

# Vegetable

## Strategic Investment Plan

2022-2026



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Any request or enquiry to use this publication should be addressed to:

Communications Manager  
Hort Innovation  
Level 7, 141 Walker Street  
North Sydney NSW 2060  
Australia

Email: [communications@horticulture.com.au](mailto:communications@horticulture.com.au)

Phone: 02 8295 2300



# EXECUTIVE SUMMARY

The overarching strategic intent of this Strategic Investment Plan (SIP) is to drive opportunities in both domestic and international markets for vegetable products while accelerating sustainable production practices, managing risks and building a more resilient and informed industry through people development, communication and extension of research.

The vegetable SIP 2022-2026 provides a roadmap to guide Hort Innovation's investment of vegetable industry levies and Australian Government contributions, ensuring investment decisions are aligned with industry priorities.

The Australian vegetable industry situation in 2019/20 is described on **page 4** with further information provided in **Appendix 1**. The domestic fresh market is the most important channel for Australian vegetables, which accounted for around 60% of the total production volume in 2019/20. Retail is the dominant channel for fresh vegetables, accounting for approximately 83% of volume, and foodservice accounts for the remaining 17% of the fresh market.

Vegetable export volume and value has increased steadily from 2012/13, growing by an average of 9.9% over the six years to 2018/19, before a small decline was experienced in 2019/20. Vegetable exports have accounted for an increasingly higher share of overall industry production volume, from 6.6% in 2012/13, to a peak of 9.7% in 2018/19. The value of vegetable exports has risen at a greater rate than the corresponding volume, which demonstrates that customers in export markets are willing to pay more for Australian vegetables.

The strategic intent of the vegetable SIP provides a summary of how the vegetable industry will drive change over the life of the SIP. Ultimately this will come about by growing the category, along with growers having access to the tools required for production efficiencies and managing risks, while meeting the quality demands of domestic and international consumers.

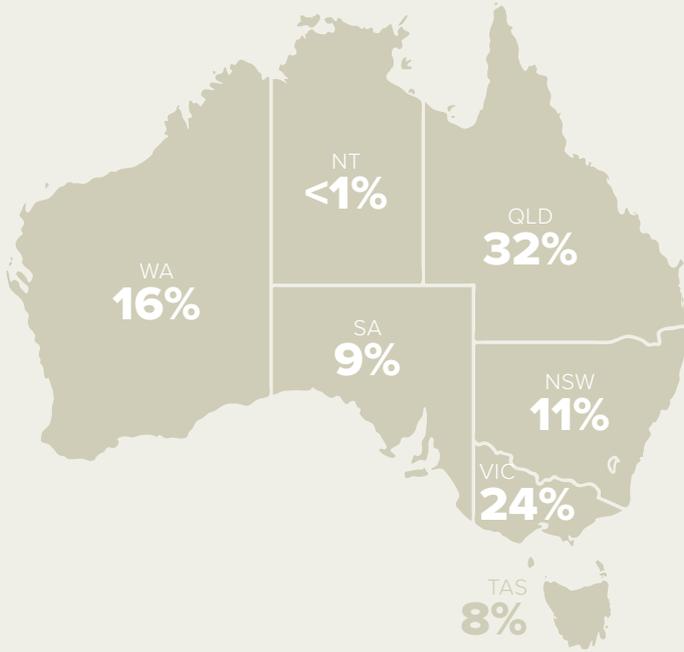
The financial estimates give an indicative overview of the funding availability for the period of FY2022-FY2026. Currently the vegetable research and development (R&D) fund has capacity to invest in new projects from FY2022. Careful prioritisation of future investment needs is required over the next five years.

The four outcome areas of this SIP cover significant themes under which programs and investments will be focused. These are listed in priority order for the vegetable industry. Industry supply, productivity and sustainability are the highest priority areas for the vegetable industry, with resource management, biosecurity advancements, variety evaluations, quality improvements and pest and disease management all essential in accelerating sustainable production and managing risks. Demand creation is the next priority for the industry as production continues to increase. Maintaining a steady value for vegetable lines through exploratory development of domestic and international market opportunities is paramount. Extension and communication of information, particularly from the supply and demand priority areas are also key to the industry's success.

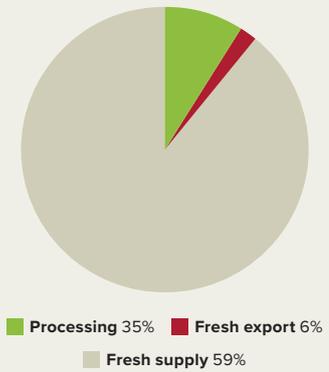
The key performance indicators (KPIs) detail how the impact of each strategy will be measured, for example, pest and disease management strategies are developed that mitigate crop loss in collaboration growers, increased trade and diversification of export market opportunities and technology solutions identified that provide improved labour efficiency.



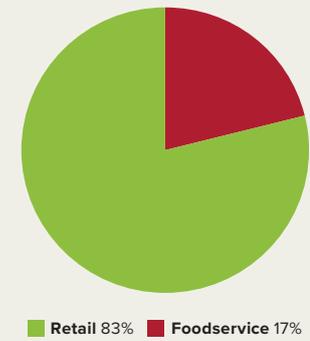
PRODUCTION AREAS:



EXPORT/FRESH DOMESTIC/ PROCESSING:



RETAIL VS FOODSERVICE:



NUMBER OF GROWERS:



**1,700**

The approximate number of levy-paying growers

HOUSEHOLD PURCHASE:



**99%**

of Australian households purchased vegetables at least once in 2019/20

PER CAPITA CONSUMPTION:



**18.49 kg**

Assuming population of 25.693 million people in June 2020

PRODUCTION VOLUME:



**1,415,949 tonnes**

of vegetables were produced in 2019/20

FARMGATE VALUE:



**\$2.272 billion\***

in 2019/20

\*Vegetable levy commodities

GROWTH TRENDS:

SINCE 2012/13...



**PRODUCTION VALUE INCREASE +\$883 million**



Production value increased by **48%** from **\$1.84 billion** in 2012/13 to **\$2.72 billion** in 2019/20.

# THE VEGETABLE STRATEGIC INVESTMENT PLAN

The vegetable SIP is the roadmap that will guide Hort Innovation's oversight and management of vegetable industry's investment programs. The SIP lays the foundation for decision-making in investments and represents the balanced interest of the whole industry. The important function of this SIP is to ensure that the investment decisions align with vegetable industry priorities.

Hort Innovation has led the process for preparing the refresh of the vegetable SIP, listening and engaging with levy payers and key stakeholders including Industry Representative Bodies (IRBs) and expertise available through advisory mechanisms and delivery partners. The refresh process involved consultation with and input from a wide range of levy payers, objective analysis of performance and learning from the previous SIP, as well as environmental scanning to identify emergent trends and issues that could impact on industry profitability and sustainability.

Hort Innovation has valued the support, advice, time, and commitment of all stakeholders that contributed to producing this SIP, especially vegetable growers.

The whole-of-company approach taken by Hort Innovation to produce this SIP has harnessed existing external and internal knowledge, learning, partnerships and relationships. The output is a tailored plan with which the vegetable industry can be confident of its strategic intent, including visibility on how investment impacts will be identified. Specific investments to address the SIP strategies and align with industry strategic priorities will be outlined in detail via the vegetable Annual Investment Plan (AIP). The AIP will be published each year over the lifespan of the SIP and detail the investments that will be prioritised based on potential industry impact, as well as the availability of levy funds. Hort Innovation will advise industry stakeholders when the AIP has been published via established communication channels each year. The AIP will be developed with input from the vegetable Strategic Investment Panels (SIAPs), IRBs and other key stakeholders.

Producers in the vegetable industry pay levies to the Department of Agriculture, Water and the Environment, which is responsible for the collection, administration and disbursement of levies and charges on behalf of Australian agricultural industries.

Agricultural levies and charges are imposed on primary producers by government at the request of industry to collectively fund R&D, marketing, biosecurity and residue testing programs.

Levy is payable on vegetables that are produced in Australia and either sold by the producer or used by the producer in the production of other goods. The levy rate on vegetables is 0.5 per cent of the gross sale value of the vegetables at the first point of sale.

Hort Innovation manages the vegetable industry levy funds that are directed to R&D (0.485% of sale price) and separately, Plant Health Australia (PHA) manages plant health programs (0.015% of sale price).

Hort Innovation has developed this SIP for the vegetable industry to strategically invest the collected vegetable levy funds into the priority areas identified and agreed by the vegetable industry.

This SIP represents the Australian vegetable industry's collective view of its R&D needs over the next five years (2022-2026). Learning, achievements and analysis of the previous SIP, consultation with Australian vegetable levy payers, and synthesis of various strategic documents have been incorporated into the development of this SIP.

**Appendix 3** acknowledges the people who were consulted in the preparation and validation of this SIP. Statistics and data within this publication are sourced from the Australian Horticulture Statistic Handbook 2019/20 and other documents unless stated otherwise and are listed in **Appendix 4**. A list of acronyms used within the document is available in **Appendix 5**.

## Financial estimates

The annual revenue from levy income and Australian Government contributions for eligible R&D set the overall budget parameters for the SIP. Importantly, a portion of these funds is already committed, as the industry has current multi-year projects for R&D activities. In addition, the levy income from year to year will vary due to changes in seasonal and market conditions.

The indicative financial estimates used for the purposes of developing this SIP are presented in **Table 1** below. These figures are regularly reviewed to reflect the latest information and statistics for the industry.

**TABLE 1. Indicative financial estimates for the vegetable SIP over the life of the SIP**

	2022 \$	2023 \$	2024 \$	2025 \$	2026 \$
<b>R&amp;D</b>					
<b>Balance end FY2021</b>	<b>2,974,317</b>				
Estimated levy funds (growers)	10,000,000	10,500,000	10,500,000	10,750,000	10,750,000
Australian Government contribution	11,411,053	10,665,607	10,206,872	9,891,491	9,862,820
Current investments	15,900,000	11,100,000	8,800,000	8,250,000	8,200,000
New investments	4,000,000	7,500,000	9,000,000	9,000,000	9,000,000
Total project investments	19,900,000	18,600,000	17,800,000	17,250,000	17,200,000
CCR	2,922,106	2,731,215	2,613,743	2,532,982	2,525,640
<b>Projected end balance</b>	<b>1,300,000</b>	<b>960,000</b>	<b>1,040,000</b>	<b>1,400,000</b>	<b>1,800,000</b>

*Disclaimer: All figures are indicative only and may change depending on actual income and expenditure.*

**Balance end FY2021** – The closing balance of the fund as at 30 June 2021

**Estimated levy funds** – Net levy income/revenue that is generated and collected by levy revenue services (LRS)

**Australian Government contribution** – Amount of contribution from the Australian Government on R&D levy-funded expenditure

**Current investments** – Current estimated value of contracted projects

**New investments** – The estimated dollar value that is available for potential new investments for industry subject to industry advice

**CCR** – Corporate cost recovery: the cost to implement and manage R&D and marketing investment programs for each industry

**Projected end balance** – Forecast of the anticipated final position of the fund





# VEGETABLE INDUSTRY OUTCOMES

The overarching strategic intent of this SIP is to drive opportunities in both domestic and international markets for vegetable products while accelerating sustainable production practices, managing risks and building a more resilient and informed industry through people development, communication and extension of research.

## Industry outcomes

Outcome statements as identified and prioritised by the vegetable industry have been prepared under four key outcome areas: industry supply, productivity and sustainability; demand creation; extension and capability; and business insights.

### **OUTCOME 1: Industry supply, production and sustainability**

Improve industry productivity (inputs/outputs) to maintain local and international competitiveness and viability of supply.

**Productivity is driven through reducing costs and inputs and increasing outputs and value. Supply and productivity will be supported through improvements to production efficiencies, including the uptake of future technologies that will drive profitability outcomes while ensuring long-term sustainability outcomes.**

The strategic intent of this outcome is to accelerate the application of production practices that are proven to optimise returns and reduce risk to growers. Achieving the outcome will involve:

- New knowledge and understanding of sustainable production systems for Australian vegetable growers including enhanced soil health, improved water and nutrient use efficiency, precision inputs and labour use efficiency
- Responding to environmental change and climate variability
- Advances in biosecurity and the management of pests and diseases through a proactive and prepared industry
- Optimising the supply chain to improve quality and traceability, as well as reduce wastage and improve sustainability of vegetable production systems
- Improvements in protected cropping and intensive production technologies
- Proactively monitoring potential crop protection regulatory threats and having access to a broader suite of effective, socially acceptable and environmentally sound crop protection solutions.



**OUTCOME 2: Demand creation**

Contribute to improving consumer knowledge, attitudes and purchase intent to drive volume growth.

**The Australian vegetable industry will develop existing and future domestic and international markets. This will contribute to improved consumer knowledge and attitudes and encourage purchase intent to drive category volume growth.**

The strategic intent of this outcome is to maintain and strengthen consumer demand as the foundation for sustainable expansion of production and consumption in both domestic and international markets. It means the industry is investing to:

- Grow the value of Australian vegetable exports by supporting industry to market premium products, targeting higher value market segments
- Articulate the value proposition for Australian vegetables and pursue more targeted market and channel growth opportunities
- Develop strong relationships across the supply chain with a shared goal to grow the category
- Enhance opportunities for value-adding and packaging
- Improve stakeholder engagement with the foodservice sector and the education of health benefits to consumers.

**OUTCOME 3: Extension and capability**

Building capability and innovative culture.

**Improve capability and develop an innovative culture that maximises investments in productivity and demand, and builds a resilient Australian vegetable industry.**

The strategic intent of this outcome is to manage knowledge, relationships, systems and processes required to communicate effectively with internal and external stakeholders. Achieving the outcome will involve:

- A change in knowledge, attitude, skill, aspiration (KASA) and practice for grower/industry profitability and sustainability through use of best practice and innovation
- Maintaining and improving industry cohesiveness, with the majority of businesses and the majority of the industry supply chain actively engaged in implementation of this strategy
- Growers, supply chain, media and governments being well informed on industry initiatives and achievements as a vital part of regional communities and networks
- Increased on-farm use of R&D outcomes which will build a stronger, more resilient industry, in addition to improved networks and cross-industry collaboration
- Proactive strategic and evidence-based decision-making in businesses and for industry on investment, priorities and risk management.

**OUTCOME 4: Business insights**

Measure industry supply (production) and demand (consumer behaviour) data and insights to inform decision-making.

**Business insights will support the industry to remain aware of market and industry trends to drive informed decision-making.**

The strategic intent of this outcome is to deliver data and insights which is foundational to achieving success in the other three outcome areas of demand creation; supply, productivity and sustainability; and extension and capability.

Achieving the outcome will involve reliable baseline data and analysis to provide insights and understand current and emerging trends. Key investments will support the provision of consumer knowledge and tracking, access to trade data, production statistics, forecasting and independent reviews to enable better decision-making process at industry level and individual businesses.

These investments underpin and are complementary to delivery of the other outcome areas.



# VEGETABLE INDUSTRY STRATEGIES

## Strategies to address industry investment priorities

The tables below describe the strategies and identified impacts for each of the key outcome areas. The highest priority investments lay the foundation for the SIP and its implementation will require a balanced approach to ensure the industry has a high likelihood of success over the short (0-3 years), medium (3-5 years) and long term (5-10 years).

The ability to deliver on these strategies (and subsequent investments) will be determined by the ability of the statutory levy to provide the resources to do so. Further resources and efficiencies may potentially become available through alternative funding sources by way of Hort Frontiers strategic partnership initiative, external grants and/or cross-industry initiatives.

### OUTCOME 1: Industry supply, production and sustainability

The Australian vegetable industry has increased profitability, efficiency and sustainability through innovative R&D, uptake of new technologies, sustainable best management practices (BMPs) and cultivars.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Optimise input management to reduce costs and maintain yield and quality in a changing climate, including improvements in water and nutrient use efficiency	<ul style="list-style-type: none"> <li>Maintained competitiveness and profitability</li> <li>Enhanced sustainability of the industry and help growers prepare and mitigate against the cost and impacts of climate change</li> <li>Reduction of major production costs through initiatives such as precision agriculture</li> </ul>
2. Identify and support opportunities to improve productivity and sustainability through effective integrated pest and disease management (IPDM), weed control, soil health and cover crops	<ul style="list-style-type: none"> <li>Efficient production systems for vegetable growers</li> <li>Improved use and management of soil and water resources in vegetable production systems</li> <li>Improved sustainability outcomes for growers and the environment</li> </ul>
3. Improve industry preparedness and resilience to biosecurity threats	<ul style="list-style-type: none"> <li>Greater protection from both endemic and exotic pests and diseases that significantly impact the vegetable industry (e.g., plant damaging arthropods such as leaf miners, fruit flies, sucking pests (aphids, whiteflies, stink bugs) and a wide range of diseases including <i>Candidatus Liberibacter solanacearum</i> (CLso), fungal wilts, rusts and nematodes)</li> <li>Improved business continuity in the event of an exotic pest incursion through better biosecurity preparedness, including implementation of on-farm biosecurity plans</li> <li>Central coordination of biosecurity R&amp;D that minimises duplication and maximises value for money</li> </ul>
4. Identify advances in automation and emerging technology opportunities to support labour use efficiency, compliance and input management pre-harvest and postharvest	<ul style="list-style-type: none"> <li>Improved labour efficiency</li> <li>Advanced compliance systems</li> <li>Improved input/resource management</li> </ul>

Continued >>

**OUTCOME 1: Industry supply, production and sustainability**

The Australian vegetable industry has increased profitability, efficiency and sustainability through innovative R&D, uptake of new technologies, sustainable BMPs and cultivars.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
5. Identify opportunities to adapt and improve current protected cropping and intensive production technologies for a range of growing conditions	<ul style="list-style-type: none"> <li>• Enhancements and specialisation of technologies to suit a broader range of conditions</li> </ul>
6. Support improvements to maintain product integrity through food safety systems and processes, production and storage techniques, and correct handling procedures through the supply chain, and mitigate associated industry risks	<ul style="list-style-type: none"> <li>• Enhanced food quality and safety, reduced opportunity for food tampering and more effective crisis management</li> <li>• Enhanced traceability</li> </ul>
7. Prioritise the major crop protection gaps through a Strategic Agrichemical Review Process (SARP)*	<ul style="list-style-type: none"> <li>• Available registered or permitted pesticides are evaluated for overall suitability against major disease, insect pests and weed threats. The SARP aims to identify potential future solutions where tools are unavailable or unsuitable</li> </ul>
8. Improve efficiencies in on-farm organic and inorganic waste management	<ul style="list-style-type: none"> <li>• Viable options for alternative use of food waste such as value-added foods and beverages, biofuels, nutraceuticals and others</li> <li>• Improved sustainability of on-farm practices</li> </ul>
9. Provide regulatory support and co-ordination for crop protection regulatory activities with the potential to impact plant protection product access, both in Australia and internationally*	<ul style="list-style-type: none"> <li>• Regulatory Risk Assessments have informed proactive strategic priority-setting to avoid pest management gaps in the event that access or use is negatively impacted</li> </ul>
10. Generate residue, efficacy and crop safety data to support applications to the Australian Pesticides and Veterinary Medicines Authority (APVMA) to gain, maintain or broaden access to priority uses for label registrations and/or minor use permits for crop protection needs*	<ul style="list-style-type: none"> <li>• Crop protection solutions meet industry priority needs as identified in the industry SARP or biosecurity plan</li> </ul>



OUTCOME 2: Demand creation	
Demand creation supports the Australian vegetable industry to develop existing and future domestic and international markets.	
STRATEGIES	POTENTIAL BENEFIT OR IMPACT
<b>Growing export markets and building export capabilities</b>	
1. Deliver a suite of export capability and market development activities that cater for the different needs of mature, emerging and aspiring exporters	<ul style="list-style-type: none"> <li>• Increased trade and exports value</li> <li>• Improved business-to-business engagement activities</li> <li>• Stronger in-market relationships with trading partners</li> <li>• Increased consumer preference for Australian vegetables</li> </ul>
2. Target high-value customers with product differentiation through best practice market intelligence, improved branding and an increased focus on value-adding	<ul style="list-style-type: none"> <li>• Increased trade and exports value</li> </ul>
3. Pursue technical market access and market improvements for existing and new industry priorities, as well as addressing as required, the specific trade barriers that inhibit export growth	<ul style="list-style-type: none"> <li>• Increased trade and diversification of export market opportunities</li> <li>• Commercially viable pathways for exporting</li> </ul>
<b>Increasing domestic demand</b>	
4. Support vegetable product differentiation and initiate stakeholder education initiatives (e.g., health benefits)	<ul style="list-style-type: none"> <li>• Australian vegetable product options are aligned with consumer needs and preferences</li> <li>• Increased demand for Australian vegetables, including imperfect or lower-grade produce</li> </ul>
5. Identify opportunities to increase the use of vegetables in domestic foodservice	<ul style="list-style-type: none"> <li>• New product offerings available to foodservice providers</li> <li>• Increased and diversified use of vegetables by the domestic foodservices sector</li> </ul>
6. Engage and collaborate with supply chain stakeholders to improve product quality through supply chain efficiencies and management of vegetable categories along the supply chain	<ul style="list-style-type: none"> <li>• Reduced costs through improved supply chain efficiencies</li> <li>• Increased demand through meeting consumer expectations for quality</li> </ul>

“The important function of this SIP is to ensure that the investment decisions align with vegetable industry priorities.”



**OUTCOME 3: Extension and capability**

Improved capability and an innovative culture that maximises investments in productivity and demand, and builds a resilient Australian vegetable industry.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Use extension and communication processes to support industry to achieve supply and demand priorities supporting profitable businesses especially in the areas of new technologies to enhance sustainable production practices, food safety, waste management, biosecurity and use of data to assist with decision-making	<ul style="list-style-type: none"> <li>Improved grower/industry profitability and sustainability through use of best practice and innovating</li> <li>Improved industry and business responses to crisis management</li> </ul>
2. Provide opportunities for the required levels of engagement across vegetable industries to innovate through trusted relationships	<ul style="list-style-type: none"> <li>Improved networks and cross-industry collaboration to increase efficiencies and use of R&amp;D outputs to build a stronger, more resilient industry</li> </ul>
3. Grow industry capacity and leadership through initiatives and training for the current workforce, increasing horticulture as a career choice and bringing new people into the industry	<ul style="list-style-type: none"> <li>Proactive strategic and evidence-based decision-making in businesses and for industry on investment, priorities and risk management</li> </ul>

**OUTCOME 4: Business insights**

The Australian vegetable industry is profitable through informed decision-making using consumer knowledge and tracking, trade data, production statistics and forecasting, and independent reviews.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Increase industry alignment with quality, consumer awareness and education driven by consumer insights*	<ul style="list-style-type: none"> <li>Provision of business insights to deliver against demand, supply and extension outcomes</li> </ul>
2. Use trade data to guide ongoing export development opportunities*	<ul style="list-style-type: none"> <li>Increased knowledge of potential markets</li> <li>Positioning of strategic markets</li> </ul>
3. Use industry data to inform long-term and/or in-season planning tools and supply strategies	<ul style="list-style-type: none"> <li>Increased industry or other stakeholder capacity (e.g., export capacity)</li> <li>Increased market knowledge/supply confidence</li> </ul>
4. Use market-leading global benchmarking to review Australian production competitiveness and engage growers in regional benchmarking initiatives	<ul style="list-style-type: none"> <li>Increased knowledge for growers on production competitiveness</li> <li>Opportunities for cost reduction</li> </ul>

\* Foundational investments provide data and information that underpin the delivery of other SIP outcome areas and will be aligned to this strategy.

Foundational investment areas include:

- Consumer behavioural data
- Consumer usage and attitudes, and brand health tracking data
- Impact assessments
- Trade data
- Crop protectant data.





# VEGETABLE SIP MONITORING AND EVALUATION

The vegetable SIP Monitoring and Evaluation (M&E) Framework development has been informed by Hort Innovation’s Organisational Evaluation Framework.

Progress against the SIP will be reported in Hort Innovation publications and through industry communication channels. The SIP outcomes and strategies are used to inform KPIs that in turn drive the investments and individual projects to deliver on the SIP. Projects responsible for delivering the strategy aligned with each KPI will collect the data.

An M&E and reporting framework is shown below. The framework shows what will be measured to demonstrate progress against the SIP and how metrics will be tracked. Reporting on KPIs will be processed through various formal channels to inform industry and government investors of progress, performance, and impact. Data sources to support M&E will be identified and collected as part of the requirements for each levy investment.

Hort Innovation will facilitate the regular review of the SIP to ensure it remains relevant to industry.

## Vegetable SIP monitoring and evaluation framework

The vegetable M&E plan is shown below. The table includes KPIs and data collection methods both at a macro/industry (trend) level and at more specific SIP strategic level/s.

OUTCOME	STRATEGIES	KPIs
<b>Industry supply, production and sustainability</b>		
<b>Outcome 1:</b> The Australian vegetable industry has increased profitability, efficiency and sustainability through innovative R&D, sustainable BMPs and cultivars.	1. Optimise input management to reduce costs and maintain yield and quality in a changing climate, including improvements in water and nutrient use efficiency	<ul style="list-style-type: none"> <li>Strategies developed with growers that optimise input management and increase climate resilience</li> </ul>
	2. Identify and support opportunities to improve productivity and sustainability through effective IPDM, weed control, soil health and cover crops	<ul style="list-style-type: none"> <li>New growing systems’ feasibility established and evaluated in collaboration with growers</li> <li>Pest and disease management strategies are developed that mitigate crop loss in collaboration with growers</li> <li>Increased knowledge of cover cropping and mixed cropping</li> <li>Plantings are optimised for production efficiency, sustainability and improved profitability</li> </ul>

*Continued >>*



OUTCOME	STRATEGIES	KPIs
<p><b>Outcome 1:</b> The Australian vegetable industry has increased profitability, efficiency and sustainability through innovative R&amp;D, sustainable BMPs and cultivars.</p>	<p>3. Improve industry preparedness and resilience to biosecurity threats</p>	<ul style="list-style-type: none"> <li>• Maintenance and implementation of a vegetable industry biosecurity plan</li> <li>• Designed (and refined) surveillance programs to support early detection of exotic plant pests</li> <li>• Prioritised fit-for-purpose diagnostics for the high-priority exotic pests using the industry biosecurity plan</li> <li>• Development of industry contingency plans, including on-farm preparedness, pest management and/or containment, and business continuity</li> <li>• Improved testing methods to ensure imported seed is free of diseases</li> </ul>
	<p>4. Identify advances in automation and emerging technology opportunities to support labour use efficiency, compliance and input management pre-harvest and postharvest</p>	<ul style="list-style-type: none"> <li>• Identification of technology solutions that provide improved labour efficiency</li> <li>• Increased knowledge and adoption by growers of automation, quality and resource management</li> </ul>
	<p>5. Identify opportunities to adapt and improve current protected cropping and intensive production technologies for a range of growing conditions</p>	<ul style="list-style-type: none"> <li>• Availability of new knowledge of cost-effective technologies that are refined for vegetable production across growing regions</li> </ul>
	<p>6. Support improvements to maintain product integrity through food safety systems and processes, production and storage techniques, and correct handling procedures through the supply chain, and mitigate associated industry risks</p>	<ul style="list-style-type: none"> <li>• No product recalls/food safety incidents</li> <li>• Effective management of the issues through a coordinated response from industry</li> <li>• Availability of best practice food safety and safe handling information for industry to support a food safety culture</li> <li>• Development of an industry risk registry and crisis management plan</li> </ul>
	<p>7. Prioritise the major crop protection gaps through a SARP*</p>	<ul style="list-style-type: none"> <li>• Coordinated industry priority setting with a clear outlook of gaps and risks in existing pest control options</li> <li>• Industry priority needs published and shared with stakeholders, including registrants</li> </ul>
	<p>8. Improve efficiencies in on-farm organic and inorganic waste management</p>	<ul style="list-style-type: none"> <li>• Identified opportunities for recycling and repurposing pre-farm-gate waste</li> <li>• Reduction of on-farm waste</li> </ul>
	<p>9. Provide regulatory support and co-ordination for crop protection regulatory activities with the potential to impact plant protection product access, both in Australia and internationally*</p>	<ul style="list-style-type: none"> <li>• Regulatory Risk Assessments maintained</li> </ul>
	<p>10. Generate residue, efficacy and crop safety data to support applications to the APVMA to gain, maintain or broaden access to priority uses for label registrations and/or minor use permits for crop protection needs*</p>	<ul style="list-style-type: none"> <li>• Data to support applications to the APVMA and the establishment of MRLs</li> </ul>

Continued &gt;&gt;

OUTCOME	STRATEGIES	KPIs
<b>Demand creation</b>		
<p><b>Outcome 2:</b> Demand creation supports the Australian vegetable industry to develop existing and future domestic and international markets.</p>	<b>Growing export markets and building export capabilities</b>	
	<p>1. Deliver a suite of export capability and market development activities that cater for the different needs of mature, emerging and aspiring exporters</p>	<ul style="list-style-type: none"> <li>Increased value of exported products</li> </ul>
	<p>2. Target high-value customers with product differentiation through best practice market intelligence, improved branding and an increased focus on value-adding</p>	<ul style="list-style-type: none"> <li>Increased industry knowledge and awareness of high-value markets and product demand</li> <li>Increased demand for premium vegetable products in international markets</li> </ul>
	<p>3. Pursue technical market access and market improvements for existing and new industry priorities, as well as addressing as required, the specific trade barriers that inhibit export growth</p>	<ul style="list-style-type: none"> <li>Prioritisation of strategic export markets for improved or new market access as identified by industry</li> </ul>
	<b>Increasing domestic demand</b>	
	<p>4. Support vegetable product differentiation and initiate stakeholder education initiatives (e.g., health benefits)</p>	<ul style="list-style-type: none"> <li>Industry has access to new product lines that align with consumer preferences</li> <li>Development of stakeholder education programs that impact knowledge, awareness and purchase intent</li> </ul>
<p>5. Identify opportunities to increase the use of vegetables in domestic foodservice</p>	<ul style="list-style-type: none"> <li>Vegetable businesses engaged to improve supply to the domestic foodservice sector</li> <li>Training programs offered to foodservice providers in collaboration with the vegetable sector</li> </ul>	
<p>6. Engage and collaborate with supply chain stakeholders to improve product quality through supply chain efficiencies and management of vegetable categories along the supply chain</p>	<ul style="list-style-type: none"> <li>Opportunities for supply chain efficiencies identified</li> <li>Improved understanding of product quality losses along the supply chain, from farm to retail</li> <li>Improved understanding and management (presentation, storage and handling) of vegetable categories along the supply chain, including at retail</li> </ul>	



OUTCOME	STRATEGIES	KPIs
<b>Extension and capability</b>		
<b>Outcome 3:</b> Improved capability and an innovative culture that maximises investments in productivity and demand and builds a resilient Australian vegetable industry.	1. Use extension and communication processes to support industry to achieve supply and demand priorities supporting profitable businesses especially in the areas of new technologies to enhance sustainable production practices, food safety, waste management, biosecurity and use of data to assist with decision-making	<ul style="list-style-type: none"> <li>Establishment of a baseline and then increased share of industry (hectares) with positive change in knowledge, attitude skills aspiration and practice change and implementation of targeted high priority areas (e.g., food safety, waste management, export capability and decision-making)</li> </ul>
	2. Provide opportunities for the required levels of engagement across vegetable industries to innovate through trusted relationships	<ul style="list-style-type: none"> <li>Grower satisfaction with growth in cooperation from within and across vegetable industries leading to adoption of innovative practices and outcomes benefiting multiple stakeholders along the supply chain</li> </ul>
	3. Grow industry capacity and leadership through initiatives and training for the current workforce, increasing horticulture as a career choice and bringing new people into the industry	<ul style="list-style-type: none"> <li>Establishment of an industry people development strategy</li> <li>Increased participation in industry training and leadership initiatives</li> </ul>
<b>Business insights</b>		
<b>Outcome 4:</b> The Australian vegetable industry is more profitable through informed decision-making using consumer knowledge and tracking, trade data, production statistics and forecasting, and independent reviews.	1. Increase industry alignment with quality, consumer awareness and education driven by consumer insights*	<ul style="list-style-type: none"> <li>Delivery of a consumer insights strategy</li> <li>Evidence that consumer insights inform strategic market engagement</li> <li>Availability of new knowledge about consumers for growers</li> </ul>
	2. Use trade data to guide ongoing export development opportunities*	<ul style="list-style-type: none"> <li>Trade data maintained and data outputs supplied to meet stakeholder needs</li> </ul>
	3. Use industry data to inform long-term and/or in-season planning tools and supply strategies	<ul style="list-style-type: none"> <li>Availability of production forecasts</li> <li>Evidence that production forecasts support marketing and production decisions</li> </ul>
	4. Use market-leading global benchmarking to review Australian production competitiveness and engage growers in regional benchmarking initiatives	<ul style="list-style-type: none"> <li>Availability of data to support extension activities and individual grower decision-making</li> <li>Evidence that data is used to support industry-level decision-making and grower practice change</li> </ul>

\* Foundational investments provide data and information that underpin the delivery of other SIP outcome areas and will be aligned to this strategy. Foundational investment areas include:

- Consumer behavioural data
- Consumer usage and attitudes, and brand health tracking data
- Impact assessments
- Trade data
- Crop protectant data.

## Reporting framework

Hort Innovation will use dynamic reporting aligned to the Organisational Evaluation Framework to report regularly on progress and performance. Reporting will be processed through formal channels to inform industry and government investors.

A review of investment performance against the respective industry outcome and/or strategy-level KPIs for the vegetable SIP will be completed annually as the primary reporting mechanism. The SIP performance report will provide:

- Evidence of progress towards achieving the industry-specific outcomes and strategies through an assessment of the KPIs identified in the SIP
- Evidence of progress towards cross-industry investment strategies and outcomes. This will involve Hort Innovation's whole-of-horticulture reporting obligations and corporate plan, annual reports and Hort Innovation's Annual Operating Plan.

SIP performance reports will also inform the Australian Government of progress towards achieving government priorities. In particular, reporting will support Hort Innovation to meet the Performance Principles and requirements contained in the [Deed of Agreement 2020-2030](#).





# COLLABORATION AND CROSS-INDUSTRY INVESTMENT

Based on advice from industry throughout the engagement process, Hort Innovation understands that Australian horticulture industries have common issues, and in turn have identified prospective areas for collaboration and cross-industry or regional investment.

These opportunities have been included as strategies across multiple industry SIPs where relevant and required. By delivering targeted multi-industry collaboration in research, development and extension (RD&E), marketing and international trade, Hort Innovation aims to support more effective and efficient outcomes for growers and the wider horticulture sector. This includes driving investment through the Hort Frontiers strategic partnership initiative. Importantly, while this approach acknowledges there is value in solving issues across industries and regions, it does not reduce the importance of industry-specific initiatives.

Cross-industry/regional R&D opportunities identified for the vegetable industry include:

- Waste management
- Biosecurity
- Food safety
- Managing climate
- Soil wealth
- Water efficiencies
- Protected cropping and precision agriculture
- Leadership
- Encouraging new entrants into the industry.

Cross-industry areas of collaboration for demand-driving outcomes provide the opportunity to advance the prosperity of the sector through gaining efficiencies in the delivery of the program and contributing to stronger overall outcomes. By collaborating as one sector to win the hearts and minds of the consumers, in addition to individual demand-driving programs, there is the potential to enhance the total category value proposition, contributing to driving returns for Australian growers.

Areas of consideration for collaboration for demand-driving outcomes across the lifespan of the 2022-2026 SIP include:

- All-of-horticulture consumer marketing campaigns designed to drive awareness, consideration, and purchase behaviour change
- Communications to bring horticulture to top of mind (saliency) and reposition the benefits they provide to Australian and international consumers
- Retail partnerships to advance total category and shopper demand-driving programs
- A global brand platform to reinforce the unique selling proposition of Australian-grown horticultural produce and drive preference with international consumers.

## Strategic science and research focus

The vegetable SIP takes into consideration the research priorities of various industry stakeholders, including AUSVEG and the Australian Fresh Produce Alliance (AFPA), and acknowledges the representation of these organisations. In developing the strategies presented within the vegetable SIP, the strategic research areas that were considered are listed in **Table 2**.

**TABLE 2. Vegetable research priorities**

Sustainability: climate change, water, packaging and shelf life
Trade: market access, industry capability development
Biosecurity: managing pest and disease, integrated pest management (IPM), chemistry
Food safety: systems and technology

Collaboration across the agriculture research community is also essential, including with organisations such as universities, private enterprise and state government agencies. Hort Innovation is a member of the National Horticulture Research Network (NHRN) together with other senior horticultural R&D representatives from state and Australian Government agricultural agencies. The NHRN is responsible for the development and implementation of the broader Horticulture RD&E Strategy under the National Primary Industries RD&E Framework.

During the engagement process, key delivery partners were contacted including lead agencies within the NHRN Framework as well as specific delivery partners for each industry. The lead agency involved with the vegetable industry investment program, Department of Agriculture and Fisheries, Queensland (DAFQ), was engaged during the development of this SIP to ensure consideration and strategic alignment of priorities for the vegetable industry. In addition, priorities and opportunities identified within the strategic plans of national and state agencies and research organisations have been considered in the development of Hort Innovations SIPs where applicable.

**TABLE 3. Government and key agency priorities**

DAFQ priorities	Rural RD&E for Profit priorities	Australian Government Science and Research priorities
Soil health	Advanced technology	Food
IDPM	Biosecurity	Soil and water
Mechanisation and labour efficiency	Soil, water and managing natural resources	Advanced manufacturing
Market and supply chain development	Adoption of R&D	Environmental change
Value add and processing/packaging		Health

This SIP has been developed alongside the government and key agency priorities listed in **Table 3**, with consideration of issues faced by the vegetable industry. These strategic areas further emphasise the opportunity and importance of cross-industry and regional collaboration. All the priority areas are of importance to Australian horticulture, and these will play a role in driving the efficiency and effectiveness of investment across the sector.

## Annual investment planning

Specific investments to address the SIP strategies and align with industry strategic priorities will be outlined in detail each year via the vegetable AIP. Investment decisions are guided by the SIP and prioritised based on potential industry impact, as well as the availability of levy funds each year. The AIP will be developed with input from the vegetable SIAPs, which are made up of growers and other industry representatives as well as IRBs and other key stakeholders. Wherever possible, investments will be aligned to form multi-industry projects to increase the efficiency of funding availability. Details of the SIAPs can be found on the Hort Innovation website [here](#), and the AIP will be published on the same page each year.

## Investment opportunities through Hort Frontiers

Innovation is key to the future success of Australian horticulture. The next evolution of the long-range, higher risk and transformational R&D that has the potential to make a significant impact will be possible through Hort Innovation's Hort Frontiers program strategic partnership initiative.

Hort Frontiers is a strategic partnership initiative that facilitates collaborative, cross-industry investments focused on the longer term and more complex themes identified as critical for Australian horticulture by 2030. The partnership framework is currently being established and will include a number of key investment themes for potential investment to guide the initiative and drive transformational R&D across horticulture. Key investment themes will include:

- Environmental sustainability (water, soil and climate)
- Pollination
- Green cities
- Biosecurity

- Health, nutrition and food safety
- Advanced production systems
- International markets
- Leadership
- Novel food and alternate uses (waste reduction).

The development of these areas for investment will benefit all of horticulture, with support from partners with aligned priorities to co-invest in deliverables identified that require alternative funds available outside the levy. Hort Frontiers is being developed to align with the Australian-grown Horticulture Sustainability Framework to invest in specific impact areas to drive innovation and sustainability initiatives.

The vegetable industry views all the above investment areas as opportunities for success into the future. Partnering with Hort Frontiers on these areas would provide the vegetable industry with opportunities for access to world-class research, specialised project management teams and large-scale R&D.

### Australian-grown Horticulture Sustainability Framework

Hort Innovation has developed the Australian-grown Horticulture Sustainability Framework report, aiming to strengthen the horticulture industry’s sustainability to meet the changing expectations and needs of growers, consumers, the community, investors and governments. The report applies across the whole of Australian horticulture, including fruits, vegetables, nuts and nursery stock. Through widespread consultation with industry and external groups, proposed sustainability goals and indicators were identified and are detailed within the framework. The framework is aligned to the UN Sustainable Development Goals.

Four key pillars were identified in the framework (*Figure 1*).



The framework should be cross-referenced when undertaking prioritisation of investments. At the time of publication, Hort Innovation is working with industry groups regarding the overall responsibility for the framework, setting and reporting progress against the framework targets and performance measures.

View the Australian-grown Horticulture Sustainability Framework on the Hort Innovation website [here](#).

**Table 4** provides examples of vegetable SIP strategies showing how the industry is already aligning to the framework.

**TABLE 4. Vegetable SIP strategy examples showing how the industry is already aligning to the Australian-grown Horticulture Sustainability Framework**

STRATEGY	IMPACT	SUSTAINABILITY GOAL
Improve efficiencies in on-farm organic and inorganic waste management	<ul style="list-style-type: none"> <li>• Viable options for alternative use of food waste such as value-added foods and beverages, biofuels, nutraceuticals and others</li> <li>• Improved sustainability of on-farm practices</li> </ul>	Less waste
Identify and support opportunities to improve productivity and sustainability through effective IPDM, weed control, soil health and cover crops	<ul style="list-style-type: none"> <li>• Efficient production systems for vegetable growers</li> <li>• Improved use and management of soil and water resources in vegetable production systems</li> <li>• Improved sustainability outcomes for growers and the environment</li> </ul>	Planet & Resources
Grow industry capacity and leadership through initiatives and training for the current workforce, increasing horticulture as a career choice and bringing new people into the industry	<ul style="list-style-type: none"> <li>• Proactive strategic and evidence-based decision-making in businesses and for industry on investment, priorities and risk management</li> </ul>	People & Enterprise



*“The vegetable SIP is the roadmap that will guide Hort Innovation’s oversight and management of vegetable industry’s investment programs.”*

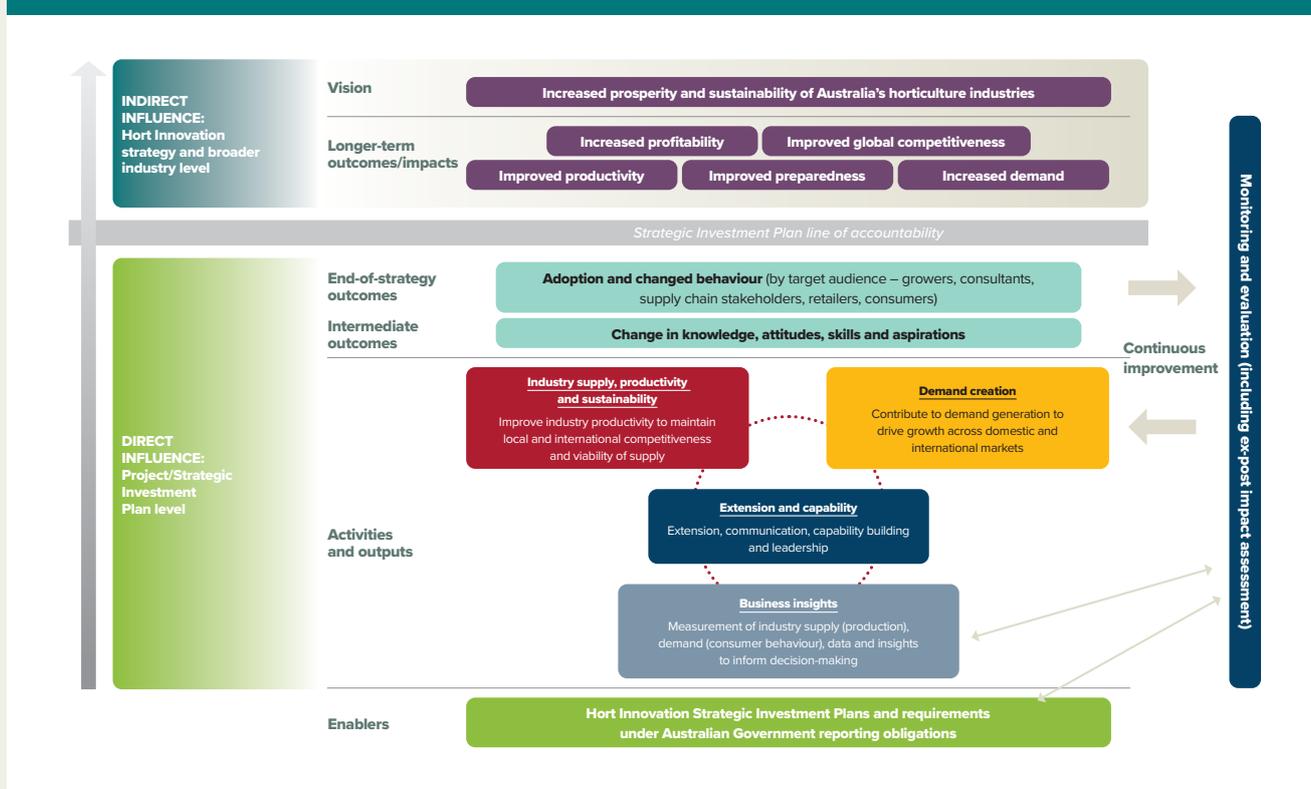
# HORT INNOVATION



## Strategic Investment Plan logic

The SIP logic (**Figure 2**) identifies how investment activities and outputs (delivered through each SIP outcome area) will support changes in industry knowledge, attitudes, skills and aspirations (KASA), which drive adoption and behaviour change. Beyond the SIP, investment will contribute to driving longer-term impacts for the sector like increased preparedness, demand, productivity, global competitiveness and profitability. Realising these impacts will support Hort Innovation’s vision of increased prosperity and sustainability of Australia’s horticulture industries.

**FIGURE 2. Strategic Investment Plan logic**



## Aligning to Hort Innovation investment priorities

Hort Innovation is committed to sustainable growth in horticulture, with the overarching aim of increasing the sector’s value to \$20 billion by 2030. We will do this through implementing the SIP and investments against the three core pillars, committed to:

1. Drive knowledge and innovation into horticulture industries
2. Deliver the highest value R&D, marketing and international trade investments across industries now and into the future
3. Enable activities that drive all strategic imperatives.

Hort Innovation is governed by a Deed of Agreement with the Australian Government, which allows for the transfer and

investment of levies and Australian Government contributions. As a Research and Development Corporation (RDC), Hort Innovation is able to leverage industry levy investments in RD&E with Government funds up to a value of 0.5% of the industry’s gross value of production. All investments made by Hort Innovation are thoroughly considered to ensure they contribute to the guiding performance principles:

- Productivity
- Profitability
- Preparedness for future opportunities and challenges
- Competitiveness
- Demand: demonstrates how productivity, preparedness and demand lead to profitability and competitiveness and sustainability.



# APPENDICES

## APPENDIX 1: Industry context

The commodities covered in the vegetable industry SIP extend to those identified under the national vegetable levy. The national vegetable levy does not apply to the following commodities, which have their own levy: potatoes, sweetpotatoes, onions and mushrooms. Additional commodities that are not covered under the national vegetable levy include asparagus, garlic, ginger and tomatoes.

### Industry supply chain

The Australian vegetable industry is a major and diverse contributor to Australian horticulture. There are approximately 1,700 levy-paying vegetable growers<sup>1</sup>. In addition to growers, the supply chain is also supported by agronomists, processors, consolidators, wholesalers, exports and distributors. Australian vegetables are supplied primarily for the domestic retail and foodservice markets in fresh form, however, fresh vegetable export volumes have been increasing. Some vegetables including peas, sweet corn and beetroot have the majority of the fresh production volume processed into products such as canned or dried goods.

Vegetables are produced using a range of field-based and protected cropping methods, which are influenced by the farming system, region and type of vegetable grown. Vegetables that have are highly labour intensive to support production include leafy salads and herbs. Other vegetables like carrots and brassicas have relatively low levels of labour input.

Depending on the scale of operation, most growers have their own planting and harvesting machinery, grading and packing facilities. Some growers also have integrated processing and direct supply chain distribution capacity within their operations. Vegetables are supplied through the central market system, direct to supermarkets or direct to processors. The three basic segments supplied domestically are supermarkets, independent retailers and foodservice providers. Vegetables can be exported directly by the grower or through an export agent or consolidator.

### Domestic consumers and drivers of demand

The domestic fresh market is the most important channel for Australian vegetables, which accounted for around 60% of the total production volume in 2019/20. Retail is the dominant channel for fresh vegetables, accounting for approximately 83% of volume, and foodservice accounts for the remaining 17% of the fresh market.

Vegetables are consumed across all meal and snacking occasions and can be prepared using a variety of methods (e.g., steaming, boiling, frying, baking, roasting, raw). **Table 5** lists the occasion ranking and common vegetables consumed for each occasion<sup>2</sup>.

**TABLE 5. Vegetable occasion ranking and type**

Occasion ranking	Types of vegetables eaten
Dinner	Beans, broccoli, cabbage, carrot, cauliflower, leafy Asian vegetables, peas, pumpkin, zucchini
Lunch	Lettuce, cucumber, fresh salad Lettuce, cucumber, fresh salad
Snacking	Celery, carrot, cucumber, radish
Breakfast	Spinach, kale

<sup>1</sup> Frilay J., Weragoda A., Litchfield F, Thompson T & Ashton D (2019). *Australian vegetable-growing farms: an economic survey, 2017–18 and 2018–19*, ABARES research report 19.12, Canberra, November. CC BY 4.0.

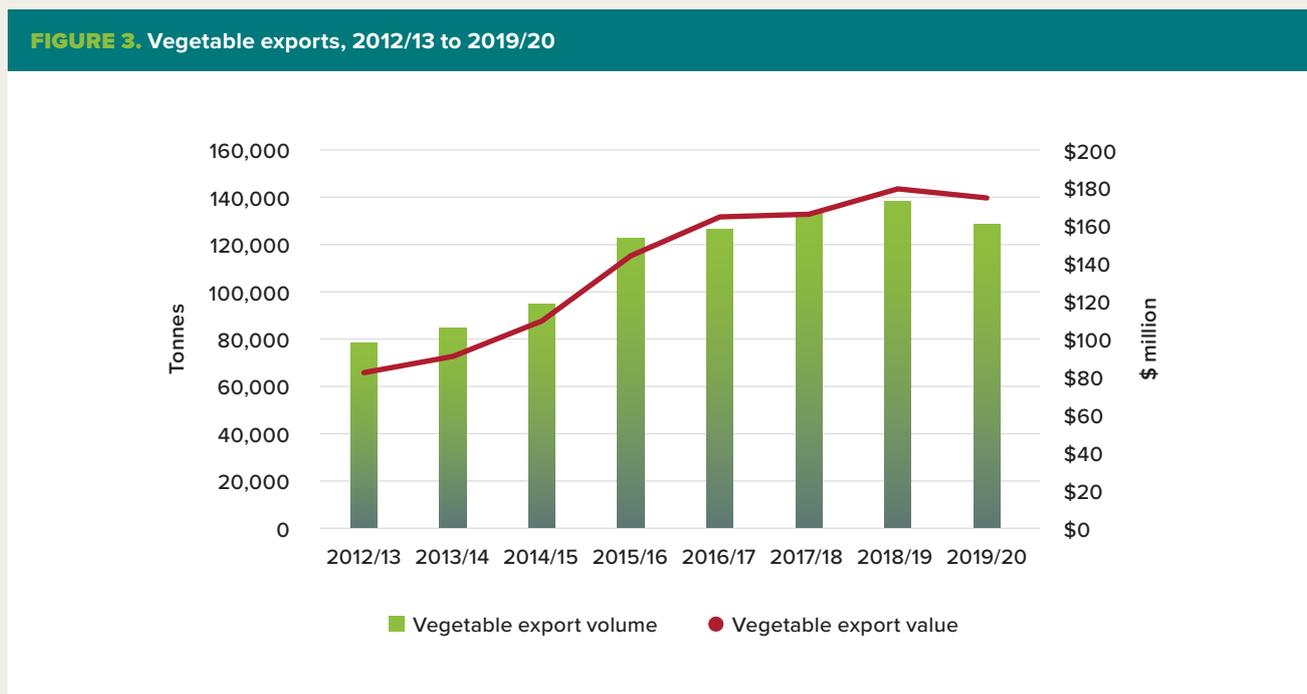
<sup>2</sup> Nielsen (2020). Vegetable consumption occasions. Hort Innovation Harvest to Home.

While the health benefits of vegetables are well known, only 7.5% of Australian adults aged 18 years and over typically meet the recommended daily intake of five serves of vegetables per day<sup>3</sup>. Consumer attitudinal research completed by Nielsen for Hort Innovation in 2019 identified that the three major barriers for purchasing more vegetables is consumers being concerned about waste, dislike of vegetables, and already eating enough<sup>4</sup>. These results highlight the need to bridge the disconnect between current vegetable consumption and the recommended dietary intake to drive domestic demand. Providing a range of vegetable offerings (e.g., pre-cut) to avoid concerns about waste, ideas for preparation that enhances meals and snacks, and highlighting methods and occasions to integrate vegetables into meals and snacks can help to overcome the key barriers to purchase and encourage more domestic consumption.

### Export markets

Vegetable export volume and value has increased steadily from 2012/13, growing by an average of 9.9% over the six years to 2018/19, before a small decline was experienced in 2019/20. Vegetable exports have accounted for an increasingly higher share of overall industry production volume, from 6.6% in 2012/13, to a peak of 9.7% in 2018/19. The value of vegetable exports has risen at a greater rate than the corresponding volume, which demonstrates that customers in export markets are willing to pay more for Australian vegetables. Export values increased by 13.9% on average over the six years to 2018/19, underpinned by increases to unit values, which jumped from 1.05 per kilogram in 2012/13 to \$1.36 per kilogram in 2019/20. In 2019/20 exports of Australian vegetables were valued at \$174 million (Figure 3).

Vegetables are exported primarily to Singapore, United Arab Emirates, Malaysia, Hong Kong and Saudi Arabia. Carrots, broccoli, cauliflower, leafy salad, celery and beans are major vegetable export commodities, accounting for 80% of the total export value in 2019/20.



Source: Australian Horticulture Statistics Handbook (2019/20)

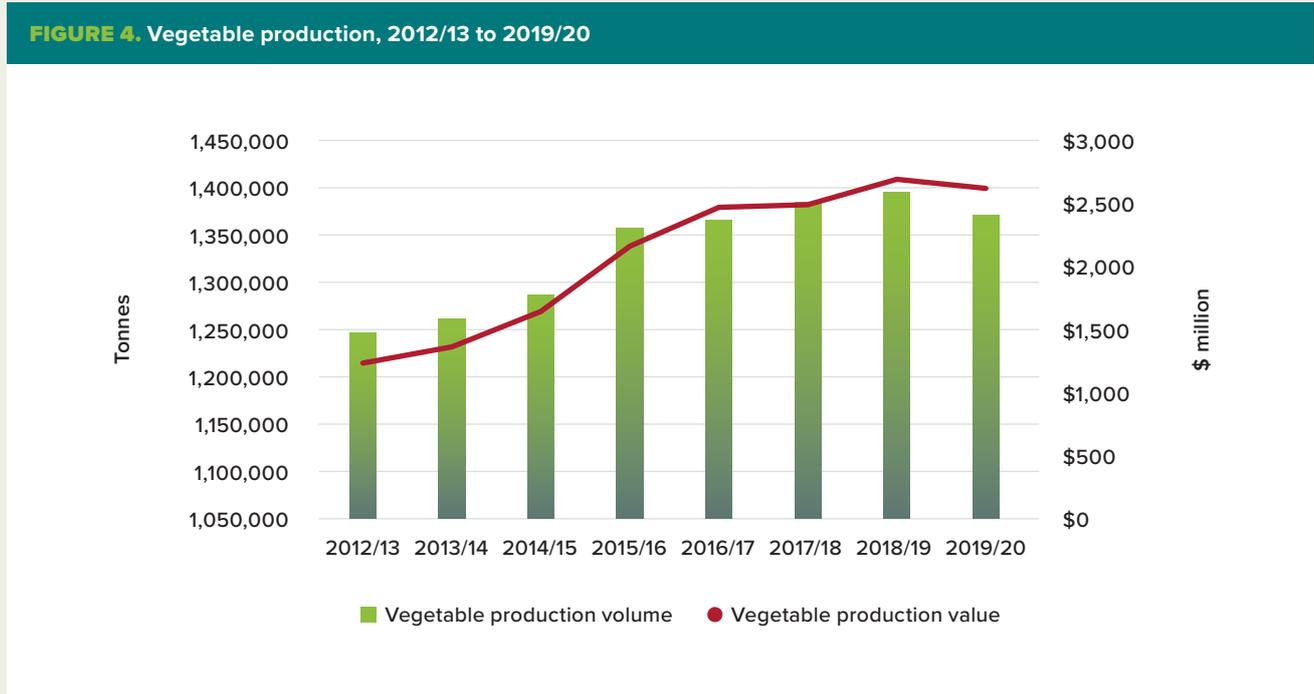
3 ABS (2018). National Health Survey: First results. Catalogue number 4364.0

4 Nielsen (2019). Veggie makeover: changing consumer perceptions to deliver growth. Hort Innovation Harvest to Home.

### Industry production

The volume of vegetable production has demonstrated an increasing trend since 2012/13, growing by an average of 3% over the six years to 2018/19, before a small decline was experienced in 2019/20. The production decline experienced in 2019/20 was driven by impacts from bushfires and drought. The value of vegetable production has increased by an average of 5.8% per year over the seven years to 2019/20, reaching a total value of \$2.79 billion (Figure 4). The average unit price has also increased from \$1.54 per kilogram to \$1.92 indicating that vegetables are maintaining and increasing their market price.

Vegetables are grown throughout Australia year-round, although the availability of specific vegetables on a regional basis are still subject to seasonal influences. The number of farms has been steadily declining in recent years as the industry consolidates, with remaining small farms most likely to exit the industry within the short term.



Source: Australian Horticulture Statistics Handbook (2019/20)



## APPENDIX 2: Vegetable industry situation analysis

At the time of refreshing the SIP in 2021, the global coronavirus (COVID-19) pandemic continues to affect horticulture industries to varying degrees. Although the outcome and ultimate impact of the pandemic are unknown, areas of investment across horticulture that may be influenced over the period of this SIP include export and trade relationships, domestic and international demand, logistics and supply chain, labour supply – all having potential impacts on grower profitability.

Environmental, economic and social sustainability are vitally important to Australian horticultural growers and industries. Customers, consumers, and investors also seek information about the sustainability and ethics of how their food is produced. Sustainability is particularly crucial as topics such as climate variability, health and ethics continue to shape the social, environmental, and political landscape for agricultural industries. The impact of these issues may have influence on a whole range of investment areas for horticulture from production practices and land management, demand and reputation of products, quality expectations and cultural/community engagement.

### Strengths, weaknesses, opportunities and threats

**Table 6** has been used to analyse the vegetable industry's strengths, weaknesses, opportunities, and threats (SWOT). The SWOT tool assists the industry to build on what works, observe what is lacking, minimise risks, and take the greatest possible advantage of chances for success.

**TABLE 6. Vegetable SWOT analysis**

The vegetable industry	
<b>Strengths</b>	<ul style="list-style-type: none"> <li>• Southern hemisphere location giving seasonal opportunities and geographic substitution for international markets</li> <li>• Strong and domestically-focused demand for Australian horticultural produce and a reputation for quality processes and standards, also known as 'clean and green'</li> <li>• The close proximity to the large and growing Asian markets, with more than half of the world's population. Asia is the fastest growing region in the world in terms of population, food consumption and income growth, and is a market increasingly looking to import high-quality, 'clean and green' produce</li> <li>• Greater investment in research, development and extension than other countries, as many do not have a comparable RDC system or access to the same levels of investment capital</li> <li>• Regulatory systems that support environmental sustainability, quality assurance and biosecurity protection</li> <li>• High-quality producers</li> <li>• Relatively large amount of arable land available and production capacity across diverse regions</li> </ul>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>• Relatively high production costs, particularly labour</li> <li>• Small economy with diverse growers of diverse cultural background, scale, crops, geography and climate, which reduces the opportunity to achieve economies of scale</li> <li>• Slowing of productivity growth</li> <li>• Impediments to exports, such as biosecurity constraints/phytosanitary requirements, trade barriers and the cost and complexity of supplying distant markets</li> <li>• The significant influence of major retailers when dealing with suppliers and access to consumers, which affects margins at the farmgate</li> <li>• Limited uptake of industry knowledge and transfer of innovation due to time and investment constraints</li> <li>• Lack of adoption of BMP models, particularly in less sophisticated operations</li> </ul>

The vegetable industry	
<b>Opportunities</b>	<ul style="list-style-type: none"> <li>• Targeting growth through exporting premium fresh food into new markets</li> <li>• Better market access to emerging economies</li> <li>• Growing world demand for horticultural products, specifically in the wider Asia region</li> <li>• Steadily increasing domestic demand for vegetables due to population growth</li> <li>• Increasing consumer aspirations for healthy eating and increasing demand for 'super foods', which include horticultural products as major components</li> <li>• Increasing investment in new and innovative technologies, including mechanisation, automation, robotics, uniform plant architecture, genomics, pest management, soil management, and protected cropping as ways of increasing productivity, production efficiency and maintaining international competitiveness</li> <li>• Increasing supply chain and industry integration and collaboration to better meet consumer needs and improve product quality</li> <li>• Opportunity to increase uptake of R&amp;D outcomes</li> <li>• Adoption of consumer insights and use in business decision-making</li> </ul>
<b>Threats</b>	<ul style="list-style-type: none"> <li>• Environmental, pest and disease factors, including higher instances and impacts of wide climatic variability and biosecurity risks</li> <li>• Ever-increasing biosecurity risk on regulated pathways due to increasing international trade (air and sea freight), passenger movements, and mail coming into Australia</li> <li>• Competition from imports, particularly from low-cost countries</li> <li>• Economic factors, including uncertainty due to the volatility of the Australian dollar, and increased global competition due to changing trade barriers, and high input costs compared to global producers, as well as fluctuations in interest rates affecting indebted farms</li> <li>• Insufficient and rising cost of labour, such as changing employment rules, difficulty in attracting young people to the sector, difficulty in recruiting professionals to work in rural areas, specific skill shortages, visa regulations and competition with other sectors, such as mining</li> <li>• Strong competition in frozen and/or processed vegetables from overseas, due especially to high local cost of labour</li> </ul>



## APPENDIX 3: People consulted

The following people are acknowledged for their contribution to the vegetable SIP development process.

NAME	INDUSTRY ROLE	REGION
Bill Bulmer	Chair, AUSVEG; Grower	Victoria
Belinda Adams	Deputy Chair, AUSVEG; Grower	Queensland
Pennie Patane	Director, AUSVEG; Grower	Western Australia
Geoff Moar	Director, AUSVEG; Grower	New South Wales
Michael Radcliff	Director, AUSVEG; Grower	Tasmania
Renee Pye	Director, AUSVEG; Grower	South Australia
Michael Coote	Chief Executive Officer, AUSVEG	National
Zarmeen Hassan	National Manager, Engagement and Extension, AUSVEG	National
Shaun Lindhe	National Manager, Communications, AUSVEG	National
Tyson Cattle	National Manager, Public Affairs, AUSVEG	National
Michael Simonetta	Grower	New South Wales
John Said	Grower	Victoria
Rob Hinrichsen	Grower	Queensland
Gordon Rogers	Director, Applied Horticultural Research Pty Ltd	National
Adam Goldwater	General Manager, Applied Horticultural Research Pty Ltd	National
Kelvin Montagu	Research scientist	National
Jennifer Ekman	Research scientist	National
Lisa Tana	Grower	Western Australia
Shane Quinn	Vegetable SIAP; Grower	Queensland
Andrew Johansen	Grower	Queensland
Andrew Craigie	Vegetable SIAP; Grower	Tasmania
Lynley Von Latham	Vegetable SIAP; Grower	Queensland
Matt Hood	Grower	Queensland
Ed Fagan	Vegetable SIAP; Grower	New South Wales
Mark Kable	Grower	Tasmania
Mitchell East	Vegetable SIAP; Grower	Western Australia
Rachel Lancaster	Vegetable SIAP; Researcher; Consultant	Western Australia
Ian Layden	Vegetable SIAP; Researcher; Consultant	Queensland
Nathan Free	Vegetable SIAP; Grower	Victoria
Sharron Windolf	Vegetable SIAP; Grower	Queensland
Anthony De Ieso	Vegetable SIAP; Grower	South Australia
Angus Galloway	Vegetable SIAP; Processor	Tasmania

*Continued >>*

NAME	INDUSTRY ROLE	REGION
Les Murdoch	Processor	National
Jason McNeill	Vegetable SIAP; Grower	Tasmania
Scott Samwell	Vegetable SIAP; Grower	South Australia
Andrew Moon	Vegetable SIAP; Grower	Queensland
Greg Owens	Vegetable SIAP; industry organisation representative	Northern Territory
Kingsley Songer	Vegetable SIAP; Grower	South Australia
Kees Versteeg	Vegetable SIAP; Grower	Queensland

In addition to the above, the following input has also been included in the consultation process:

- More than 300 growers engaged through the VegNET regional extension program throughout 2020-2021\*
- AUSVEG and Hort Innovation online SIP refresh webinar series 1, 2 and 3: April, July and September 2021
- Hort Connections: June 2021
- Joint vegetable SIAP workshop: June and September 2021

\*VegNET regional extension program highlighted priority needs for the 10 major vegetable growing regions in Australia including input from the following regional workshops:

- Burnett, Queensland (20 growers)
- South Australia (17 growers)
- New South Wales (20 growers)
- Gippsland, Victoria (35 growers)
- Tasmania (15 growers)
- Southern Queensland
- Northern Territory (15 growers)
- Northern Queensland (18 growers)
- Western Australia (more than 200 growers)



## APPENDIX 4: Reference material

### Footnotes

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## APPENDIX 5: List of acronyms

<b>AFPA</b>	Australian Fresh Produce Alliance
<b>AIP</b>	Annual Investment Plan
<b>APVMA</b>	Australian Pesticides and Veterinary Medicines Authority
<b>BMP</b>	best management practice
<b>CSIRO</b>	Commonwealth Scientific and Industrial Research Organisation
<b>DAFQ</b>	Department of Agriculture and Fisheries, Queensland
<b>FY</b>	financial year
<b>GI</b>	glycemic index
<b>IPDM</b>	integrated pest and disease management
<b>IRB</b>	Industry Representative Body
<b>KASA</b>	knowledge, attitudes, skills and aspirations
<b>KPI</b>	key performance indicator
<b>M&amp;E</b>	monitoring and evaluation
<b>MRL</b>	Maximum Residue Limit
<b>NHRN</b>	National Horticulture Research Network
<b>PHA</b>	Plant Health Australia
<b>R&amp;D</b>	research and development
<b>RDC</b>	Research and Development Corporation
<b>RD&amp;E</b>	research, development and extension
<b>SARP</b>	Strategic Agrichemical Review Process
<b>SIAP</b>	Strategic Investment Advisory Panel
<b>SIP</b>	Strategic Investment Plan
<b>SWOT</b>	strengths, weaknesses, opportunities and threats



# Hort Innovation

Horticulture Innovation Australia Limited  
ACN 602 100 149

Level 7, 141 Walker Street  
North Sydney NSW 2060 Australia

02 8295 2300 | [communications@horticulture.com.au](mailto:communications@horticulture.com.au)

[www.horticulture.com.au](http://www.horticulture.com.au)