

# Impact assessments

During 2018/19, Hort Innovation engaged independent consultants to evaluate the impact of our R&D investments in the previous financial year, providing insights into the type and magnitude of impacts generated across the company's strategic levy programs.

The evaluation revealed a range of economic, social and environmental benefits being generated for horticulture growers, supply chain participants, and the community at large.

The undertaking of this work marked the beginning of a new, yearly process for the company.

## How assessments were made

Because Hort Innovation invests in R&D across a host of industry-specific levy programs, projects that were completed in 2017/18 across all industry funds were available to be randomly sampled for the impact assessment. This ensured a representative list of projects was used as the basis for the evaluation.

### Here's what happened:

1. A pool of projects was identified, with the criteria of being completed in the 2017/18 financial year and with a Hort Innovation managed investment value of at least \$80,000 – met by a total of 85 projects with a Hort Innovation investment value of \$50.4 million.
2. From this pool, a random sample of 15 projects was selected (listed on p43). Together, these 15 projects had a nominal Hort Innovation managed fund value of \$9.3 million (18.5 per cent of the overall investment value). Each project sampled also aligned with a unique R&D portfolio.
3. Each of the 15 projects was evaluated using a framework approach, looking at project objectives, activities, outputs and impacts. Some of the impacts identified were also valued in monetary terms.

The approach for evaluating the impacts was performed in line with impact assessment guidelines defined by the Council of Rural RDCs. The impact assessment consultants engaged with researchers, Hort Innovation staff and industry stakeholders to support the evaluations.

## The results

Through the assessments, 86 impacts were subjectively identified as having been generated directly by the 15 randomly selected projects. The impacts themselves were grouped into 15 broad categories, as seen in the table below. Specific benefits ranged from yield and quality improvements for avocados to increased grower and supply chain partner capacity in export development and export mindset.

ECONOMIC IMPACTS	SOCIAL IMPACTS	ENVIRONMENTAL IMPACTS
<p><b>Increased productivity and/or profitability for Australian horticulture crops (including through increased average yields, increased area grown, increased average value, increased average quality)</b></p> <p>Example relating to the investment <i>Profitable pears: Maximising productivity and quality of new pear varieties</i> (AP12002): Increased productivity and profitability for Australian pear producers was realised through the adoption of optimal orchard management systems and practices that increase average yield and fruit quality.</p>	<p><b>Increased knowledge and scientific/research capacity</b></p> <p>Example relating to the investment <i>Nursery industry statistics and research 2016/17</i> (NY16004): Capacity built in industry and researchers in the collection and interpretation of data.</p>	<p><b>Reduced chemical export off-farm</b></p> <p>Example relating to the investment <i>National strawberry varietal improvement program</i> (BS12021): Increased disease resistance of new strawberry varieties may have resulted in reduced chemical use and hence reduced the risk for any potential chemical export to the off-farm environment.</p>
<p><b>Increased supply of and/or demand for Australian horticulture products</b></p> <p>Example relating to the investment <i>National strawberry varietal improvement program</i> (BS12021): Increased demand for strawberries across Australia due to the improved characteristics of new varieties valued by consumers.</p>	<p><b>Productivity/profitability benefits having a flow-on effect to support improved regional community wellbeing</b></p> <p>Example relating to the investment <i>Supply chain quality improvement – cool chain best practice guidelines</i> (AV15010): The improved profitability of the avocado industry supply chains will increase or protect current positive benefit spill-overs to regional areas where avocados are produced and distributed.</p>	<p><b>Increased water use efficiency</b></p> <p>Example relating to the investment <i>Profitable pears: Maximising productivity and quality of new pear varieties</i> (AP12002): Improved environmental outcomes as a result of increased water use efficiency when growing and producing pears.</p>
<p><b>Reduced production and/or demand variability risks</b></p> <p>Example relating to the investment <i>Development of the Australian melon industry through communication and market focused activity</i> (VM12003): Reduced impact of biosecurity and food safety incidents for melons from improved coordination of industry mitigation practices and eradication or management responses.</p>	<p><b>Improved producer and/or consumer health, wellbeing or utility</b></p> <p>Example relating to the investment <i>Where should all the trees go? Investigating the impact of tree canopy coverage on socio-economic status and wellbeing in local government areas</i> (NY16005): Health and wellbeing improvement in some urban local government areas due to the identification of priority areas and associated actions for urban greening, compared to what otherwise would have been delivered by the 2020 Vision urban greening initiative without the project investment.</p>	<p><b>Avoided waste</b></p> <p>Example relating to the investment <i>Berry export strategy</i> (MT17001): Avoided berry waste associated with additional production, with berries likely to have been wasted in the absence of export market development.</p>

ECONOMIC IMPACTS	SOCIAL IMPACTS	ENVIRONMENTAL IMPACTS
<p><b>Maintained and/or improved market access (domestic or international)</b></p> <p>Example relating to the investment <i>New end-point treatment solutions to control fruit fly (2)</i> (VG13044): Contribution to maintained and/or improved market access for Australian capsicum producers/exporters, specifically in the New Zealand market.</p>	<p><b>Increased industry or other stakeholder capacity (for example, export capacity)</b></p> <p>Example relating to the investment <i>Berry export strategy</i> (MT17001): Increased grower and supply chain partner capacity in export development and export culture for strawberries, raspberries and blackberries.</p>	<p><b>Enhanced biodiversity</b></p> <p>Example relating to the investment <i>Where should all the trees go? Investigating the impact of tree canopy coverage on socio-economic status and wellbeing in local government areas</i> (NY16005): Potential increase in the value of biodiversity in some local government areas through increased green space.</p>
<p><b>Decreased production or supply chain costs</b></p> <p>Example relating to the investment <i>Development of the Australian melon industry through communication and market focused activity</i> (VM12003): Increased adoption of beneficial management practices from training and other extension and awareness activities, resulting in reduced melon costs of production.</p>		<p><b>Increased adoption of environment-friendly best management practices</b></p> <p>Example relating to the investment <i>Innovating new virus diagnostics and planting bed management in the Australian sweetpotato industry</i> (VG13004): With improved sweetpotato virus control, fewer chemicals will be needed for the control of insect virus vectors. This reduced usage means fewer chemicals on farm and a reduced potential for chemicals in the district environment, with positive impacts on biodiversity and water quality.</p>
<p><b>Increased efficiency of resource allocation, particularly for horticulture RD&amp;E expenditure</b></p> <p>Example relating to the investment <i>Women's and Young Grower Industry Leadership and Development Missions 2016-2018</i> (VG15703): Better vegetable industry decisions – more integrated, efficient and profitable supply chains and better allocation of public RD&amp;E resources. Also, increased capacity of industry – outside of Hort Innovation – when it comes to industry leadership and advising on public policy.</p>		



## What about monetary impact and value?

Where suitable data was available, the impacts were also valued to provide a quantitative assessment of the project via a cost-benefit analysis in monetary terms.

The cost-benefit analysis was projected over a 30-year timeframe following the project's conclusion, recognising that benefits from an investment may continue to be realised following its immediate conclusion. Costs and benefits were discounted to a present value (in 2018/19 terms) using a five per cent discount rate to reflect the time value of money.

**The results demonstrated that across the 15 sampled projects, an average benefit-cost ratio of three to one was achieved, generating a total net present value of \$41.8 million over 30 years.** The Hort-Innovation-only (levy fund) investment component of this generated a net present value of \$22.1 million and a benefit-cost ratio of 2.9 to one. Although some impacts were valued, other benefits weren't quantifiable (such as the benefit of positive impacts on regional communities from enhanced grower incomes, or broader supply chain efficiencies). As such, these results give a conservative estimate of the true benefits that would be realised for growers, supply chain participants and the broader public.

## Glossary of economic terms

The following economic terms have been used in the table on p43, illustrating the cost-benefit analysis results by project sampled:

- » **Present value of benefits:** The discounted value of benefits to 2018/19 terms.
- » **Present value of costs:** The discounted value of investment costs to 2018/19 terms.
- » **Net present value:** The discounted value of the benefits of an investment, less the discounted value of the costs – that is, present value of benefits minus present value of costs.
- » **Benefit-cost ratio:** The ratio of the present value of investment benefits to the present value of investment costs.

## Results by project sampled

PROJECT CODE	PROJECT NAME	R&D PORTFOLIO	PRESENT VALUE OF BENEFITS (\$M)	PRESENT VALUE OF COSTS (\$M)	NET PRESENT VALUE (\$M)	BENEFIT-COST RATIO
AP12002	Profitable pears: Maximising productivity and quality of new pear varieties	Crop production	6.22	3.56	2.66	1.75
AV14000	Achieving more consistent yields of quality fruit in the Australian avocado industry	Technology transfer and adoption	5.78	1.58	4.19	3.65
AV15010	Supply chain quality improvement – cool chain best practice guidelines	Supply chain	2.23	0.62	1.61	3.59
BS12021	National strawberry varietal improvement program	Breeding	24.87	7.02	17.85	3.54
MT17001	Berry export strategy	Export trade	0.21	0.15	0.06	1.39
MU14000	Communication and education of mushroom nutrition research to health professionals (phase 2)	Human nutrition	2.80	1.08	1.72	2.59
MU16005	Food safety for the Australian mushroom industry	Product integrity	0.51	0.18	0.34	2.89
NY16004	Nursery industry statistics and research 2016/17	Industry analysis	0.89	0.23	0.66	3.82
NY16005	Where should all the trees go? Investigating the impact of tree canopy coverage on socio-economic status and wellbeing in local government areas	Emerging technologies	0.67	0.21	0.46	3.17
VG13004	Innovating new virus diagnostics and planting bed management in the Australian sweetpotato industry	Plant health: pathology/ virology / nematodes	9.70	2.77	6.60	3.50
VG13044	New end-point treatment solutions to control fruit fly (2)	Biosecurity and market access R&D	1.65	1.02	0.63	1.62
VG15703	Women's and Young Grower Industry Leadership and Development Missions 2016-2018	Study tours	3.13	1.46	1.67	2.15
VG16025	Increasing consumption by developing community awareness and benefits of vegetables	Vegetable industry development	0.12	0.11	0.01	1.08
VG16026	Addressing vegetable consumption through foodservice organisations (chefs, TAFEs and other training institutions)	Industry market research	0.67	0.35	0.32	1.90
VM12003	Development of the Australian melon industry through communication and market focused activity	Industry communications	3.47	0.85	2.62	4.09