

Final Report

**Industry-specific impact assessment
program: Berries**

**Impact assessment report for project *Assisting the
ongoing development of the Queensland
strawberry industry (BS12015)***

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Executive Summary

What the report is about

This report presents the results of an impact assessment of a Horticulture Innovation Australia Limited (Hort Innovation) investment in *BS12015: Assisting the Ongoing Development of the Queensland Strawberry Industry*. The project was funded by Hort Innovation over the period October 2012 to March 2016.

Methodology

The investment was analysed qualitatively within a logical framework that included activities and outputs, outcomes and impacts. Impacts were categorised into a triple bottom line framework. Principal impacts identified were then considered for valuation. Past and future cash flows were expressed in 2020/21 dollar terms and were discounted to the year 2020/21 using a discount rate of 5% to estimate the investment criteria.

Results/key findings

The investment in BS12015 has provided the Queensland strawberry industry with support by an Industry Development Officer (IDO). The IDO has enhanced the performance of strawberry growers via, for example, improved planning, management and cost savings and a greater awareness of market trends. These outcomes were achieved via a range of activities and communication channels such as newsletters, farm visits and field days. Other beneficiaries from the project investment include nursery owners and the management of the Queensland runner scheme.

Investment Criteria

Total funding from all sources for the project was \$0.72 million (present value terms). The investment produced estimated total expected benefits of \$3.76 million (present value terms). This gave a net present value of \$3.04 million, an estimated benefit-cost ratio of 5.25 to 1, an internal rate of return of 52.7% and a modified internal rate of return of 13.0%.

Based on the assumptions made in the economic analysis, the investment criteria estimated show a positive return to the investment in Project BS12015.

Conclusions

Project BS12015 was successful in that the investment provided the opportunity for the IDO to assist participants in Queensland strawberry growing maintain their knowledge of industry developments, markets and market trends, and new technology to improve their decision making on farm. This was achieved via an increased and more effective use of various communication channels. Grower decisions targeted included choice of varieties, earlier adoption of new technology, strawberry runner quality, and improving communications between various industry stakeholders including research and extension staff.

Keywords

Impact assessment, benefit-cost analysis, BS12015, Queensland, strawberry, industry development, extension, capacity building

Introduction

All research, development, and extension (RD&E) and marketing levy investments undertaken by Horticulture Innovation Australia Limited (Hort Innovation) are guided and aligned to specific investment outcomes, defined through a Strategic Investment Plan (SIP). The SIP guides investment of the levy to achieve each industry's vision. The relevant industry SIPs apply for the financial years 2016/17 – 2020/21.

In accordance with the Organisational Evaluation Framework, Hort innovation has the obligation to evaluate the performance of its investment undertaken on behalf of industry.

This impact assessment program addresses this requirement through conducting a series of industry-specific ex-post independent impact assessments of the berry (Rubus (RB) + Strawberry (SB)), mango (MG), turf (TU) and nursery (NY) RD&E investment funds.

Fourteen RD&E investments (projects) were selected through a stratified, random sampling process. The industry samples were as follows:

- Four RB + BS projects were chosen worth \$1.44 million (nominal Hort Innovation investment) from an overall population of 16 projects worth an estimated \$8.59 million,
- Three MG projects worth \$1.77 million (nominal Hort Innovation investment) from an overall population of 16 projects worth approximately \$7.9 million,
- Four TU projects worth \$0.66 million (nominal Hort Innovation investment) from a total population of 15 projects worth \$4.81 million, and
- Three NY projects worth \$0.96 million (nominal Hort Innovation investment) from an overall population of 19 projects worth \$7.32 million.

The project population for each industry included projects where a final deliverable had been submitted in the five-year period from 1 July 2015 to 30 June 2020.

The projects for each industry sample were chosen such that the investments represented (1) at least 10% of the total Hort Innovation RD&E investment expenditure for each industry, and (2) the SIP outcomes (proportionally) for each industry where possible given the small sample sizes.

Project BS12015: *Assisting the Ongoing Development of the Queensland Strawberry Industry* was randomly selected as one of four unique RB + BS investments under MT20008 and was analysed in this report.

General Method

The impact assessment follows general evaluation guidelines that are now 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 includes both qualitative and quantitative descriptions that are in accord with the impact assessment guidelines of the Council of Rural Research and Development Corporations (CRRDC) (CRRDC, 2018).

The evaluation process involved identifying and briefly describing project objectives, activities and outputs, outcomes, and impacts. 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. Where impact valuation was exercised, the impact assessment uses cost-benefit analysis as its principal tool. 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.

Background & Rationale

Background

The Australian strawberry industry is one of Australia's 'traditional' horticultural industries. Strawberries Australia Inc. is the strawberry industry's peak national agri-political organisation representing strawberry growers. All States have a Strawberry Growers Association affiliated with the national body. Table 1 shows recent industry production and value statistics.

Table 1: Australian Strawberry Production and Value for Years Ending June 2018 to 2020

Year ended June	Total Australian Production (tonnes)	Fresh Supply (tonnes)	Fresh Supply Wholesale Value (\$m)	Fresh Supply Wholesale Value (\$/tonne)
2018	93,545	76,514	486.8	6,362
2019	76,605	67,577	434.2	6,425
2020	82,310	68,166	472.6	6,933
Average	84,153	70,752	464.5	6,573

Source: Australian Horticultural Statistics Handbook, 2019/20

The research and development activities of the strawberry industry are guided by the industry's Strategic Investment Plan (SIP). The activities are funded by levies payable on strawberry runners planted in Australia, as well as by matching government funds.

The process of preparing the latest SIP was managed by Hort Innovation in consultation with Strawberries Australia and the Strategic Investment Advisory Panel. The current SIP has been driven by levy payers and addresses the Australian strawberry industry's research and development (R&D) needs from 2017 to 2021.

Project Rationale

The project followed an earlier industry development project (BS09004) and was aimed at further developing industry capacity with respect to productivity, sustainability and profitability. The various industry segments to be targeted were both strawberry fruit growers and the growers of strawberry runners as well as associated industry sectors such as strawberry breeders and research and extension personnel.

Further development of the QLD industry capacity with regard to strawberry grower business decision making was seen as improving grower profitability and ongoing viability. Grower decisions identified as being of importance included choice of varieties and earlier adoption of new technology. Other aspects of the industry where further development and improvement were sought included strawberry runner quality, selections from breeding programs and communications between various industry stakeholders including research and extension staff.

Project Details

Summary

Project Code: BS12015
 Title: *Assisting the Ongoing Development of the Queensland Strawberry Industry*
 Research Organisation: Queensland Strawberry Industry Promotions Council (QSIPC)
 Project Leader: Jennifer Rowling, Industry Development Officer, QSIPC
 Period of Funding: October 2012 to March 2016

Objectives

The project aimed to continue to build capacity in the QLD strawberry industry and followed an earlier Hort Innovation industry development project (BS09004). Within this broad aim, the specific objectives of the Industry Development Officer (IDO) were:

- To facilitate industry wide planning to deliver goals such as a global focus, competitiveness, market capability, better marketing structures and early adoption of technology and information.
- To facilitate planning and development of regional and state industry strategies and to connect the results to the national industry.
- To evaluate selections from the breeding programs in conjunction with breeders, runner growers and other commercial ventures; selections to be based on environmental and market opportunities within QLD.
- To continually update the grower’s database with information in relation to areas, time of production, varieties grown and other information pertinent to the industry.
- To continue the development of a sound communication plan to assist industry stakeholders build a common identity, focus and direction to encourage cooperation to achieve better outcomes for growers.

Logical Framework

Table 2 provides a description of Project BS12015 in a logical framework format, organised by project activities, outputs, outcomes and impacts.

Table 2: Logical Framework for Project BS12015

Activities	<ul style="list-style-type: none"> • Establishment of a QSIPC Project Management Committee • The Project Management Committee met regularly during the project to ensure industry needs were being met. • Investigation by the IDO via a survey of the needs of QLD strawberry growers in order to assist growers to make more informed decisions in the future. • Development of priorities and an annual work plan by the IDO addressing communications, technology transfer, market information, strawberry runners, and project management. • Evaluation of opportunities to increase strawberry fruit demand. • Investigation of new variety selections from both production and market demand perspectives. • Investigation of opportunities for improving strawberry runner quality. • Assessment of opportunities for improving new technology uptake by growers.
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	<ul style="list-style-type: none"> • Assessment of opportunities for developing supply chain alliances. • Development of communication strategies and links with: <ul style="list-style-type: none"> ○ Queensland Strawberry Runner Certification Scheme and runner growers. ○ Queensland Strawberry growers, for example via QSIPC’s newsletter (Simply Red), other email newsletters, field days and other industry events such as workshops. ○ Strawberry interests and groups in other states and national bodies.
Outputs	<ul style="list-style-type: none"> • A series of workshops and field days were facilitated by the IDO, sometimes in collaboration with the QLD Department of Agriculture and Fisheries and other stakeholders. • A series of newsletters and fact sheets were produced; a key newsletter was produced by the IDO (Simply Red); this contained articles from various stakeholders (e.g. R&D providers as well as sourced advertising revenue). • There were 14 quarterly editions of Simply Red produced over the period from December 2012 to March 2016. • Also, information on different strawberry varieties was communicated to growers. • A series of grower training events and tours was conducted. • The IDO coordinated three QLD Strawberry Industry Annual Dinner and Award events that have contributed to network building across the industry. • At least 4 regular grower meetings were conducted by the IDO each year; in addition, the IDO kept growers up to date on various issues via email and post. • The communication network expanded as growers increased information sharing.
Outcomes	<ul style="list-style-type: none"> • Strawberry growers and businesses have become more actively involved in industry issues and events such as field days and workshops. • A greater grower awareness has been apparent in the importance of, support for, and participation in research and development (R&D) activities. • Strawberry runner quality is now better managed by the industry with constructive feedback both ways between runner growers and runner users. • A wider appreciation by various industry-associated groups has been apparent for collaboration and addressing various future industry opportunities (e.g. R&D priorities). • Some evidence to support the outcomes was collated as a result of feedback forms from workshops and other activities, grower participation numbers etc. However, the majority of evidence to support the outcomes came through grower meetings and the QSIPC project committee where participants were regularly asked to provide feedback on the relevance, quality of content, method of delivery ie. workshop, study tour etc and how the information supplied may help with future on-farm decision making and provide direction for the project going forward (Jennifer Rowling, pers. comm., 2021).

Impacts	<ul style="list-style-type: none"> Improved decision making by some growers (e.g. strawberry variety selection for planting, management activities) potentially resulting in positive impacts on revenues and costs. There has been a reduction in the use of chemicals as a result of an increase in IPM practices of strawberry growers in Queensland over the course of the project (Jennifer Rowling, pers. comm., 2021). Improved R&D resource allocation due to an increasing appreciation of the feedback from industry on new varieties and other issues impacting on future research. Increased capacity to change across the QLD strawberry industry.
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Project Investment

Nominal investment

Table 3 shows the investment made in Project BS12015.

Table 3: Annual Investment in Project BS12015 (nominal \$)

Year ended 30 June	Hort Innovation (\$)	TOTAL (\$)
2013	105,000	105,000
2014	105,000	105,000
2015	98,565	98,565
2016	87,862	87,862
Totals	396,427	396,427

Source: Project Research Agreement

Program management costs

For the Hort Innovation investment the cost of managing its funding was added to the Hort Innovation contribution in Table 3 via a management cost multiplier (1.162). This multiplier was estimated based on the share of 'payments to suppliers and employees' in total Hort Innovation expenditure (3-year average) reported in the Hort Innovation's Statement of Cash Flows (Hort Innovation Annual Report, various years). This multiplier was then applied to the nominal investment by Hort Innovation shown in Table 3.

Real investment and extension costs

For purposes of the investment analysis, the investment costs of all parties were expressed in 2020/21 dollar terms using the Implicit Price Deflator for Gross Domestic Product (ABS, 2021). No additional costs of extension were included as the project itself was largely centred on extension.

Impacts

Table 4 provides a summary of the principal types of impacts delivered by the project, based on the logical framework. Impacts have been categorised into economic, environmental and social impacts.

Table 4: Triple Bottom Line Categories of Principal Impacts from Project BS12015

Economic	<ul style="list-style-type: none"> Improved decision making by some Queensland strawberry growers (e.g. strawberry variety selection for planting, management activities) potentially resulting in impacts on revenues and costs. Improved R&D resource allocation due to an increasing appreciation of the feedback from the Queensland industry on new varieties and other issues.
Environmental	<ul style="list-style-type: none"> Potential for reduced export of soil, nutrients and chemicals from strawberry farms to waterways.
Social	<ul style="list-style-type: none"> Increased regional community spillovers captured by local families and businesses along the supply chains from a more productive Queensland strawberry industry Increased capacity to change in future across the Queensland strawberry industry.

Public versus private impacts

The impacts identified from the investment are predominantly private impacts accruing to the Queensland strawberry industry through an increase in profitability, driven by improved decision making regarding production and marketing. Some public benefits may be delivered via environmental benefits, regional community spillovers, and a higher degree of useful feedback to public research agencies on industry constraints and priorities.

Distribution of private impacts

The private impacts will be distributed throughout Queensland strawberry growers including businesses involved in the strawberry input and output supply chains.

Impacts on other Australian industries

It is likely that most impacts will be largely confined to the Queensland strawberry industry. However, the increased communication with strawberry interests and groups in other states and national bodies may have delivered some limited impacts to other Australian strawberry interests.

Impacts overseas

It is unlikely that there will be any significant spillover impacts from the project to overseas interests.

Match with national priorities

The Australian Government's Science and Research Priorities and Rural RD&E priorities are reproduced in Table 5. The project outcomes and related impacts will contribute primarily to Rural RD&E Priority 4 (and, to some extent, Priority 3), as well as to Science and Research Priority 1.

Table 5: Australian Government Research Priorities

Australian Government	
Rural RD&E Priorities (est. 2015)	Science and Research Priorities (est. 2015)
<ol style="list-style-type: none"> 1. Advanced technology 2. Biosecurity 3. Soil, water and managing natural resources 4. Adoption of R&D 	<ol style="list-style-type: none"> 1. Food 2. Soil and Water 3. Transport 4. Cybersecurity 5. Energy and Resources 6. Manufacturing 7. Environmental Change 8. Health

Sources: DAWR (2015) and OCS (2016)

Alignment with the Strawberry Strategic Investment Plan 2017-2021

The strategic outcomes and strategies of the Australian strawberry industry are outlined in the Strawberry Industry’s Strategic Investment Plan 2017-2021¹ (Hort Innovation, 2017). Project BS12015 primarily addressed Outcome 3 through Strategies 3.2 and 3.3. The project also contributed to Outcome 1 through an increase by Queensland growers in their targeting of market opportunities and consumer preference, and Outcome 4.

¹ For further information, see: <https://www.horticulture.com.au/hort-innovation/funding-consultation-and-investing/investment-documents/strategic-investment-plans/>

Valuation of Impacts

Impacts Valued

The impact(s) valued in the assessment of BS12015 was the improved decision making by some Queensland strawberry growers (e.g. strawberry variety selection for planting, management activities) potentially resulting in impacts on both revenues and costs.

Impacts Not Valued

Several other impacts were identified but not valued; they included:

- Improved R&D resource allocation due to an increasing appreciation of the feedback from the Queensland industry on new varieties and other information related to research priorities. This impact was not valued due to a lack of available data on the pathway to this impact from the increased appreciation of, and input to R&D, by strawberry growers in Queensland.
- The potential for improved environmental management (reduced export of soil, nutrients and chemicals to waterways) was not valued due to a lack of available information on the extent of environmental management changes that may have occurred.
- Increased regional community spillovers from a more productive and profitable Queensland strawberry industry. This impact was not valued due to the difficulty of making sound linkage assumptions between the project and the impact and the diversity of geographic locations involved, as well as a lack of time and resources.
- Increased capacity to change in the future across the Queensland strawberry industry in future. This potential impact was not valued as any valuation would depend on the timing and nature of and ongoing and future impacts that might occur. Moreover, the capacity to change has already been accommodated to some extent in the improved decision making that has already been valued in this assessment.

Summary of Assumptions

The specific assumptions used to value the impact from Project BS12015 are provided in Table 6.

Table 6: Summary of Assumptions for Impact Valued for Project BS12015

Variable	Assumption	Source/Comment
Impact valued: Increased productivity and profitability of some Queensland growers		
Average annual area of strawberry production in Queensland	Agtrans estimate of 450 ha	Based on average of Queensland Strawberries (2020) 300 ha and Qld Govt (2019) 600 ha ;
Gross margin for Queensland strawberry production	\$81,179 per ha	Department of Primary Industries, Parks, Water and Environment, Tasmania https://dpiwwe.tas.gov.au/ May 2018
Maximum proportion of QLD growers benefiting from Project BS12015	15%	Analyst assumptions
First year of benefit	2015	
Year in which maximum benefit achieved	2018	

Period of maximum benefits	2018-2022	
Last year of benefits	Benefits decline linearly from 2023 until zero in 2026	
Increase in gross margin for growers benefiting	10%	Analyst assumption; assumed to be a combination of cost reductions, increased yield, and increased product prices
<i>Risk and attribution factors</i>		
Probability of output	100%	Analyst assumptions
Probability of outcome (proportion of industry experiencing productivity gains from the project)	90%	
Probability of increase in gross margin due to project	90%	
Attribution	100%	
Counterfactual	It was assumed that without the investment in BS12015, the impact valued would not have occurred via other investments and strategies	

Results

All costs and benefits were discounted to 2020/21 using a discount rate of 5%. A reinvestment rate of 5% was used for estimating the modified internal rate of return (MIRR). The base analysis used the best available estimates for each variable, notwithstanding a level of uncertainty for many of the estimates. All analyses ran for the length of the project investment period plus 30 years from the last year of investment (2015/16) as per the CRRDC Impact Assessment Guidelines (CRRDC, 2018).

Investment Criteria

Tables 7 and 8 show the investment criteria estimated for different periods of benefits for the total investment and the Hort Innovation investment alone. It should be noted that the investment criteria in both tables are the same.

Table 7: Investment Criteria for Total Investment in Project BS12015

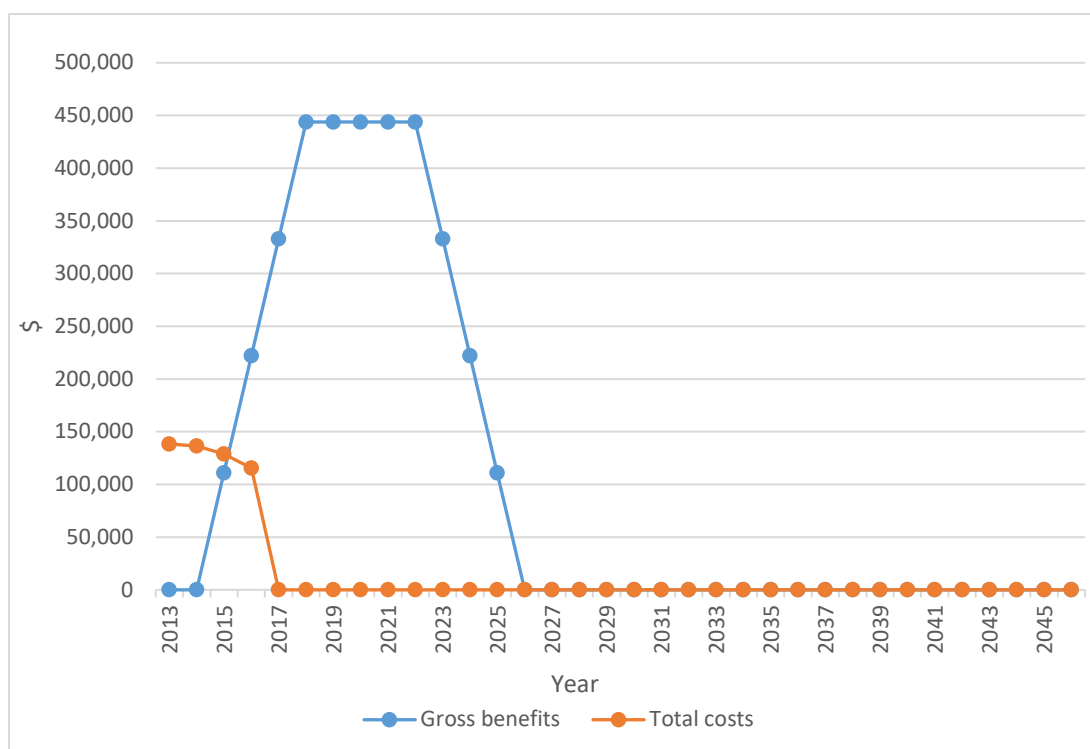
Investment Criteria	Years after Last Year of Investment						
	0	5	10	15	20	25	30
Present Value of Benefits (\$m)	0.43	2.75	3.76	3.76	3.76	3.76	3.76
Present Value of Costs (\$m)	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Net Present Value (\$m)	-0.28	2.03	3.04	3.04	3.04	3.04	3.04
Benefit-Cost Ratio	0.60	3.84	5.25	5.25	5.25	5.25	5.25
Internal Rate of Return (%)	negative	50.12	52.67	52.67	52.67	52.67	52.67
MIRR (%)	negative	36.35	26.27	20.03	14.14	14.48	13.01

Table 8: Investment Criteria for Hort Innovation Investment in Project BS12015

Investment Criteria	Years after Last Year of Investment						
	0	5	10	15	20	25	30
Present Value of Benefits (\$m)	0.43	2.75	3.76	3.76	3.76	3.76	3.76
Present Value of Costs (\$m)	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Net Present Value (\$m)	-0.28	2.03	3.04	3.04	3.04	3.04	3.04
Benefit-Cost Ratio	0.60	3.84	5.25	5.25	5.25	5.25	5.25
Internal Rate of Return (%)	negative	50.12	52.67	52.67	52.67	52.67	52.67
MIRR (%)	negative	36.35	26.27	20.03	14.14	14.48	13.01

The annual undiscounted benefit and cost cash flows for the total investment for the duration of the BS12015 investment plus 30 years from the last year of investment are shown in Figure 1.

Figure 1: Annual Cash Flow of Undiscounted Total Benefits and Total Investment Costs



Sensitivity Analyses

A sensitivity analysis was carried out on the discount rate. The analysis was performed for the total investment and with benefits taken over the life of the investment plus 30 years from the last year of investment. All other parameters were held at their base values. Table 9 presents the results that show a relatively low sensitivity to the discount rate,

Table 9: Sensitivity to Discount Rate
(Total investment, 30 years)

Investment Criteria	Discount rate		
	0%	5%	10%
Present Value of Benefits (\$m)	3.55	3.76	4.02
Present Value of Costs (\$m)	0.52	0.72	0.98
Net Present Value (\$m)	3.03	3.04	3.05
Benefit-cost ratio	6.84	5.25	4.12

A sensitivity analysis was then undertaken for the proportion of QLD growers assumed to capture benefits from the investment. Results are provided in Table 10.

Table 10: Sensitivity to Proportion of QLD Growers Assumed to Benefit
(Total investment, 30 years)

Investment Criteria	Proportion of QLD Growers Assumed Benefiting		
	10%	15% (Base)	20%
Present Value of Benefits (\$m)	2.50	3.76	5.01
Present Value of Costs (\$m)	0.72	0.72	0.72
Net Present Value (\$m)	1.79	3.04	4.29
Benefit-cost ratio	3.50	5.25	7.00

Confidence Rating

The results produced are highly dependent on the assumptions made, some of which are uncertain. There are two factors that warrant recognition. The first factor is the coverage of benefits. Where there are multiple types of benefits it is often not possible to quantify all the benefits that may be linked to the investment. The second factor involves uncertainty regarding the assumptions made, including the linkage between the research and the assumed outcomes.

A confidence rating based on these two factors has been given to the results of the investment analysis (Table 11). The rating categories used are High, Medium and Low, where:

- High: denotes a good coverage of benefits or reasonable confidence in the assumptions made
- Medium: denotes only a reasonable coverage of benefits or some uncertainties in assumptions made
- Low: denotes a poor coverage of benefits or many uncertainties in assumptions made

Table 11: Confidence in Analysis of Project

Coverage of Benefits	Confidence in Assumptions
Medium	Medium-Low

Coverage of benefits was assessed as Medium. While the most important impact from the investment was valued, there were four other impacts identified that were not valued in monetary terms. As a result, the investment criteria as provided by the valued benefit could be underestimated.

Confidence in assumptions for the impact valued was rated as Medium-Low, as some of the key assumptions made were not supported directly by evidence of change.

Conclusions

The investment in Project BS12015 focused on a wide range of activities providing information provision to QLD strawberry growers that facilitated improved industry wide planning to deliver objectives such as increased use of new technology and information (e.g. regarding varieties), marketing capabilities and marketing structures, and enhanced communication and cooperation among stakeholders.

Total funding from all sources for the project was \$0.72 million (present value terms). The investment produced estimated total expected benefits of \$3.76 million (present value terms). This gave a net present value of \$3.04 million, an estimated benefit-cost ratio of 5.25 to 1, an internal rate of return of 52.7% and a modified internal rate of return of 13.0%.

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.

Reference List

- Australian Bureau of Statistics (ABS) (Feb, 2021) 7121.0 - Agricultural Commodities, Australia, ABS series 5204.0 and 5206.0. Various years.
- Council of Rural Research and Development Corporations. (2018). Cross-RDC Impact Assessment Program: Guidelines. Canberra: Council of Rural Research and Development Corporations. Retrieved from http://www.ruralrdc.com.au/wp-content/uploads/2018/08/201804_RDC-IA-Guidelines-V.2.pdf
- Department of Agriculture and Water Resources (DAWR). (2015). Agricultural Competitiveness White Paper. Canberra: Commonwealth of Australia. Retrieved from <http://agwhitepaper.agriculture.gov.au/SiteCollectionDocuments/ag-competitiveness-white-paper.pdf>
- Department of Primary Industries, Parks, Water and Environment Tasmania Retrieved from: <https://dpiuwe.tas.gov.au/>, May 2018.
- Hort Innovation (2017) Strawberry Strategic Investment Plan 2017-2021. Retrieved from <https://www.horticulture.com.au/globalassets/hort-innovation/levy-fund-financial-and-management-documents/sip-pdfs/hortinnovation-sip-strawberry.pdf>
- Hort Innovation (2020) Australian Horticulture Statistics Handbook, 2019/20. Retrieved from: <https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/grower-resources/ha18002-assets/australian-horticulture-statistics-handbook>
- Office of the Chief Scientist (OCS). (2016). Strategic Science and Research Priorities. Canberra: Commonwealth of Australia. Retrieved from http://www.chiefscientist.gov.au/wp-content/uploads/STRATEGIC-SCIENCE-AND-RESEARCH-PRIORITIES_181214web.pdf
- Queensland Strawberries (2020) Retrieved from: <https://qldstrawberries.com.au/about/our-industry/>
- Queensland Government (2014) Strawberry harvesting and post-harvest handling; Retrieved from <https://www.daf.qld.gov.au/business-priorities/agriculture/plants/fruit-vegetable/fruit-vegetable-crops/strawberries/harvesting-and-post-harvest-handling>
- Queensland Government (2019) Retrieved from <https://www.daf.qld.gov.au/business-priorities/agriculture/plants/fruit-vegetable/fruit-vegetable-crops/strawberries>

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Abbreviations

ABS	Australian Bureau of Statistics
BS	Strawberry
CRRDC	Council of Rural Research and Development Corporations
DAWR	Department of Agriculture and Water Resources (Australian Government)
ha	hectare
IDO	Industry Development Officer
MG	Mango
MIRR	Modified Internal Rate of Return
NY	Nursery
OCS	Office of Chief Scientist Queensland
QLD	Queensland
QSIPC	Queensland Strawberry Industry Promotions Council
R&D	Research and Development
RB	Rubis
RD&E	Research, Development and Extension
SB	Strawberry
SIP	Strategic Investment Plan
TU	Turf
\$m	Million dollars