumption of citrus driven by a reduced frequency of negative experiences.<br>• A potential increase in farm gate value of a proportion of fresh citrus production in Australia, driven by quality improvements as ascertained by domestic fresh citrus consumers, and the associated increase in consumption. |
| | CY16011 | • Reduced costs associated with testing of cherry fruit for fruit fly eggs and/or larvae.<br>• Maintained or increased market access (currently domestic only) for Australian cherries contributing to the current expansion of the Australian cherry industry.<br>• Potentially, reduced future costs of quarantine treatments for Australian export cherries supported through use of the process domestically.<br>• Reduced risk of the spread of fruit fly through cherry fruit because of improved detection and biosecurity. |
| | NY15001 | • Increased quantity and value of landscape container-grown trees supplied to nursery customers. |
| | MC15005 | • Increased productivity and/or profitability for some Australian macadamia producers driven by:<br>○ Improved understanding of farm productivity and quality performance within the industry,<br>○ Improved mitigation and management of challenging seasonal conditions,<br>○ Increased adoption of industry best practice,<br>○ Improved understanding of farm expenditure, and<br>○ Improved decision making guided by robust farm and industry data, tools, and models. |

| | | |
|---|---|---|
| | | • Improved efficiency of macadamia RD&E resource allocation through better prioritisation of key constraints and limitations to producer performance. |
| | OL16004 | • Increased demand for Australian Extra Virgin Olive Oil (EVOO) with an associated increase in olive and olive oil price. |
| | VG15004 | • Increased potential for adoption of R&D information and best management practices for vegetable production in the three northern vegetable growing regions based on existing levels of production.<br>• Potential for increased vegetable production in each of the three regions with associated increased productivity and profitability, and potentially, further increases in vegetable exports through strong support from the existing Industry Development Officer and other networks/initiatives. |
| | VG15013 | • Avoided loss of cucurbit yield due to improved Cucumber Green Mottle Mosaic Virus management. |
| | VG15030 | • Improved earnings for those participating in leadership training – additional salary or profit in their own business sooner.<br>• Better industry decisions – more integrated, efficient, and profitable supply chains, better allocation of public R&D, and capacity to shape favourable public policy outcomes. |
| | VG16005 | • Contribution to improved food safety for fresh vegetable products known to be hosts for Salmonella leading to reduced incidence of foodborne illnesses.<br>• Improved profitability for some Australian vegetable producers through reduced risk of foodborne illnesses leading to less variable consumer demand and/or reduced product recalls.<br>• Some contribution to maintained market access for Australian vegetable products through improved food safety.<br>• Reduced post-harvest vegetable treatment costs because of reduced need for pathogen disinfection treatments. |
| | VG16018 | • Increased vegetable consumption by 8 to 12-year-old children resulting in additional profitable vegetable sales by Australian growers. |
| | VG16035 | • Contribution to potential future projects that will increase vegetable grower profitability via adoption of a Direct Consumer Engagement marketing program. |
| | VG16084 | • Minor increase in vegetable grower use of market reports, resulting in improved marketing decisions and additional business profit. |

*Table 5: Principal Environmental Impacts by Project*

| | | |
|---|---|---|
| Environmental | AL14006 | • Nil |
| | AL16004 | • Nil |
| | CT15006 | • More judicious use of chemicals by some growers. |
| | CT15013 | • Reduced need for waste disposal affecting the environment. |
| | CY16011 | • Nil |

| | | |
|---|---|---|
| | NY15001 | • Potential for improved environmental amenities by both private interests and all tiers of public government agencies.<br>• Potential increase in the value of biodiversity in some local government areas. |
| | MC15005 | • Potentially, some contribution to improved environmental outcomes through increased adoption of best management practices (e.g. integrated pest and disease management, improved chemical use, etc.). |
| | OL16004 | • Nil |
| | VG15004 | • Potential for improved environmental outcomes by improved control of pests. |
| | VG15013 | • Nil |
| | VG15030 | • Nil |
| | VG16005 | • Nil |
| | VG16018 | • Nil |
| | VG16035 | • Nil |
| | VG16084 | • Nil |

*Table 6: Principal Social Impacts by Project*

| | | |
|---|---|---|
| Social | AL14006 | • Increased almond grower skills in managing weather/climate risk.<br>• Increased researcher skills in climate, phenology, and tree physiology.<br>• Contribution to improved regional community wellbeing from spill-over benefits as a result of increased crop yield and grower income - North Adelaide Plains, Riverland, Sunraysia and Riverina. |
| | AL16004 | • Capacity – additional Almond Board of Australia skills in the creation and management of mother blocks.<br>• Social - contribution to improved regional community wellbeing from spill-over benefits as a result of increased crop quality, yield, and grower income. |
| | CT15006 | • Some minor regional social impacts may have been derived from increased spill-overs to families and businesses along the supply chain from yield and grower profitability increases and less variability of orange quantity flows from year to year.<br>• Increased scientific knowledge and research capability. |
| | CT15013 | • Some regional social impacts may have been derived from increased spill-overs to families and businesses in citrus growing regions from increased grower and supply chain profitability increases.<br>• An increase in industry cohesiveness along the citrus value chain. |
| | CY16011 | • Nil |

| | | |
|---|---|---|
| | NY15001 | • Potential health and wellbeing improvements in some urban local government areas from increased tree cover. |
| | MC15005 | • Increased industry capacity, particularly for business and financial management skills, through training and extension activities aimed at improving farm productivity and quality.<br>• Potentially, improved regional community wellbeing from spill-over benefits from more productive and profitable Australian macadamia producers. |
| | OL16004 | • Increased capacity in chefs working in the Australian food services sector.<br>• Increased knowledge and capacity amongst teachers working in NSW and Victorian TAFE and other culinary schools.<br>• Increased capacity amongst project team members who have additional market research experience.<br>• Increased satisfaction amongst customers in the food service sector with better tasting and more skilfully prepared foods.<br>• Contribution to improved regional community wellbeing from spill-over benefits as a result of increased demand for Australian EVOO. |
| | VG15004 | • Potential spill-overs to some North Queensland regional communities from increased profitability of vegetable growing. |
| | VG15013 | • Increased cucurbit grower skills in virus prevention and management.<br>• Increased researcher skills in disease epidemiology and field diagnostic systems.<br>• Contribution to improved regional community wellbeing from spill-over benefits as a result of increased crop yield and grower income. |
| | VG15030 | • Trained leaders are more able and willing to contribute to community initiatives in regional Australia. |
| | VG16005 | • Increased consumer health and wellbeing through future consumption of probiotic vegetable products.<br>• Some contribution to maintained social licence to operate for some Australian vegetable producers due to improved food safety, increased community wellbeing and reduced use of chemical disinfestation treatments. |
| | VG16018 | • Children eating additional healthy vegetables, forming positive lifelong habits, and reducing the costs of endemic diseases such as obesity and type 2 diabetes.<br>• Researchers with a better understanding of what motivates children and the design of effective education programs.<br>• Contribution to improved regional community wellbeing with more profitable vegetable growers and healthy school-aged children. |
| | VG16035 | • Future contribution to vegetable grower understanding of the benefits of marketing, the marketing process, and Direct Consumer Engagement.<br>• Researchers with an increased understanding of resources available for small business, social media focussed marketing programs. |

| | | |
|---|---|---|
| | | • Future contribution to improved regional community wellbeing with more profitable vegetable growers. |
| | VG16084 | • Growers, industry development officer and researchers with additional capacity – increased awareness of the content and value of existing (Ausmarket) market reporting data.<br>• Future contribution to improved regional community wellbeing with more profitable vegetable growers. |

### Overview of Impact Types

The specific, project level impacts then were generalised into broad impact categories/types to describe the overall economic, environmental and social impacts of the total Hort Innovation RD&E portfolio, as represented by the stratified, random sample of projects assessed. Each individual project impact is represented by one tick mark (✓) in Table 7 (broad economic impact types), Table 8 (broad environmental impact types) and Table 9 (broad social impact types). Some projects have multiple ticks in the one category; this is because these impacts were different to one another but fell into the same category.

Across all 15 projects assessed there were 64 individual impacts identified. Of these, approximately 41% were identified as economic (26), 9% environmental (6) and 50% social (32).

*Table 7: Impacts by Broad Economic Impact Type for each Project in the Hort Innovation 2018/19 Impact Assessment Sample*

| **Project Code** | **Economic Impact Type** | | | | | |
|---|---|---|---|---|---|---|
| | Increased productivity and/or profitability for Australian horticulture crops[(a)] | Increased supply of and/or demand for Australian horticulture products (including through reduced variability risks) | Maintained and/or improved market access (domestic or international) | Decreased (or, potentially, increased) production or supply chain costs | Increased efficiency of resource allocation, particularly for horticulture RD&E expenditure | Other/ miscellaneous |
| AL14006 | ✓ | | | | | |
| AL16004 | ✓ | | | | | |
| CT15006 | ✓✓ | | | | | |
| CT15013 | ✓ | ✓ | | | | |
| CY16011 | | | ✓ | ✓ | | ✓✓ |
| NY15001 | ✓ | | | | | |
| MC15005 | ✓ | | | | ✓ | |
| OL16004 | | ✓ | | | | |
| VG15004 | ✓✓ | | | | | |
| VG15013 | ✓ | | | | | |
| VG15030 | | | | | ✓ | ✓ |
| VG16005 | | ✓ | ✓ | ✓ | | ✓ |
| VG16018 | | ✓ | | | | |
| VG16035 | | | | | | ✓ |
| VG16084 | | | | | | ✓ |
| **Impact Count** | **10** | **4** | **2** | **2** | **2** | **6** |

(a) Includes drivers such as increased average yields, increased area grown, increased average value, and increased average quality

*Table 8: Impacts by Broad Environmental Impact Type for each Project in the Hort Innovation 2018/19 Impact Assessment Sample*

| **Project Code** | **Environmental Impact Type** | | | | |
|---|---|---|---|---|---|
| | Reduced risk of chemical export to the off-farm environment | Avoided waste | Enhanced biodiversity | Increased adoption of environmentally friendly, best management practices | Other/ miscellaneous |
| AL14006 | | | | | |
| AL16004 | | | | | |
| CT15006 | ✓ | | | | |
| CT15013 | | ✓ | | | |
| CY16011 | | | | | |
| NY15001 | | | ✓ | | ✓ |
| MC15005 | | | | ✓ | |
| OL16004 | | | | | |
| VG15004 | | | | | ✓ |
| VG15013 | | | | | |
| VG15030 | | | | | |
| VG16005 | | | | | |
| VG16018 | | | | | |
| VG16035 | | | | | |
| VG16084 | | | | | |
| **Impact Count** | **1** | **1** | **1** | **1** | **2** |

*Table 9: Impacts by Broad Social Impact Type for each Project in the Hort Innovation 2018/19 Impact Assessment Sample*

| **Project Code** | **Social Impact Type** | | | | |
|---|---|---|---|---|---|
| | Increased knowledge and scientific/ research capacity | Productivity/ profitability benefits having a flow-on effect to support improved regional community wellbeing | Improved producer and/or consumer health, wellbeing, or utility | Increased industry or other stakeholder capacity (e.g. export capacity) | Other/ miscellaneous |
| AL14006 | ✓ | ✓ | | ✓ | |
| AL16004 | | ✓ | | ✓ | |
| CT15006 | ✓ | ✓ | | | |
| CT15013 | | ✓ | | | ✓ |
| CY16011 | | | | | |
| NY15001 | | | ✓ | | |
| MC15005 | | ✓ | | ✓ | |
| OL16004 | | ✓ | ✓ | ✓✓✓ | |
| VG15004 | | ✓ | | | |
| VG15013 | ✓ | ✓ | | ✓ | |
| VG15030 | | | | | ✓ |
| VG16005 | | | ✓ | | ✓ |
| VG16018 | ✓ | ✓ | ✓ | | |
| VG16035 | ✓ | ✓ | | ✓ | |
| VG16084 | | ✓ | | ✓ | |
| **Impact Count** | **5** | **11** | **4** | **9** | **3** |

# Results

## Overview

The following sections present the estimated investment criteria for each of the 15 Hort Innovation RD&E project investments evaluated and for all 15 projects in aggregate. The total investment for each project was usually a combination of resources from Hort Innovation and other funding partners, for example from State departments or other research/industry organisations. The investment criteria for each project investment are reported for both the total investment (including that of Hort Innovation) and for the Hort Innovation investment alone.

The investment costs for all resources (cash and in-kind) were expressed in 2019/20 dollar terms using the Implicit Price Deflator for Gross Domestic Product (ABS, 2020). All benefits after 2019/20 also were expressed in 2019/20 dollar terms. All costs and benefits were discounted to 2019/20 using a discount rate of 5% and using a reinvestment rate of 5% for calculating the Modified Internal Rate of Return (MIRR). The base analyses used the best available estimates for each variable, notwithstanding a level of uncertainty for many of the estimates. All individual analyses ran for the length of the individual project investment period plus 30 years from the last year of investment.

Results presented include the Present Value of Costs (PVC), estimated Present Value of Benefits (PVB), Net Present Value (NPV), Benefit-Cost Ratio (BCR), Internal Rate of Return (IRR) and MIRR. Definitions for these terms may be found in the Glossary of Economic Terms at the end of this report.

For the second series of Hort Innovation's annual impact assessments, 14 of the 15 projects had impacts that were valued in monetary terms. Impacts were not valued for project VG16005 and detailed reasoning behind the decision not to value the impacts identified can be found in the individual project evaluation report available from Hort Innovation. For projects where no impacts are valued, only the PVC is reported, with all other investment criteria appearing as NR (not reported) where applicable. However, the cost cash flows for projects with no impacts valued are still to be included in the calculation of the aggregate investment criteria for all 15 projects.

### Investment Criteria by Project

The individual project investment criteria for the total investment and the Hort Innovation investment for the 2018/19 random sample are reported in Table 10 and Table 11 respectively.

*Table 10: Investment Criteria for Total Investment by Individual Project*
*(30 years after last year of investment, 5% discount rate)*

| Project Code | Project Title | PVB ($m) | PVC ($m) | NPV ($m) | BCR | IRR (%) | MIRR (%) |
|---|---|---|---|---|---|---|---|
| AL14006 | Managing almond production in a variable and changing climate | 5.28 | 1.35 | 3.94 | 3.93 | 14.3 | 9.4 |
| AL16004 | Development of high health status mother plantings for new Australian almond varieties | 0.21 | 0.12 | 0.09 | 1.69 | 9.2 | 6.7 |
| CT15006 | Development of national strategies to manage citrus gall wasp | 2.47 | 0.93 | 1.54 | 2.65 | 12.6 | 8.6 |
| CT15013 | Citrus Quality Standards (Stage 3) | 2.66 | 0.83 | 1.83 | 3.20 | 15.3 | 10.1 |
| CY16011 | Implementing brown sugar flotation for assuring freedom in fruit fly | 0.41 | 0.14 | 0.27 | 2.97 | 15.1 | 6.5 |
| NY15001 | Evaluation of Nursery Tree Stock Balance Parameters | 1.27 | 0.19 | 1.08 | 6.84 | 28.8 | 12.0 |
| MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 12.48 | 2.11 | 10.36 | 5.90 | 26.8 | 9.9 |
| OL16004 | Olive Oil Food Service | 0.49 | 0.21 | 0.28 | 2.35 | 21.4 | 7.8 |
| VG15004 | Regional capacity building to grow vegetable businesses - Bowen Gumlu and FNQ | 1.90 | 0.99 | 0.92 | 1.93 | 10.8 | 9.9 |
| VG15013 | Improved management options for cucumber green mottle mosaic virus | 7.36 | 1.78 | 5.58 | 4.13 | 17.7 | 9.7 |
| VG15030 | Growing Leaders 2015 | 2.09 | 0.71 | 1.38 | 2.93 | 46.5 | 10.5 |
| VG16005 | ProbiSafe - Development of biocontrol agents to inhibit pathogen growth | NR | 1.09 | NR | NR | NR | NR |
| VG16018 | Educational opportunities around the perceptions and aversions to vegetables through digital media | 3.34 | 1.01 | 2.33 | 3.30 | 17.9 | 9.2 |
| VG16035 | Training growers to enhance their consumer engagement | 0.20 | 0.17 | 0.03 | 1.19 | 6.0 | 5.6 |
| VG16084 | Vegetable Market Price Reporting Pilot Program – Reporting | 0.34 | 0.16 | 0.19 | 2.19 | 33.5 | 7.6 |

NR: Not Reported

*Table 11: Investment Criteria for the Hort Innovation Investment by Individual Project (30 years after last year of investment, 5% discount rate)*

| Project Code | Project Title | PVB ($m) | PVC ($m) | NPV ($m) | BCR | IRR (%) | MIRR (%) |
|---|---|---|---|---|---|---|---|
| AL14006 | Managing almond production in a variable and changing climate | 2.32 | 0.59 | 1.73 | 3.93 | 14.3 | 9.4 |
| AL16004[(a)] | Development of high health status mother plantings for new Australian almond varieties | 0.21 | 0.12 | 0.09 | 1.69 | 9.2 | 6.7 |
| CT15006 | Development of national strategies to manage citrus gall wasp | 1.54 | 0.58 | 0.96 | 2.65 | 12.6 | 8.6 |
| CT15013[(a)] | Citrus Quality Standards (Stage 3) | 2.66 | 0.83 | 1.83 | 3.20 | 15.3 | 10.1 |
| CY16011[(a)] | Implementing brown sugar flotation for assuring freedom in fruit fly | 0.41 | 0.14 | 0.27 | 2.97 | 15.1 | 6.5 |
| NY15001 | Evaluation of Nursery Tree Stock Balance Parameters | 0.93 | 0.14 | 0.80 | 6.84 | 28.8 | 12.9 |
| MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 3.82 | 0.65 | 3.17 | 5.90 | 26.8 | 9.9 |
| OL16004 | Olive Oil Food Service | 0.42 | 0.18 | 0.24 | 2.35 | 21.4 | 7.8 |
| VG15004 | Regional capacity building to grow vegetable businesses - Bowen Gumlu and FNQ | 1.39 | 0.72 | 0.67 | 1.93 | 9.9 | 9.9 |
| VG15013 | Improved management options for cucumber green mottle mosaic virus | 6.32 | 1.53 | 4.79 | 4.13 | 17.7 | 9.7 |
| VG15030[(a)] | Growing Leaders 2015 | 2.09 | 0.71 | 1.38 | 2.93 | 46.5 | 10.5 |
| VG16005[(a)] | ProbiSafe - Development of biocontrol agents to inhibit pathogen growth | NR | 1.09 | NR | NR | NR | NR |
| VG16018[(a)] | Educational opportunities around the perceptions and aversions to vegetables through digital media | 3.34 | 1.01 | 2.33 | 3.30 | 17.9 | 9.2 |
| VG16035 | Training growers to enhance their consumer engagement | 0.18 | 0.15 | 0.03 | 1.19 | 6.0 | 5.6 |
| VG16084[(a)] | Vegetable Market Price Reporting Pilot Program – Reporting | 0.34 | 0.16 | 0.19 | 2.19 | 33.5 | 7.6 |

NR: Not Reported

(a) 100% Hort Innovation managed investment. Thus, investment criteria for the total investment (Table 10) and the Hort Innovation investment are the same.

Of the 15 of the projects randomly selected for the 2018/19 sample for the Hort Innovation annual impact assessment program, 14 included impacts that were valued in monetary terms. The total investment per project (PVC) across all 15 RD&E investments (Table 10) ranged from $0.12 million to $2.11 million (present value terms). Estimated benefits (PVB) for projects where impacts were valued ranged from $0.20 million to $12.48 million (present value terms).

Table 12 and Table 13 identify the three projects with the highest NPVs and BCRs. The projects are listed in descending order of each key investment criterion.

*Table 12: Top Three Projects by Net Present Value*
*(Total Investment, 30 years, 5% discount rate)*

| Project Code | Project Title | NPV ($ million) |
|---|---|---|
| MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 10.36 |
| VG15013 | Improved management options for cucumber green mottle mosaic virus | 5.58 |
| AL14006 | Managing almond production in a variable and changing climate | 3.94 |

*Table 13: Top Three Projects by Benefit-Cost Ratio*
*(Total Investment, 30 years, 5% discount rate)*

| Project Code | Project Title | BCR ($ million) |
|---|---|---|
| NY15001 | Evaluation of Nursery Tree Stock Balance Parameters | 6.84 |
| MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 5.90 |
| VG15013 | Improved management options for cucumber green mottle mosaic virus | 4.13 |

### Aggregate Investment Criteria (15 Projects)

Table 14 and Table 15 provide the aggregate investment criteria for all 15 projects for both total investment and the Hort Innovation investment only.

*Table 14: Aggregate Investment Criteria for Total Investment in all 15 Projects*
*(5% discount rate)*

| Investment Criteria | Years after last year of investment | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 5 | 10 | 15 | 20 | 25 | 30 |
| PVB ($m) | 1.07 | 8.70 | 18.43 | 26.20 | 32.20 | 36.90 | 40.50 |
| PVC ($m) | 11.79 | 11.79 | 11.79 | 11.79 | 11.79 | 11.79 | 11.79 |
| NPV ($m) | -10.71 | -3.08 | 6.64 | 14.41 | 20.42 | 25.12 | 28.72 |
| BCR | 0.09 | 0.74 | 1.56 | 2.22 | 2.73 | 3.13 | 3.44 |
| IRR (%) | negative | negative | 12.2 | 15.6 | 16.6 | 17.0 | 17.2 |
| MIRR (%) | negative | negative | 9.0 | 9.5 | 8.7 | 7.9 | 7.2 |

*Table 15: Aggregate Investment Criteria for Hort Innovation Investment in all 15 Projects*
*(5% discount rate)*

| Investment Criteria | Years after last year of investment | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 5 | 10 | 15 | 20 | 25 | 30 |
| PVB ($m) | 0.70 | 6.09 | 12.37 | 17.21 | 20.90 | 23.78 | 25.97 |
| PVC ($m) | 8.60 | 8.60 | 8.60 | 8.60 | 8.60 | 8.60 | 8.60 |
| NPV ($m) | -7.90 | -2.50 | 3.77 | 8.62 | 12.30 | 15.19 | 17.37 |
| BCR | 0.08 | 0.71 | 1.44 | 2.00 | 2.43 | 2.77 | 3.02 |
| IRR (%) | negative | negative | 11.0 | 14.3 | 15.4 | 15.9 | 16.1 |
| MIRR (%) | negative | negative | 7.8 | 8.5 | 7.9 | 7.3 | 6.6 |

The results in Table 14 show that the weighted average BCR for all 15 projects was approximately 3.4 to 1 for the total investment after 30 years. The simple average BCR was approximately 3.2 to 1 (derived from Table 10). The aggregate investment criteria were positive after ten years (BCR of 1.6).

The PVB for the Hort Innovation investment (Table 15) was estimated by multiplying the total PVB for each individual project by the Hort Innovation proportion of real investment in each project and then aggregating the Hort Innovation benefit cash flows for all 15 projects. The proportion of Hort Innovation investment at the project level varied from approximately 30.6% (Project MC15005) to 100% (seven projects).

### Source of Benefits

Table 16 shows the contribution of each project to the total PVB (Total Investment)

*Table 16: Contribution of Benefits by Source*

| Project Code | Project Title | PVB ($m) | Proportion of Total PVB (%) |
|---|---|---|---|
| AL14006 | Managing almond production in a variable and changing climate | 5.28 | 13.0 |
| AL16004 | Development of high health status mother plantings for new Australian almond varieties | 0.21 | 0.5 |
| CT15006 | Development of national strategies to manage citrus gall wasp | 2.47 | 6.1 |
| CT15013 | Citrus Quality Standards (Stage 3) | 2.66 | 6.6 |
| CY16011 | Implementing brown sugar flotation for assuring freedom in fruit fly | 0.41 | 1.0 |
| NY15001 | Evaluation of Nursery Tree Stock Balance Parameters | 1.27 | 3.1 |
| MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 12.48 | 30.8 |
| OL16004 | Olive Oil Food Service | 0.49 | 1.2 |
| VG15004 | Regional capacity building to grow vegetable businesses - Bowen Gumlu and FNQ | 1.90 | 4.7 |
| VG15013 | Improved management options for cucumber green mottle mosaic virus | 7.36 | 18.2 |
| VG15030 | Growing Leaders 2015 | 2.09 | 5.2 |
| VG16005 | ProbiSafe - Development of biocontrol agents to inhibit pathogen growth | NR | NR |
| VG16018 | Educational opportunities around the perceptions and aversions to vegetables through digital media | 3.34 | 8.2 |
| VG16035 | Training growers to enhance their consumer engagement | 0.20 | 0.5 |
| VG16084 | Vegetable Market Price Reporting Pilot Program - Reporting | 0.34 | 0.8 |
| Total | | 40.50 | 100.0 |

NR: Not Reported

### Leverage

Leverage is expressed here as the ratio of non-Hort Innovation investment to Hort Innovation investment. Across the 15 projects, leverage ratios varied from 0 to 2.27 (nominal terms). Seven projects had a leverage ratio of 0 (no external funding). The highest leveraged project was the project MC15005 (*Benchmarking the Macadamia Industry 2015-2018*) with a leverage ratio of 2.27.

The leverage ratios by project are provided in Table 17. The weighted average leverage ratio for all 15 projects was 0.37.

*Table 17: Leverage Ratio by Project*

| Project Code | Project Title | Leverage Ratio[(a)] |
|---|---|---|
| AL14006 | Managing almond production in a variable and changing climate | 1.28 |
| AL16004 | Development of high health status mother plantings for new Australian almond varieties | 0.00 |
| CT15006 | Development of national strategies to manage citrus gall wasp | 0.60 |
| CT15013 | Citrus Quality Standards (Stage 3) | 0.00 |
| CY16011 | Implementing brown sugar flotation for assuring freedom in fruit fly | 0.00 |
| NY15001 | Evaluation of Nursery Tree Stock Balance Parameters | 0.36 |
| MC15005 | Benchmarking the Macadamia Industry 2015-2018 | 2.27 |
| OL16004 | Olive Oil Food Service | 0.16 |
| VG15004 | Regional capacity building to grow vegetable businesses - Bowen Gumlu and FNQ | 0.38 |
| VG15013 | Improved management options for cucumber green mottle mosaic virus | 0.17 |
| VG15030 | Growing Leaders 2015 | 0.00 |
| VG16005 | ProbiSafe - Development of biocontrol agents to inhibit pathogen growth | 0.00 |
| VG16018 | Educational opportunities around the perceptions and aversions to vegetables through digital media | 0.00 |
| VG16035 | Training growers to enhance their consumer engagement | 0.13 |
| VG16084 | Vegetable Market Price Reporting Pilot Program - Reporting | 0.00 |
| Weighted Average Leverage Ratio (all 15 projects) | | 0.37 |

(a) Ratio of non-Hort Innovation managed investment to Hort Innovation investment

# Conclusions

Impact assessments were carried out on 15 randomly selected Hort Innovation RD&E investments that were completed with a final deliverable submitted in the year ended June 2019. These investments produced a range of economic, environmental and social impacts. Across all 15 projects assessed there were 64 individual impacts identified. Of these, approximately 41% were identified as economic (26), 9% environmental (6) and 50% social (32).

Total funding from all sources for the 15 project investments totalled $11.79 million (present value terms) and produced estimated total expected benefits of $40.50 million (present value terms). This gave an aggregate weighted average BCR of approximately 3.4 to 1 after 30 years at a 5% discount rate. The results are consistent with other, similar evaluations of agricultural RD&E investments conducted by the evaluation team where average BCRs have been estimated between 2 and 6 to 1. For example, an aggregate assessment of some 288 evaluations of RD&E investments across all 15 Australian Research and Development Corporations (RDCs) funded by the CRRDC generated a weighted average BCR of approximately 4.5 to 1 (Agtrans Research, AgEconPlus & EconSearch, 2016).

Impacts from 14 of the 15 projects from the 2019/20 sample were valued in monetary terms as part of the Hort Innovation annual impact assessment process.

The sample of projects evaluated:

- represented more than 10% of the total Hort Innovation lifetime funding of projects with a final deliverable submitted in the year ended 30 June 2019,
- was representative of funding across the pre-defined Hort Innovation project value ranges, and
- was drawn at random.

Some, but not all, of the impacts identified for each project investment were valued as part of the evaluation process. The decision not to value certain impacts was, in general, due either to a shortage of necessary evidence/data, a high degree of uncertainty surrounding the potential impact, or the likely low relative significance of the impact compared to those that were valued. The impacts valued are therefore deemed to represent the principal benefits delivered by the RD&E project investments. As not all impacts were valued, it is likely that the estimated investment criteria reported are an underestimate of the performance of the Hort Innovation RD&E investment evaluated.

The 2018/19 sample was considered largely representative of the investment in Hort Innovation's overall RD&E porfolio for the same period. Therefore, the impacts and aggregate investment criteria estimated are indicative of impacts and performance across the broader suite of RD&E undertaken by Hort Innovation. Further, as part of Hort Innovation's ongoing, annual impact assessment program, the representative results from the 2017/18 (first series) and 2018/19 (second series) evaluations will contribute to Hort Innovation's performance story over time.

Thus, the positive results reported should be viewed with confidence by Hort Innovation, the various Australian horticulture industries represented (including their levy payers and managers), and policy personnel responsible for allocation of public funds.

# Recommendations

The evaluation process reported was the second year of an annual process that will continue over a three-year period. It was intended that Hort Innovation and the evaluation team assess the overall evaluation process each year and make any reasonable improvements for the subsequent year's evaluation process. The following suggestions are made in this context with the intention of them being discussed with Hort Innovation personnel before the next round of evaluations (year three, sample of projects completed with a final deliverable submitted in the year ending June 2020).

### Consultation with Key Project Personnel

As with the first series of impact assessments conducted in calendar 2019, an important step in the impact assessment process is consultation with key project personnel including, potentially, the project's Principal Investigator and/or the project's Hort Innovation Portfolio Manager.

One of the major challenges faced by the evaluation team was gaining the cooperation of key project personnel to provide feedback and/or details of additional contacts (e.g. industry stakeholders) regarding each project's impact assessment (e.g. misinterpretations and/or omissions within the logical framework and feedback on key assumptions/data used in the impact valuations).

At the beginning of the next series of annual impact assessments, it is recommended that the relevant Principal Investigators and/or Portfolio Managers for the projects sampled are advised in advance regarding the requirement to provide assistance for the impact assessment process.

### Project Commencement to Ensure Completion for Hort Innovation Annual Report

An earlier start on year three assessments is suggested to ensure ample time for draft review, revision, and submission prior to Hort Innovation Annual Report deadlines. Additional time will ease pressure on the Hort Innovation Annual Report compilation team.

## Glossary of Economic Terms

| | |
|---|---|
| Cost-benefit analysis: | A conceptual framework for the economic evaluation of projects and programs in the public sector. It differs from a financial appraisal or evaluation in that it considers all gains (benefits) and losses (costs), regardless of to whom they accrue. |
| Benefit-cost ratio: | The ratio of the present value of investment benefits to the present value of investment costs. |
| Discounting: | The process of relating the costs and benefits of an investment to a base year using a stated discount rate. |
| Internal rate of return: | The discount rate at which an investment has a net present value of zero, i.e. where present value of benefits = present value of costs. |
| Investment criteria: | Measures of the economic worth of an investment such as Net Present Value, Benefit-Cost Ratio, and Internal Rate of Return. |
| Modified internal rate of return: | The internal rate of return of an investment that is modified so that the cash inflows from an investment are re-invested at the rate of the cost of capital (the re-investment rate). |
| Net present value: | The discounted value of the benefits of an investment less the discounted value of the costs, i.e. present value of benefits - present value of costs. |
| Present value of benefits: | The discounted value of benefits. |
| Present value of costs: | The discounted value of investment costs. |

# References

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# Appendices

The following table lists the titles of the individual impact assessment reports that form the appendices to the 2020 Aggregate Report (2018/19 Sample).

Table 18: Individual Impact Assessment Report Titles: Hort Innovation Impact Assessment Program 2018/19 Sample

| Project Code | Report Title |
|---|---|
| AL14006 | Appendix 1: Managing almond production in a variable and changing climate (AL14006 Impact Assessment) |
| AL16004 | Appendix 2: Development of high health status mother plantings for new Australian almond varieties (AL16004 Impact Assessment) |
| CT15006 | Appendix 3: Development of national strategies to manage citrus gall wasp (CT15006 Impact Assessment) |
| CT15013 | Appendix 4: Citrus Quality Standards (Stage 3) (CT15013 Impact Assessment) |
| CY16011 | Appendix 5: Implementing brown sugar flotation for assuring freedom in fruit fly (CY16011 Impact Assessment) |
| NY15001 | Appendix 6: Evaluation of Nursery Tree Stock Balance Parameters (NY15001 Impact Assessment) |
| MC15005 | Appendix 7: Benchmarking the Macadamia Industry 2015-2018 (MC15005 Impact Assessment) |
| OL16004 | Appendix 8: Olive Oil Food Service (OL16004 Impact Assessment) |
| VG15004 | Appendix 9: Regional capacity building to grow vegetable businesses – Bowen Gumlu and FNQ (VG15004 Impact Assessment) |
| VG15013 | Appendix 10: Improved management options for cucumber green mottle mosaic virus (VG15013 Impact Assessment) |
| VG15030 | Appendix 11: Growing Leaders 2015 (VG15030 Impact Assessment) |
| VG16005 | Appendix 12: ProbiSafe – Development of biocontrol agents to inhibit pathogen growth (VG16005 Impact Assessment) |
| VG16018 | Appendix 13: Educational opportunities around the perceptions and aversions to vegetables through digital media (VG16018 Impact Assessment) |
| VG16035 | Appendix 14: Training growers to enhance their consumer engagement (VG16035 Impact Assessment) |
| VG16084 | Appendix 15: Vegetable Market Price Reporting Pilot Program – Reporting (VG16084 Impact Assessment) |

## Acknowledgements

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## Abbreviations

| | |
|---|---|
| RD&E | Research, Development and Extension |
| ABS | Australian Bureau of Statistics |
| BCR | Benefit-Cost Ratio |
| CRRDC | Council of Rural Research and Development Corporations |
| EVOO | Extra Virgin Olive Oil |
| FNQ | Far North Queensland |
| Hort Innovation | Horticulture Innovation Australia Ltd |
| IRR | Internal Rate of Return |
| MIRR | Modified Internal Rate of Return |
| NPV | Net Present Value |
| PVB | Present Value of Benefits |
| PVC | Present Value of Costs |
| R&D | Research and Development |
| RDC | Research and Development Corporation |