Citrus

STRATEGIC INVESTMENT PLAN

2017-2021

Hort Innovation
Strategic levy investment

CITRUS FUND

Content

Communications Manager
Hort Innovation
Level 8, 1 Chifley Square
Sydney NSW 2000
Australia
Email: communications@horticulture.com.au
Telephone: 02 8295 2300

Introduction

This Strategic Investment Plan (SIP) is the roadmap that helps guide Hort Innovation's oversight and management of individual levy industry investment programs. The SIP lays the foundation for decision making in levy investments and represents the balanced interest of the particular industry from which the levy is collected. The very important function of the SIP is to make sure that levy investment decisions align with industry priorities.

Hort Innovation is the not-for-profit, grower-owned research and development (R&D) and marketing company for Australia's $9 billion horticulture Industry.

As part of the role Hort Innovation plays as the industry services body for Australian horticulture, the organisation is tasked by the Australian Government with working alongside industry to produce a strategic plan for investment of levies in industry R&D and marketing activities.

Each individual levy industry investment strategy also speaks to the future growth and sustainability of the Australian horticulture industry as a whole. The SIPs are produced under the umbrella of the Hort Innovation Strategic Plan, which takes a whole-of-industry view in setting its direction, as it considers broader agriculture government priorities for the advancement of Australian horticulture.

The process of preparing this SIP was managed by Hort Innovation and facilitated in partnership with the Industry Representative Body and the Strategic Investment Advisory Panel (SIAP). Independent consultants were engaged to run the consultation process, to gather the advice from stakeholders impartially and produce a plan against which the citrus industry can be confident of its strategic intent.

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

The citrus SIP

Producers in the citrus industry pay levies to the Department of Agriculture and Water Resources (DAWR), 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.

New citrus levy rates were introduced from July 1, 2016. The oranges levy rate is $4.25 per tonne (or 8.5 cents per box[1]) and the levy rate on other citrus (mandarins, lemons, limes and grapefruit) is $3.50 per tonne (or 7 cents per box).

Hort Innovation manages the proportion of citrus levy funds that is directed to the investment in the citrus R&D (orange and other citrus) and orange industry marketing program. Separately, Plant Health Australia (PHA) manages plant health programs. In 2015/16, total citrus levy receipts were approximately $1.85 million: $1.46 million of R&D levies and $397,000 of marketing levies.

Hort Innovation has developed this SIP to assist in strategically investing the collected citrus levy funds in the priority areas identified and agreed by the citrus industry. The ability to deliver on all the articulated strategies (and investments) in an impactful manner will be determined by the ability of the statutory levy to provide the resources to do so.

This plan represents the Australian citrus industry's collective view of its needs in R&D (and marketing for the orange industry) over the next five years (2017 to 2021).

This plan has been developed in consultation with Australian citrus levy payers through direct consultation with levy payers and teleconferences and workshops with Hort Innovation's citrus industry SIAP.

The process to develop this plan is fully described in ***Appendix 1***. The people consulted in the preparation of the plan are listed in ***Appendix 2*** and the documents referred to are listed in ***Appendix 4***.

The citrus SIAP has responsibility for providing strategic investment advice to Hort Innovation. Both Hort Innovation and the panel will be guided by the strategic investment priorities identified within this plan. For more information on the citrus industry SIAP constituency, please visit Hort Innovation's website at www.horticulture.com.au.

1 A 'box' is defined as 20 kilograms for oranges and other citrus (excluding grapefruit) and 16.67 kilograms for grapefruit.

Citrus

STRATEGIC INVESTMENT PLAN 2017-2021 AT A GLANCE

POTENTIAL IMPACT OF THIS PLAN

$140.1 Million

Based on an estimated investment of $22.7 million over the next five years

OUTCOMES	STRATEGIES
Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus products	Identify and develop new and existing export market opportunities
	Identify and develop new and existing domestic market opportunities
	Support demand-building activities in export and domestic markets through the provision of accurate and timely market research
Growers and the industry reduce biosecurity, phytosanitary and agrichemical-related risks	Safeguard the Australian citrus industry from future biosecurity and phytosanitary risks throughout the value chain
	Safeguard the Australian citrus industry from injudicious use of agrichemicals throughout the value chain
Improved product quality and increased productivity from the application of innovation	Undertake R&D and extension to develop and extend improvements in productivity and efficiency across the value chain
	Undertake R&D and extension to enhance product quality (such as flavour and juice content)
Industry participants have increased skills, capacity and knowledge	Increase skills in existing participants, and attract a new generation of willing participants to the citrus industry
	Ensure growers and other members of the value chain are fully aware of industry developments

Major opportunities

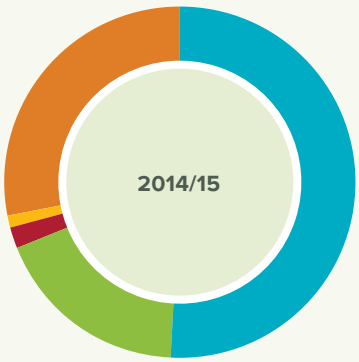
- Increased demand for high-quality product with high-quality standards
- Close proximity to Asian markets
- Maintenance of current high-value markets and exploring emerging markets
- Relative freedom from pests and diseases in some areas
- Greater use of technical and marketing resources
- Moving towards ultra-low pesticide residue through best management practices (BMPs)
- Improvement of industry capacity to meet strict market protocols.

Major challenges

- Increasing protectionist policies in emerging markets
- Other countries improving quality (and Australia's potential loss of its premium position in export market)
- Ensuring there is no loss of markets due to biosecurity or MRL breaches
- Ensuring increased production does not lead to oversupply
- Reduced access to water and climate variability
- Maintenance of pest-free area (PFA) status in some areas
- Ensuring diseases do not spread through budwood
- High costs for labour and compliance
- Ensuring accuracy of tree census and crop estimates data.

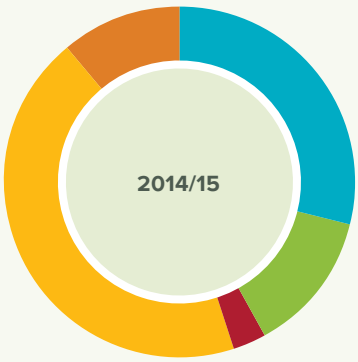
Citrus
STRATEGIC INVESTMENT PLAN 2017-2021
AT A GLANCE

Orange industry size and production distribution



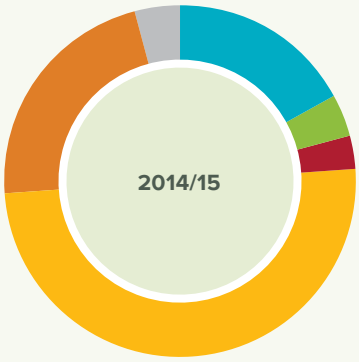
NSW	51%
VIC	18%
WA	2%
QLD	1%
SA	28%
NT	–
TAS	–

Mandarin industry size and production distribution



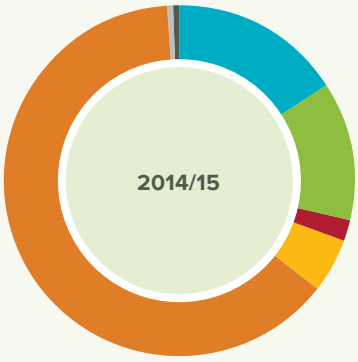
NSW	29%
VIC	13%
WA	3%
QLD	44%
SA	11%
NT	–
TAS	–

Lemon/lime industry size and production distribution



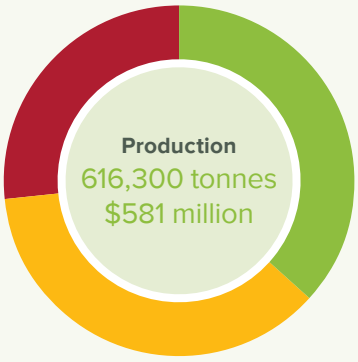
NSW	17%
VIC	4%
WA	3%
QLD	50%
SA	22%
NT	4%
TAS	–

Grapefruit industry size and production distribution



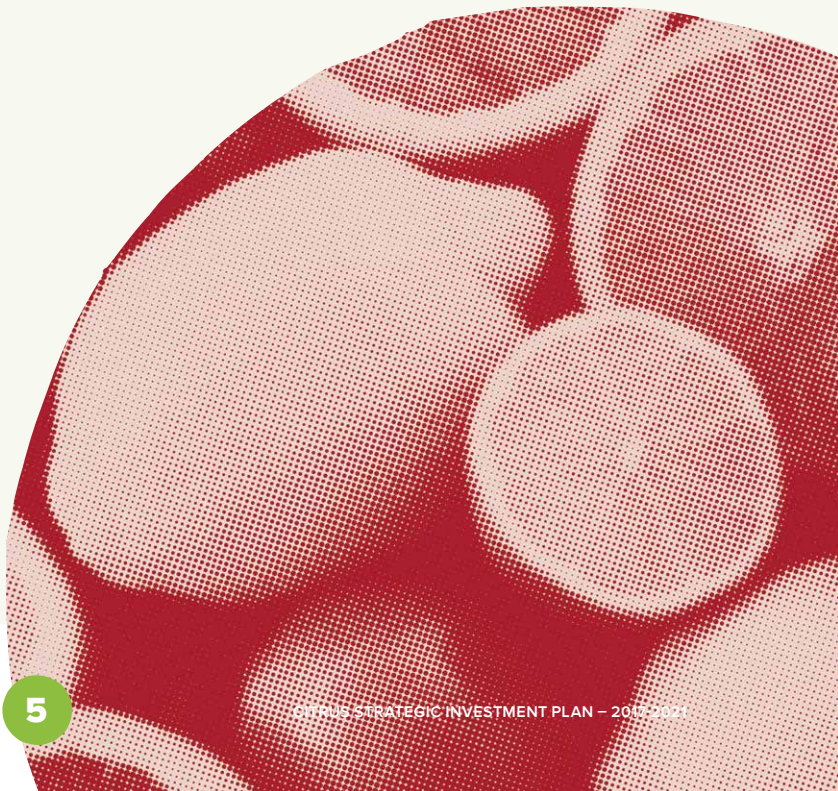
NSW	16%
VIC	13%
WA	2%
QLD	5%
SA	64%
NT	<1%
TAS	<1%

Citrus supply chain and value 2014/15



- **Processing** 223,117 tonnes; 36%
- **Fresh supply** 232,289 tonnes; 38%
- **Fresh export** 160,894 tonnes; 26%

2015/16 Approximately 1,500 growers



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SECTION ONE

Context

The Australian citrus industry

Production

The world produced 121 million tonnes of citrus in 2013/14 but production has been flat since 2010/11[2]. Australian citrus is a small component in the global citrus market but is a major horticulture industry for Australia, producing 616,300 tonnes of citrus fruit worth $581 million in 2014/15[3]. It is estimated that Australia produced 695,896 tonnes of citrus for the 2015 crop production year[4] and is forecast to produce 689,823 tonnes in 2016[5]. These figures include major citrus types such as oranges (Valencia and Navel are main varieties), mandarins, lemons, limes and grapefruit. Citrus juice products, orange juice in particular, are a major product for many citrus growers.

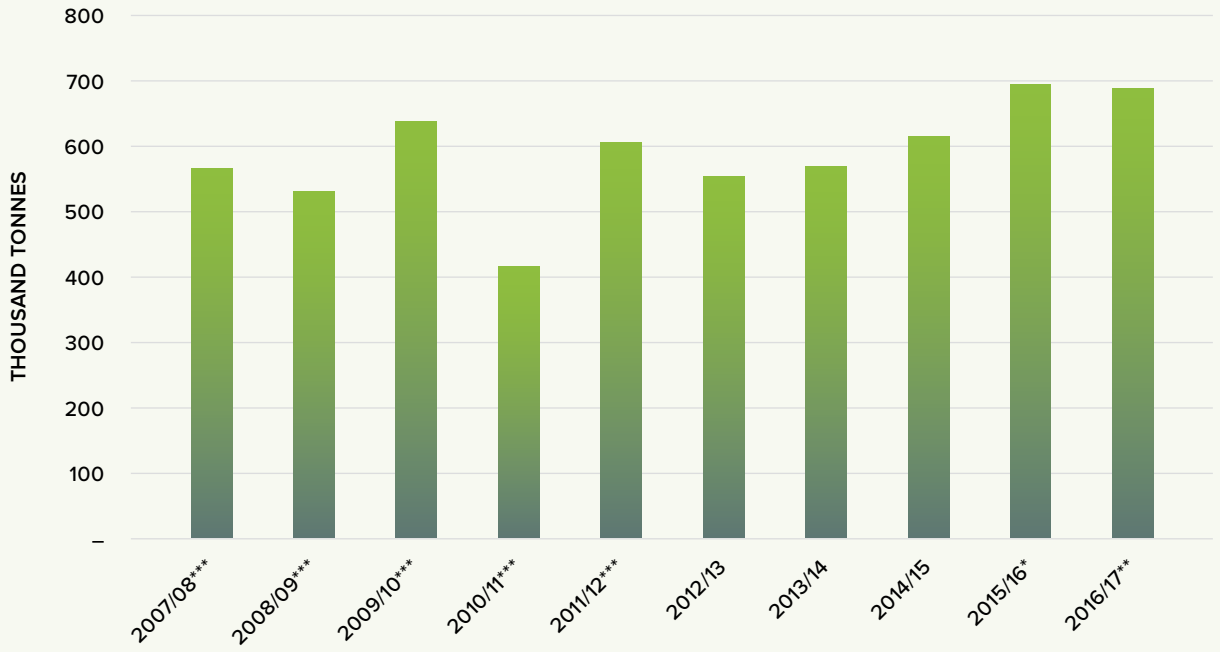
Citrus is grown all over mainland Australia by about 1,500 growers on over 25,000 hectares of orchards.

Citrus is grown all over mainland Australia (***Figure 1***) by about 1,500 growers on over 25,000 hectares of orchards. The major production regions are the Riverland of South Australia (mainly oranges and mandarins), the Murray Valley region of Victoria and New South Wales (mainly oranges and mandarins), the Riverina in New South Wales (mainly oranges) and the Central Burnett region of Queensland (mainly mandarins, lemons and limes). Western Australia (mainly oranges and mandarins) and Northern Territory have smaller citrus plantings[6]. It is noteworthy that Queensland and Western Australia are expected to produce 34 per cent and 71 per cent more fruit respectively by 2025[7].

Figure 1: Citrus-producing regions of Australia

2 *Citrus Fruit Statistics 2015, Market and Policy Analyses of Raw Materials*, Horticulture and Tropical (RAMHOT) Products Team, Trade and Markets Division, Food and Agriculture Organization of the United Nations, 2016.
3 *Australian Horticulture Statistics Handbook 2014/15*, Hort Innovation, 2016.
4 The term 'production year' in this report refers to the period April to March. All other data is for financial year.
5 *Australian Citrus National Forecast: 2016 Season*, Citrus Australia and Hort Innovation, 2016.
6 *Citrus Production Outlook 2016-2025*, Andrew Harty and Nathan Hancock, Citrus Australia, December 2015.
7 Ibid.

Figure 2: Total citrus production in Australia *(Source: Australian Horticulture Statistics Handbook 2014/15 and Citrus Australia/Hort Innovation)*



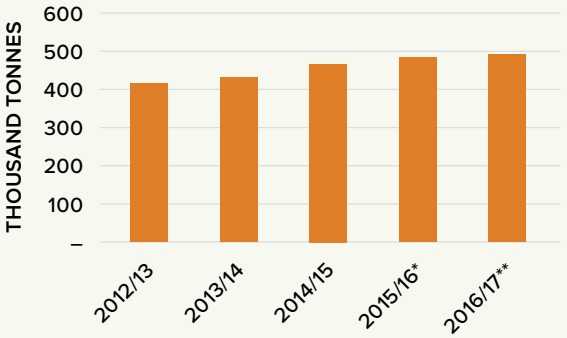
Over the last 10 years, total citrus production in Australia has been rising, but like all agricultural production is subject to seasonal conditions (***Figure 2***). Note that in this and subsequent figures on citrus production, quantities for 2015/16 (* in figures) are estimates for the production year (April to March) while 2016/17 (** in figures) are production year forecasts. Some earlier data has been provided by Citrus Australia.

Orange

Oranges make up 76 per cent of all citrus fruit produced in Australia[8]. In the 2015 production year, the industry estimates that 486,116 tonnes of oranges were produced[9]. Australia is a relatively small producer of oranges by world standards. Brazil is by far the largest orange-producing country, with 17 million tonnes produced in 2014/15. China is second at 7 million tonnes, with the United States at 5.8 million tonnes. The European Union collectively produces 6 million tonnes[10].

Oranges are mainly grown in the Riverland, Murray Valley and Riverina regions. Fifty-five per cent of Australia's oranges (mainly Navel) were sold in equal parts to both domestic and export markets in 2014/15. Most other oranges were used for processing, that is, juice production[11].

Figure 3: Total orange production in Australia
(Source: Australian Horticulture Statistics Handbook 2014/15 and Citrus Australia/Hort Innovation)



Over the last five years, orange production has been increasing (***Figure 3***) especially toward Navel and away from Valencia.

Future forecasts[12] suggest that growers are continuing to move away from varieties used for juice, such as Valencia, due to lower returns while a small expansion in the eating varieties (especially Red Navels) is expected through to 2025.

8 *Australian Horticulture Statistics Handbook 2014/15*, Hort Innovation, 2016.
9 *Australian Citrus National Forecast: 2016 Season*, Citrus Australia and Hort Innovation, 2016.
10 USDA FAS.
11 *Australian Citrus National Forecast: 2016 Season*, Citrus Australia and Hort Innovation, 2016.
12 *Citrus Production Outlook 2016-2025*, Andrew Harty and Nathan Hancock, Citrus Australia, December 2015.

Mandarin

The citrus industry estimates that 153,257 tonnes of mandarins were produced in the 2015 crop production year. Two-thirds of Australian mandarins are consumed in the domestic market while one-third is exported. There is little processing of mandarins.

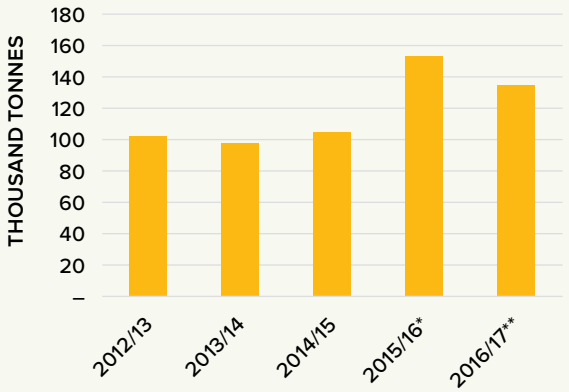
Mandarins are mostly grown along the eastern coastline of Australia, with Queensland being the largest producing state. Major varieties include Imperial, Murcott and Afourer.

Mandarin production has been rising in Australia over the last five years (***Figure 4***).

Industry forecasts are for a significant increase in mandarin production – of 45 per cent by 2025[13].

Figure 4: Total mandarin production in Australia

(Source: Australian Horticulture Statistics Handbook 2014/15 and Citrus Australia/Hort Innovation)



Lemon and lime

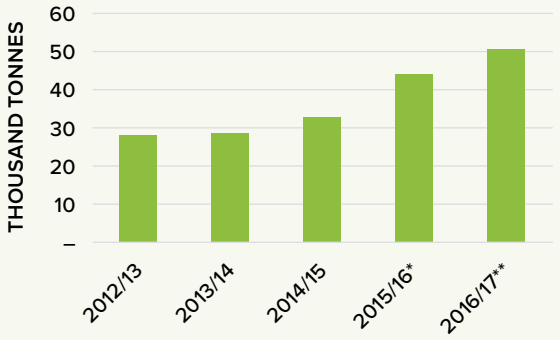
In the crop production year of 2015, Australia produced an estimated 33,481 tonnes of lemons and 9,627 tonnes of limes, most of which are consumed locally[14].

Lemon and lime production has been rising in Australia over the last few years (***Figure 5***), especially bouncing back after the Queensland floods in 2013. Further production increases are predicted – 47 per cent for lemons and 67 per cent for limes – by 2025[15].

Globally, Mexico is the largest producer of lemons and limes at 2.3 million tonnes. Argentina and the United States are also major producers[16].

Figure 5: Total lemon and lime production in Australia

(Source: Australian Horticulture Statistics Handbook 2014/15 and Citrus Australia/Hort Innovation)



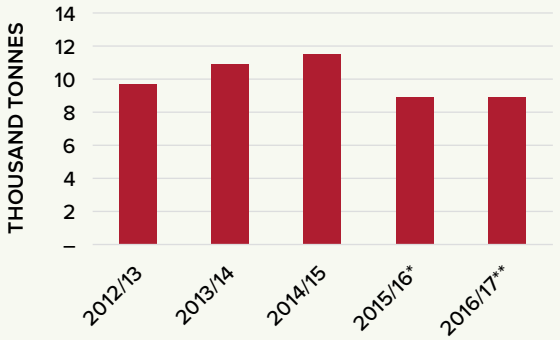
Grapefruit

Australia produced 8,935 tonnes of grapefruit in the 2015 crop production year[17]. Although grapefruit is grown all over mainland Australia, South Australia is responsible for over 60 per cent of Australia's production[18]. Grapefruits are sold mainly in the domestic market[19].

Grapefruit production has been fluctuating in Australia over the last five years (***Figure 6***), with considerable decreases over the last two years in response to reducing demand.

Figure 6: Total grapefruit production (thousand tonnes) in Australia

(Source: Australian Horticulture Statistics Handbook 2014/15 and Citrus Australia/Hort Innovation)



13 Ibid.
14 *Australian Citrus National Forecast: 2016 Season*, Citrus Australia and Hort Innovation, 2016.
15 *Citrus Production Outlook 2016-2025*, Andrew Harty and Nathan Hancock, Citrus Australia, 2015.
16 USDA FAS.
17 *Australian Citrus National Forecast: 2016 Season*, Citrus Australia and Hort Innovation, 2016.
18 *Australian Horticulture Statistics Handbook 2014/15*, Hort Innovation, 2016.
19 Ibid.

Product quality

The industry follows a voluntary[20] *minimum* national quality standard for oranges and mandarins. The standards were based on consumer research, commercial standards and industry consultation. An Australian Citrus Quality Guide provides standard testing procedures, and recommends standard testing equipment for consistency and ease in following the standards. Training materials such as manuals and videos are made available to growers as staff training aids to encourage compliance and for ease of use at any time in the supply chain from orchard to retail shelf.

There is a high level of voluntary compliance with these minimum standards, but opportunities remain to improve product quality. The industry continues to face product quality matters, in particular:

1. Consistency of fruit maturity and the need for:
   a. A non-invasive procedure for maturity testing in the orchard
   b. More robust procedures for predicting maturity
2. Granulation/dryness of mandarins
3. Handling and storage practices to retain freshness and eating quality
4. Waste control, such as with postharvest rots and fruit breakdown.

Labour

Citrus fruit are harvested manually. Labour shortage is a common problem in citrus as it is in agriculture and horticulture generally. Unskilled worker requirements are seasonal, and labour retention is a problem, especially when the labour market is limited and transient. The lack of skilled labour and succession are also a concern for the industry.

Biosecurity

Worldwide, Huanglongbing (HLB) or citrus greening disease is one of the worst problems for the global citrus industry. It has no cure. Infected trees must be destroyed to avoid cross-contamination. HLB is spread by the sap-sucking Asian citrus psyllid (*Diaphorina citri* Kuwayama). This insect is not present in Australia but is a real threat to the Australian citrus industry. It is prevalent throughout Asia, Africa and parts of North and South America, including the United States. It is also in New Guinea. Early detection is essential and is a critical component of the industry's Risk Management Plan.

Serious graft-transmissible diseases can easily damage the industry. It is essential that growers have more access to high-health propagation material to avoid this situation. It is not enough to increase access to new varieties and rootstocks, especially from overseas. The necessary plant quarantine procedures should be evaluated for effectiveness and efficiency in pathogen detection and the use of elimination technology and practices.

Biosecurity is a large trade barrier for many regulatory markets. Protocols are in place to address the biosecurity concerns for many export markets and these can add significant costs on the grower. Queensland Fruit Fly (Qfly) is a big issue across various fruit and vegetable commodities. There are collaborative programs to contain Qfly in Sunraysia with the support of the Victorian government. Currently, international recognition of PFAs such as Riverland is not in place for major markets such as China. Other 'trade barrier pests' of concern are Fuller's rose weevil (FRW), Mediterranean Fruit Fly (Medfly) and light brown apple moth.

To address and take a national approach to resolving biosecurity issues, there must be close coordination among all relevant stakeholders: growers, nurseries, industry groups, Hort Innovation, federal and state government agencies, Plant Health Australia and researchers.

Agrichemicals

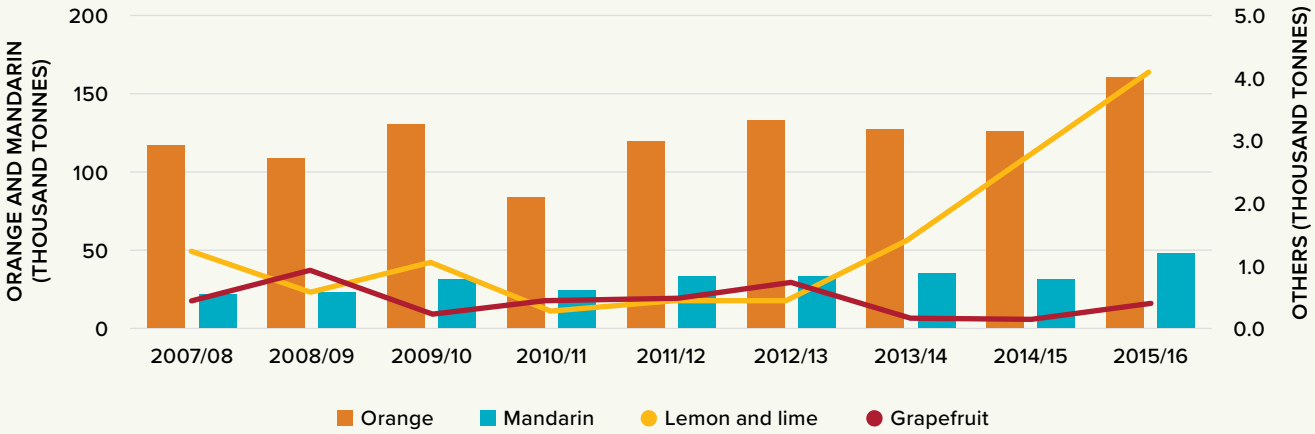
Horticulture industries need access to effective agrichemicals that are accepted in Australian and international markets. The global landscape in this area is often changing. Each market has specific chemical requirements, often responding to increasing regulatory requirements. Some markets have no MRLs set for specific pesticides applied on Australian citrus. In these cases citrus exported to these markets require zero residue after harvest, often restricting their use within Australia for those specific markets. Managing agrichemical residue compliance is also critically essential for exports. In addition, there is a need to expedite the chemical regulatory approval process, which could make a substantial difference to a grower's business.

While the industry has made some gains through R&D and regulatory changes over the last few seasons, it must remain prepared for further regulatory scrutiny of some of the control options in Australia and overseas. Some existing chemicals may come under more scrutiny, so the industry must continue to explore other control measures with product registrants.

...Huanglongbing (HLB) or citrus greening disease is one of the worst problems for the global citrus industry.

20 Standards are regulated in Western Australia. See https://www.agric.wa.gov.au/citrus/measuring-internal-maturity-citrus

Figure 7: Australian citrus exports *(Source: Australian Horticulture Statistics Handbook 2014/15)*



Markets

Export market

In 2015/16, Australia exported 214,171 metric tonnes of citrus valued at nearly $300 million, predominantly oranges and mandarins. This was a substantial increase on the $206 million of citrus exports in 2014/15. The citrus industry remains Australia's third largest exporter of horticulture products behind nuts and table grapes. Oranges, the largest citrus export commodity, account for almost 70 per cent of the value of total citrus exports. Exports of lemon and lime[21] have dramatically increased in volume since 2012/13, although from a low base (***Figure 7***). Citrus Australia reports that the value of exports for the 2016 calendar year was $328 million.

While Australia's citrus exports increased in 2015, global export volumes have tended to fall, depending on the particular fruit[22] (***Figure 8***).

Australia competes with other exporters in the southern hemisphere, notably South Africa, Argentina and Chile. Peru is also an active citrus exporter, as is New Zealand to a lesser degree. Australian citrus is known for its high-quality, premium eating experience and excellent food safety standards. The industry takes a serious and committed approach to managing food safety and MRLs through a government-supported residue-testing program, the National Residue Survey (NRS). It has a clean history of quarantine compliance and has adopted a continuous improvement production practice[23].

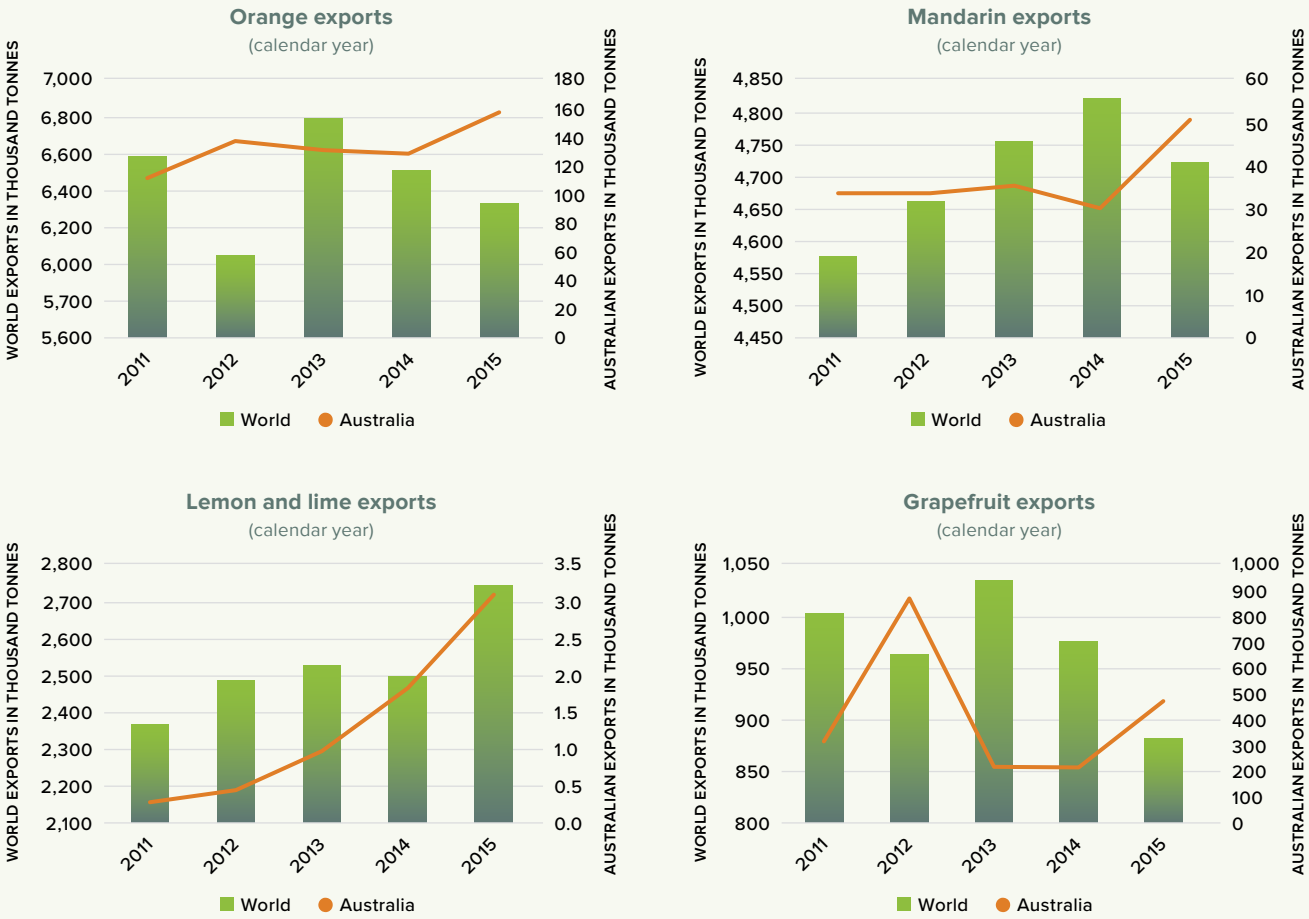
The ratification of trade agreements with China, Japan and South Korea in recent years has been a significant development in providing export opportunities for the citrus industry. China is now one of the major markets for Australian oranges and mandarins, with 420 per cent growth over the last decade[24]. Almost 40 per cent of Australian orange exports went to the Hong Kong and mainland China markets in 2016 (calendar year). Australia's key export markets in 2016 were China, Japan, Hong Kong, United Arab Emirates, Singapore, Indonesia, Malaysia and the United States.

Australia is well placed to export citrus to its mainly northern hemisphere markets, with competitive advantages that include[25]:

- Seasonal production of citrus meeting demand for fresh produce in the northern hemisphere
- Proximity to market, chiefly Asia, with shorter transit times
- Strong, government-backed commitment to managing food safety and MRLs through the NRS
- A product mix that appeals to consumers
- Sophisticated and well-developed export practices, strong supply chains and logistical capacity
- Experienced and commercially-focused Industry Representative Bodies (IRBs), in particular Citrus Australia
- Successful implementation of long-term market access strategies
- Free trade agreements leading to zero, or decreasing, tariff barriers in key export markets
- Australia's clean-green profile.

21 No breakdown of export data between lemon and lime is available.
22 UN Comtrade.
23 *Citrus Export Strategy 2014/15 – 2019/20*, Jim Fitzgerald and Ewan Colquhoun, DAWR and Citrus Australia, September 2014.
24 *MT14006 – Export Market Intelligence. Australian Citrus Exports, January to December 2016*, Fresh Intelligence, 2016.
25 Adapted from *Australian Citrus Industry Export Strategy, 2014/15 – 2019/20.*

Figure 8: Citrus exports by citrus type *(Source: UN Comtrade)*



Despite the advantages Australia has in exports, there are also some negatives, including[26]:

- Growing competition from other southern hemisphere citrus producers (especially Chile, Argentina and South Africa)
- The high likelihood that some unregulated markets will introduce import protocols over the next five years
- Commercially significant barriers to trade in some protocol markets
- Difficult market access negotiation processes and practices in some protocol markets
- A strong domestic currency, leading to lower export margins
- Relatively high production costs as compared to lower labour-cost countries
- Strong competition from other export industries for prioritisation of Australian Government market access negotiations.

Domestic market

The domestic market is essential to the citrus industry. There is more fruit sold in this market than collectively sold in export markets or for processing. Australia's citrus consumption has been increasing each year, reaching 260,100 tonnes in 2014/15. Except for a dip in 2013/14 for mandarins, total consumption has risen in all citrus commodities. Australian per capita consumption of citrus is shown in ***Table 1***.

Table 1: Per capita consumption of citrus fruit

*(Source: *Australian Horticulture Statistics Handbook 2014/15)*

Per capita consumption (kilograms)	Australia*		
	2012/13	2013/14	2014/15
All citrus	9.19	9.73	10.94
Orange	4.55	5.37	6.05
Mandarin	2.88	2.52	2.95
Lemon and lime	1.34	1.34	1.43
Grapefruit	0.43	0.51	0.51

26 Ibid

Figure 9: Citrus consumption in Australia *(Source: Australian Horticulture Statistics Handbook 2014/15)*

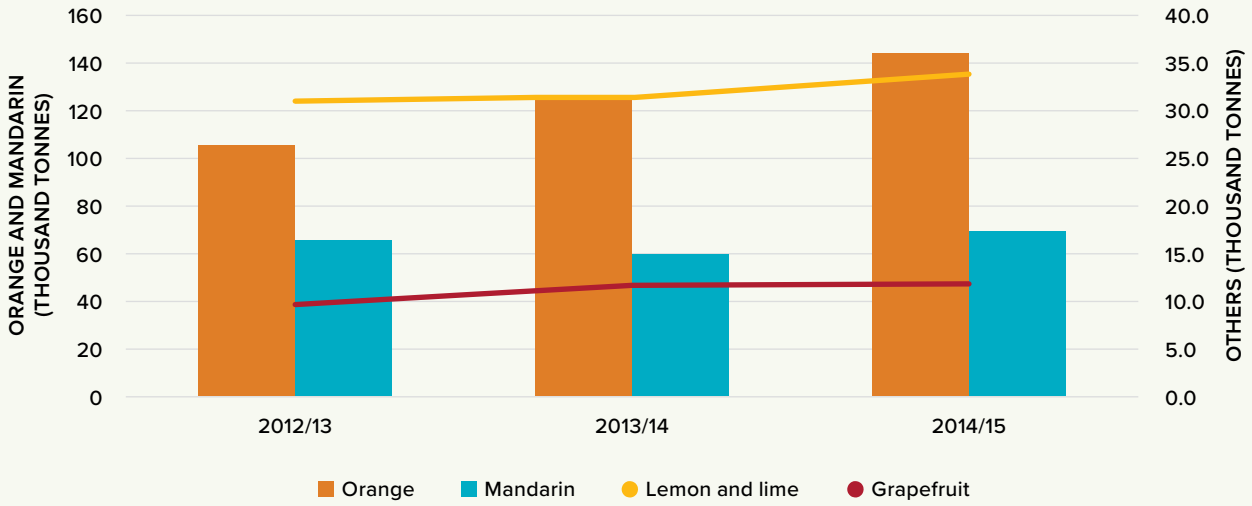
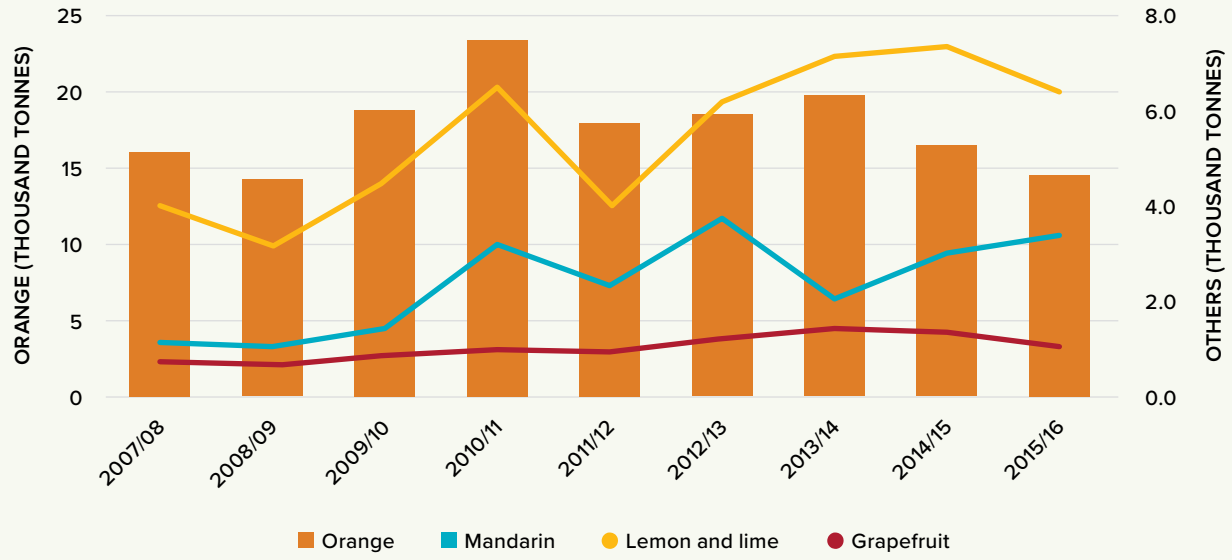


Figure 10: Citrus imports into Australia *(Source: Australian Horticulture Statistics Handbook 2014/15)*



Total domestic consumption of the major citrus categories from 2012/13 to 2014/15 is shown in ***Figure 9***.

Imports of citrus, particularly lemons and limes, have steadily increased from 2011/12 (***Figure 10***). The bulk of citrus imports are from the United States that provides counter-seasonal supply to the domestic market.

The major determinant of domestic market performance for citrus is the marketing programs of the major retail chains. The industry believes it has a good relationship with the major retail chains – this strength should be maximised. Because of the importance of this market, Citrus Australia has a Domestic Leadership Group to drive the direction for the domestic citrus industry.

Processing

Citrus fruit sold into the processing sector is primarily used for juice. Orange juice, the largest citrus juice category, is mainly made from Valencia oranges.

After processing, orange juice is stored as fresh juice or concentrate. Fresh orange juice sells at a premium compared to juice made from concentrate. Long-life and non-refrigerated juice products are mainly manufactured from imported frozen concentrate. There has been a decline in the fresh orange juice sector, and citrus growers are slowly moving away from growing Valencia oranges due to lower returns compared to higher returns for Navel varieties. Some Navel orange production is processed but this often requires an expensive, extra process of de-limonisation to enhance the flavour of Navel orange juice. Certain varieties of Navel oranges exist with low limonin content (such as Late Lane) while particular horticultural practices can also help to lower limonin levels and may help to support higher prices.

Consumption of orange juice in Australia has decreased over the last decade from 49,000 tonnes in 2005/06 to 41,000 tonnes in 2012/13, with a further fall to 39,000 tonnes forecast for 2016/17. Competition from other beverages, such as iced tea and sports drinks, as well as a general move away from drinks with high sugar content, have contributed to the fall in orange juice consumption in the local market. However, as noted earlier, the juice sector is a key product for many growers, and constitutes over 36 per cent of all citrus production and 46 per cent of oranges[27]. But, matching supply and demand is a constant challenge, and reports indicate that demand from the processing sector is outstripping supply in the 2016/17 season.

Consumption of orange juice in Australia has fallen over the last decade from 49,000 tonnes in 2005/06 to 41,000 tonnes in 2012/13…

Industry capability

Data intelligence

Data intelligence is one of the strengths of the industry. Internal collaboration among industry growers has improved and has been instrumental in producing more reliable industry data intelligence.

A national tree census is conducted annually, providing highly useful production data and reliable national crop forecasts. Some production and trade data from competing countries have also been accessed to better understand the industry's global position and provide industry benchmarks and insight into global opportunities and threats.

The industry has specific projects that focus on fruit quality, data intelligence, analysis and forecasting. Growers have online access to statistics on plantings and crop forecasting. Reports on trade statistics, consumer behaviour and retail data are provided regularly to the industry. With a growing export focus, the industry will need to closely monitor global trends and competition, have regular access to export market information, and continue to improve its intelligence on domestic production and production forecasting modelling.

27 *Australian Horticulture Statistics Handbook 2014/15*, Hort Innovation, 2016.

Extension and communications

Citrus production is technically complex. Growers need access to the latest BMP information, whether for production research outcomes, chemical use, market access requirements or for consumer trends.

The industry (most particularly Citrus Australia and New South Wales Department of Primary Industries (DPI NSW), which is the lead R&D agency for citrus) conducts a series of regionally-based grower workshops on relevant issues, supported by an extensive range of documents, technical manuals, videos and even apps that are available on the Citrus Australia website (www.citrusaustralia.com.au) or on the DPI NSW website (www.dpi.nsw.gov.au/agriculture/horticulture/citrus). DPI NSW also conducts regular regional technical seminars, field days, and masterclasses, and publishes a technical quarterly e-newsletter. Citrus Australia holds a biennial Citrus Technical Forum that complements its Market Outlook Forum held every other year.

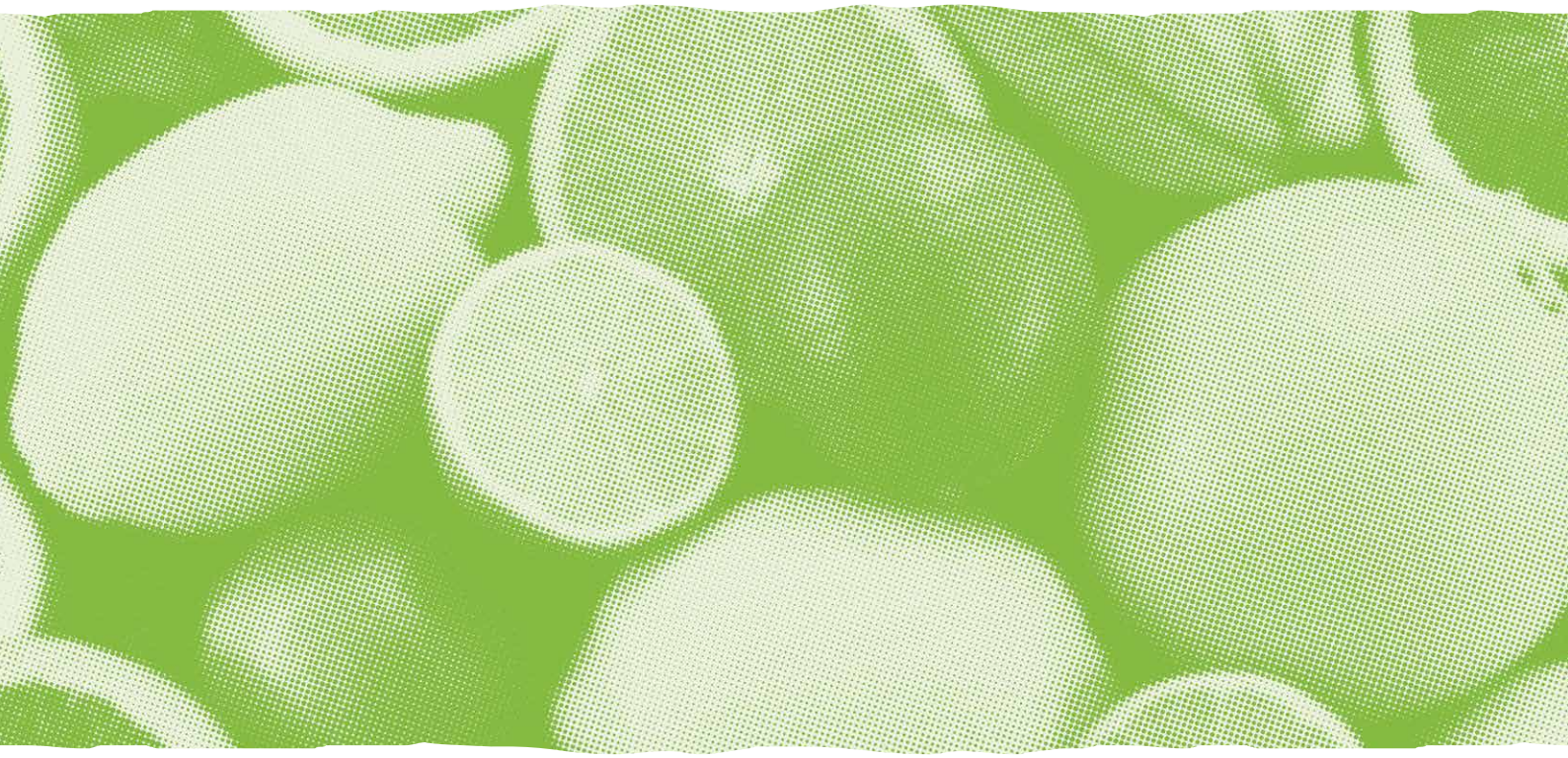
The citrus industry also has an active communications program that includes annual regional forums, seasonal newsletters, a quarterly industry magazine *Australian Citrus News*, and informative websites that give current industry news and production data statistics. Reference groups of industry stakeholders have been formed to focus on key issues such as agrichemicals, biosecurity and exports. Around 65 per cent of growers use online services. To take advantage of the efficiencies of electronic communications, further expansion of online connectivity among growers is necessary.

With the challenges of attracting younger generations into the industry, there is a greater need to provide academic training and professional career pathways to develop and expand the pool of talent for horticulture and specifically for citrus. This would include expertise in farming, business management, agronomy and pathology, among other disciplines.

The need for the industry to continually innovate to reduce costs and improve quality is paramount. Access to and adoption of latest technologies and knowledge by growers is important, but not achieved at an industry-wide level. The industry still has access to significant state government extension programs, but some government agencies in some areas have reduced this capacity. The industry provides extension activities at a private level although not all producers uptake this. DPI NSW has recently upgraded its services to the citrus industry, and is seeking to build and expand its delivery of R&D and technical information to the industry. The citrus industry requires a 'wholesale service' of the latest information and BMP to help the industry respond quickly to emerging threats and opportunities.

Performance against the previous SIP

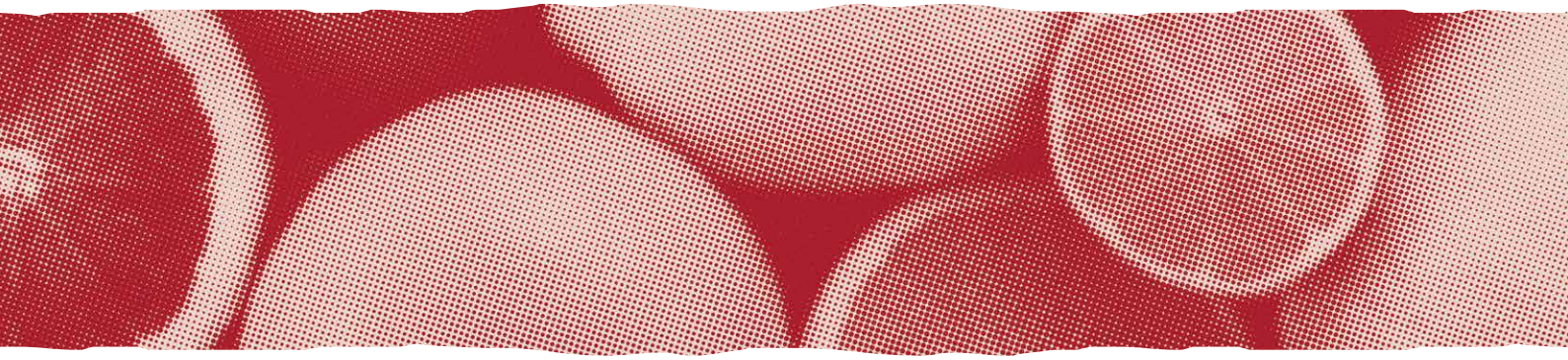
The citrus industry's previous SIP (2012-2017) produced positive outcomes for the industry. Two key objectives from the SIP were to increase the percentage of crop exported, and to increase the farm-gate value of production. These two objectives are strongly linked. The industry was successful in meeting these objectives, especially the former as indicated earlier in this document.



Operating environment

An analysis of the industry's strengths, weaknesses, opportunities and threats (SWOT) was undertaken through consultation with the citrus industry SIAP and the broader grower base. The following key themes were identified. It should be noted that while this SWOT analysis is nationally orientated, certain elements within the following table might be specific to certain regions and types of fruit.

The citrus industry	
Strengths	• Significant export markets and strong demand • Capability to produce premium export quality citrus that exceeds international competition capabilities • Strong brand (high-quality, sweetness, clean-green, safe) • Ability to work collaboratively with public (federal and state) and private organisations/agencies • Significant increase in the export focus of many growers • High-quality on-farm R&D • Excellent market information on production, varieties • Robust food safety systems and traceability standards • Good range of varieties • Strong mechanisms in place to monitor and address market access/maintenance issues including scientific documentation for protocol requirements • Widespread application of BMP in key areas such as irrigation, pest management, nutrition and environmental management • Access to some key technical and marketing resources
Weaknesses	• Harvest of fruit by some growers outside the correct maturity timeframes, which can often lead to consumer disappointment, especially at the start of the season • Poor biosecurity attitudes and practices by some industry participants • Lack of skilled labour at key times and high cost of labour • Potential for inaccurate crop estimates, adversely affecting harvest, transport and market supply planning, leading to loss of income • Only one quarantine facility servicing the Australian citrus industry • Competition in some cases between exporters and marketers • Complex and costly government compliance processes • Markets not recognising some PFAs • Slow resolution of market access issues • Protocols/MRLs that can be confusing, especially for growers • Lack of domestic nursery accreditation scheme • High cost of production



The citrus industry	
Opportunities	• Increased demand for high-quality product with high-quality standards supporting well-known brands from Australia • Close proximity to Asian markets • Maintaining current high-value markets and exploring emerging markets • Relative freedom from pests and diseases in some areas • Make greater use of technical and marketing resources • Moving toward ultra-low MRLs through BMP combinations • Health benefits of citrus • Export opportunities for fresh juice • Increase in fruit quality • Collective action (including via Hort Innovation Pool 2) to better manage endemic pests, especially fruit fly • Improving the capacity of industry to meet strict market protocols • More students studying agriculture • Greater access to local skills
Threats	• Australia loses its premium position in export markets as other countries improve quality • Increasingly protectionist policies in emerging markets • Loss of markets due to biosecurity or MRL breaches • Restrictions on chemical use affect market access, due to limited chemical options in addressing MRL compliance • Substantial increase in value of the Australian dollar • Increased production leading to oversupply • Industry uncertainty created over unclear government policy positions • Reduced access to water, and climate variability/climate change • Increasing supply of imported citrus and other seasonal fruit (local or imported) • Further loss of PFA status in some areas • Local pests and diseases, such as gall wasp, island fly and fruit fly, and potential new incursions such as HLB (and associated Asian citrus psyllid), oriental fruit fly and other exotic diseases • Disease spread through budwood • Increasingly high labour and compliance costs • Further restrictions on access to skilled and unskilled labour • Reduced accuracy of tree census and crop estimates • Lack of skilled, experienced industry representatives participating in industry forums/ committees • Under-resourced peak industry body • Water and power insecurity

2

SECTION TWO

Citrus industry outcomes

Industry outcomes

The Australian citrus industry's vision is to remain a world-class industry producing a consistently high-quality, great-tasting, safe, clean and healthy premium food for domestic and international consumers. To achieve this, the industry will need to efficiently deliver innovative and effective R&D, extension and marketing[28] solutions.

Overall, this SIP seeks to build on the significant gains that the industry has made over the last five years to ensure its ongoing viability and sustainability.

OUTCOME 1

Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus products

The Australian citrus industry produces high-quality, well-coloured fruit that is highly regarded domestically and overseas. The industry considers that the greatest opportunity to build demand for Australian citrus products and thus increase industry profitability is by expanding and maintaining markets, especially export markets. Over recent years, the citrus industry has increased production and export income.

To ensure a sustainable industry for future citrus growers, it will be critically important to at least maintain, if not increase, domestic and export market demand. If this does not happen, supply will outstrip demand, resulting in lower prices and lower grower incomes. In addition to an expected increase in domestic production (especially for lemons and limes), an increase in imports and supply of other fruits in season (local and imported) is also anticipated.

In 2015/16, Australia exported 214,171 metric tonnes of citrus valued at nearly $300 million[29], predominantly oranges and mandarins. The citrus industry remains Australia's third largest exporter of horticulture products behind nuts and table grapes. Key markets include Japan, Hong Kong special administrative region (SAR), China, Malaysia, and Singapore. Growth from China has been particularly large over the last couple of years.

The development and future growth of the Australian citrus industry is highly dependent upon continued expansion into high-value export markets. Improvements in, and maintenance of, market access conditions are critical to achieving the industry's export ambitions. The industry believes strongly that a growing export market is also critical to underpinning domestic prices. A domestic/export ratio of 60:40 is seen by industry as an attractive mix (it is currently closer to 80:20). However, the continued focus on export markets is not without risks as export markets by their very nature can be volatile (exchange rates, trade policies, phytosanitary requirements) and thus considered riskier. The focus of Outcome 1 must be strongly supported by activities in Outcome 2.

This SIP outcome is strongly backed by the peak industry body as Citrus Australia has a target of $400 million export value by 2020 (currently $300 million).

28 Only oranges have a marketing levy
29 *IHS Global Trade Atlas*

OUTCOME 1 (*continued*)

Some potential opportunities to support this outcome include:

- Identifying, developing and maintaining new and existing export markets
- Identifying, developing and maintaining new and existing domestic market segments
- Improving protocols (sea and air) to new and existing markets (see Outcome 2)
- Undertaking innovative marketing initiatives for oranges
- Increasing the production of export quality fruit (see Outcome 3)
- Supporting demand building through the provision of accurate and timely market research (for example, consumer preferences in markets, trade barriers and mitigation strategies)
- Providing information on citrus production in Australia and competing countries, including the regular conduct of the national tree census, and accurate and prompt annual national crop forecasts
- Collaborating with other horticulture products and agencies.

OUTCOME 2

Growers and the industry reduce biosecurity, phytosanitary and agrichemical-related risks

Outcome 1 has a strong focus on building demand in export markets. One of the greatest risks to achievement of Outcome 1 is a biosecurity or phytosanitary issue damaging part, or all, of the industry. It is critically important that the industry protects its assets and guards against the following two main risks:

1. Increased costs and reduced market access, or increased costs of compliance through phytosanitary breaches (expansion of existing pests and diseases or introduction of new ones); and/or
2. Market closure (especially export) through non-compliance with MRLs or non-adherence to export protocols.

Biosecurity is both a positive and a negative for industry. On one hand, it can help facilitate marketing into key export markets (for example, PFA status). On the other hand, the costs of phytosanitary programs to avoid the introduction or spread of pests around the country are significant. These costs are increasingly borne by growers.

The greatest biosecurity threat to the industry is the arrival in Australia of an exotic pest or disease (such as HLB) from which Australia is currently free. The emergence of HLB and Asian citrus psyllid would be catastrophic to the industry if the disease were not immediately controlled and eliminated. Another major biosecurity concern for the national industry is management of the Qfly in Queensland, New South Wales and Victoria, and Medfly in Western Australia. Qfly is prevalent in the eastern states, and is shared across various horticulture industries such as table grape, summerfruit, cherry and avocado. PFA status (as held by the Riverland) allows growers in the area to export their fruit without the need to comply with fruit fly-related protocols. In some key production areas such as Sunraysia and the Riverina, state government and grower-funded management programs are in place.

Some potential opportunities to support this outcome include:

Biosecurity and Phytosanitary

- Developing protection plans and remediation/contingency plans against the introduction of new destructive invasive pests and pathogens (such as HLB and Asian citrus psyllid)
- Ongoing individual and collective action to manage serious endemic pests, diseases and weeds, including fruit fly (including Pool 2), citrus gall wasp and fungal pathogens
- Undertaking R&D on postharvest pathogens and disorders
- Establishing an accreditation scheme for citrus industry nurseries, with all budwood to come from Auscitrus for commercial nursery citrus tree production and domestic nursery production
- Ensuring plant material is imported through plant quarantine using the most effective and efficient pathogen detection and elimination technology.

OUTCOME 2 (*continued*)

Agrichemical

- Undertaking to identify and provide access to new softer chemicals, prioritise agrichemical needs through industry consultation, and expedite the agrichemical regulatory approval process for citrus (including review of the current Strategic Agrochemical Review Process (SARP))
- Achieving chemical compliance and adherence to MRLs across the entire industry
- Implementing BMP combinations to allow the move towards ultra-low residue levels.

OUTCOME 3

Improved product quality and increased productivity from the application of innovation

Australian citrus is well-recognised for its premium quality in global markets. Although the Australian citrus industry is not a large contributor globally, it competes very well on quality, particularly against lower-priced competitor-exporting countries such as Chile, Argentina and South Africa.

While the industry has been increasing production in recent years, and with further increases in production likely, citrus growers' profitability will improve by increasing productivity (increased yields of first grade fruit per unit of input), decreasing costs, or increasing product quality. Some producers are obtaining consistently high yields, but there is an opportunity for other growers to achieve these levels as well, either through better practices and technologies, or through use of better varieties. Minimising the impact of pests and diseases is also crucial in this pursuit.

Optimising yield of high-quality fruit per unit of input is an important means of reducing growers' cost of production per tonne and therefore increasing profitability. These parameters and their variability across groves are not well understood at an industry level, so there is a need to gather benchmarking data to identify the opportunities for improvement and to enable monitoring of change over time.

Australian citrus's main competitive advantage is taste. While there are voluntary product quality standards available and well used, greater adoption by growers, packers, marketers and retailers would be advantageous.

There are a number of potential opportunities where improved product quality and increased productivity can further support demand-building strategies, including:

- Undertaking R&D and extension to improve productivity (yield of first grade fruit per hectare) and/or reduce the cost of production (there are many opportunities in this field, such as robotic harvesting and precision agriculture)
- Undertaking R&D and extension to enhance product quality (such as flavour and juiciness) including the development of non-destructive fruit testing and objective grading) and waste reduction
- Applying BMPs in key areas such as irrigation, canopy management, pest management, plant growth regulators, nutrition and environmental management to enhance 'pack-out' of export quality (first grade) fruit
- Maintaining collaborative quality standards programs between industry and retail outlets, and undertaking ongoing retail chain liaison and training
- Further developing and adopting of national internal quality standards
- Developing new varieties and rootstocks in line with consumer preferences, especially for appearance and juiciness (for fresh and processing citrus)
- Undertaking industry benchmarking studies, including packhouse efficiency, and using the results to improve performance (comparisons within Australia and with competitors for both fresh and processing products)
- Review, investigate and compile technical information on the health benefits of citrus.

OUTCOME 4

Industry participants have increased skills, capacity and knowledge

The citrus industry has two critically important challenges for human resources:

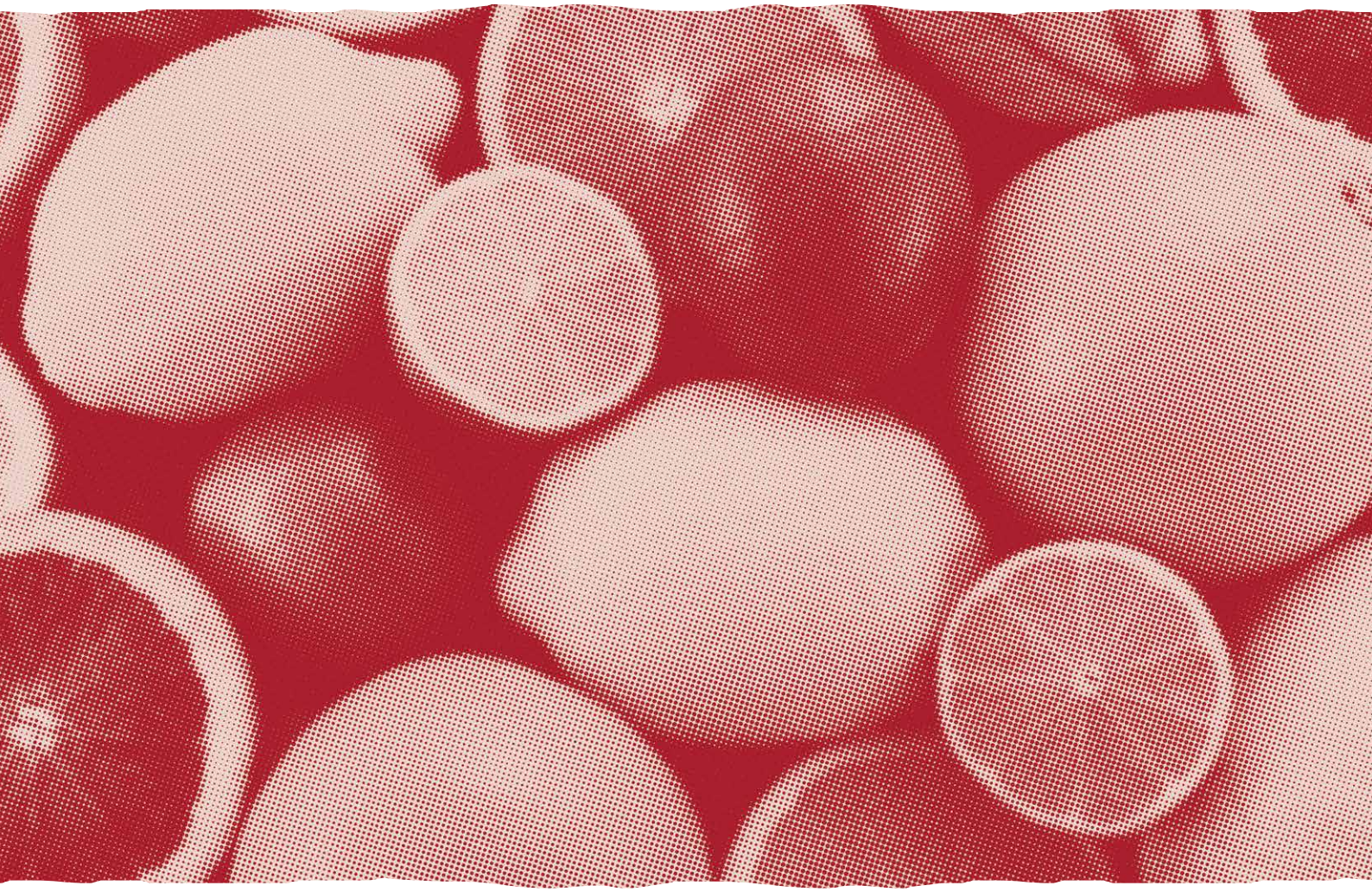
1. The ability to retain existing participants, and attract a new generation of participants to the industry
2. The ability to attract labour (in quality and quantity) at key times during the season.

Many of the deliverables sought from Outcomes 1, 2 and 3 require complex skills in horticulture and business, along with enhanced confidence (and resources) to adopt new techniques and technologies. These are crucial to a vibrant and confident citrus industry. State agencies, especially the NSW DPI, and Citrus Australia have been very active in training.

Harvesting is a large cost component of the production process and relies heavily on casual labour.

Potential opportunities to support Outcome 4 include:

- Delivering training programs to enhance skills of existing and new industry participants, possibly through a training centre of excellence
- Providing incentives to attract the next group of citrus farmers, including the importance of succession planning
- Facilitating the two-way flow of information through the value chain via an effective industry communication program
- Extending industry information and technology improvements effectively and efficiently through a range of forums, workshops, communication vehicles (especially digital) and industry events.



SECTION THREE

3 Citrus industry priorities

Industry investment priorities

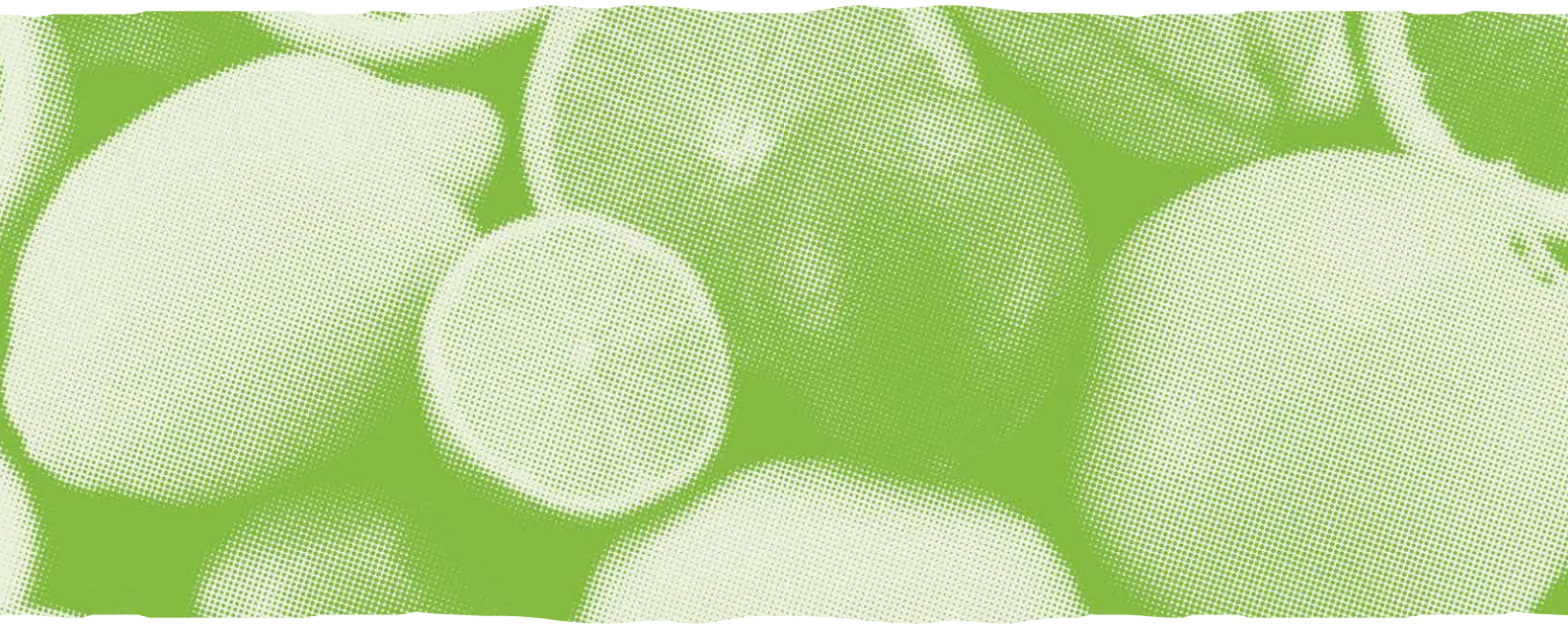
The following industry investment priorities (or strategies) have been identified by industry as those most likely to provide industry benefits from citrus R&D, extension and marketing strategies for the orange industry. Possible deliverables are also listed.

The overall deliverables or key performance indicators (KPIs) from this plan are that by 2021, the Australian citrus industry will have:

- Increased revenue from export markets ($400 million target) compared with 2016 levels
- Complied fully with all export protocols
- Enhanced its well-developed production forecasting system
- Reduced overall chemical residue load on all fruits compared with 2016, and have met or exceeded all market-based MRLs
- Enhanced biosecurity processes and protocols against existing and potential new pests and diseases
- Put in place and trialled a crisis management plan for citrus
- Improved the consistency of product quality.

The outcomes sought for the industry will be delivered through export and domestic marketing strategies for the orange industry, as well as R&D and industry capacity-building activities for all citrus. While there will be a significant focus on export markets, this will be adopted with the understanding that the further development of export markets improves the outcomes for those producers who focus largely on the domestic market.

This plan comprises four key Outcomes that are each closely linked. Outcome 1 is highly dependent on results from Outcome 2 while Outcome 4 will be vitally important to achieving Outcomes 1, 2 and 3.

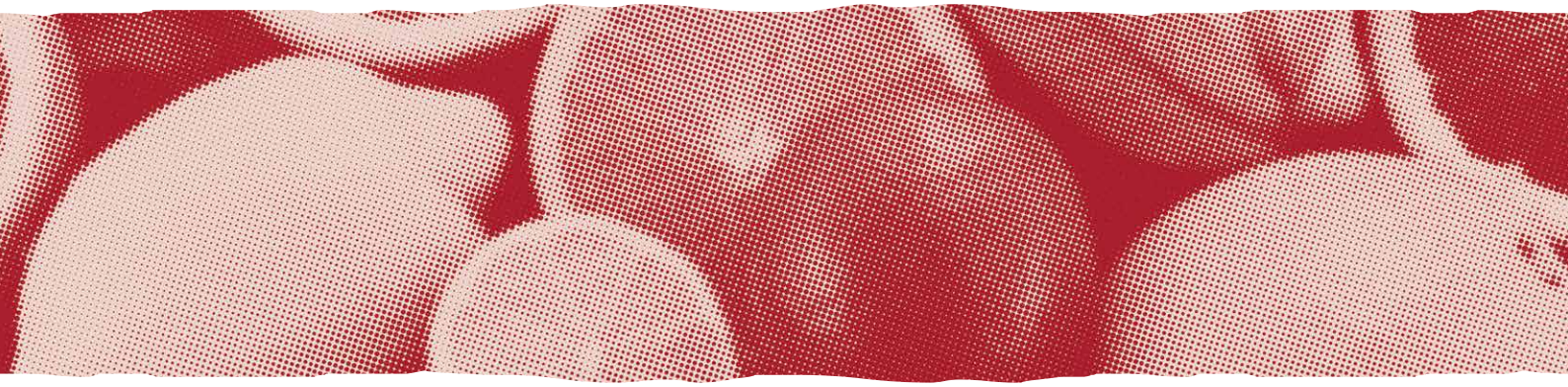


OUTCOME 1 – Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus prices	
STRATEGIES	**POSSIBLE DELIVERABLES**
1.1 Identify and develop new and existing export market opportunities, especially for market access	Annual review (and progressive updating) of current export plan to maintain relevance and to continue guiding industry expansion in exports Integrated marketing package (based on premium product orientation) to further support commercial players Develop the science and continue to engage with relevant government authorities on key market access protocols as identified by priorities in the citrus export plan (for example, China – orchards free of Fuller's rose weevil; market acceptance and expansion of PFAs for key regions) Comprehensive knowledge and understanding of protocols (export registrations) by new entrants to export markets Targeted in-market marketing activities for oranges Identification of opportunities to export fresh juice to Asian markets Collaboration with other horticulture products and agencies in inbound and export-focused trade missions
1.2 Identify and develop new and existing domestic market opportunities	Undertake R&D and extension to identify domestic marketing opportunities for oranges to support commercial entities Availability (imported or locally developed) of the best varieties and rootstocks, to maximise consumer satisfaction (domestically and export) with Australian product (and productivity) for both fresh and processed product
1.3 Support demand-building activities in export and domestic markets through the provision of accurate and timely market research	Comprehensive market research data on domestic and export markets available to support demand-building activities Information on citrus production in Australia, including the regular conduct of the national tree census, and accurate and prompt annual national crop forecasts Reports on production/performance of citrus in competing countries, along with relevant global import/export data

OUTCOME 2 – Growers and the industry reduce biosecurity, phytosanitary and agrichemical-related risks	
STRATEGIES	**POSSIBLE DELIVERABLES**
2.1 Safeguard the Australian citrus industry from future biosecurity and phytosanitary risks throughout the value chain	Scientific evidence available to support market access opportunities identified in the citrus export plan (see also Outcome 1) Protection plans and remediation/contingency plans against the introduction of new destructive invasive pests and pathogens (such as HLB and Asian citrus psyllid) available and implemented Enhanced programs to manage serious endemic pests, diseases and weeds, including fruit fly, citrus gall wasp and fungal pathogens, including support for PFAs Plant material imported only through plant quarantine using the most effective and efficient pathogen detwection and elimination technology Security of budwood multiplication systems Establish traceability and certification systems by Auscitrus for citrus industry nurseries – both commercial and domestic
2.2 Safeguard the Australian citrus industry from injudicious use of agrichemicals throughout the value chain	Outcomes from R&D identify and provide access to new 'softer' chemicals Grower extension and education programs result in chemical compliance and adherence to MRLs across the entire industry (see also Outcome 4) Best practice combinations allow the move towards ultra-low residue levels Expansion of citrus participation in NRS testing Review of the current SARP

OUTCOME 3 – Improved product quality and increased productivity from the application of innovation	
STRATEGIES	**POSSIBLE DELIVERABLES**
3.1 Undertake R&D and extension to develop and extend improvements in productivity and efficiency across the value chain	Updated current best management practice in all areas of the pipeline to increase productivity (yield per hectare) for fresh and processed product Outcomes from R&D that allow further improvements in productivity and/or reduce the cost of production (such as robotic harvesting, precision agriculture, big data) Industry-based benchmarking studies for fresh and processed product
3.2 Undertake R&D and extension to enhance product quality (such as flavour and juiciness)	Updated current best management practice in all areas of the pipeline to increase product quality, including plant growth regulators, pruning and wind blemish Outcomes from R&D that allow further improvements in pack-out of export quality (or first grade fruit – both pre-harvest quality and postharvest freshness and integrity, including developing non-destructive fruit testing and objective grading, and waste reduction New varieties and rootstocks in line with consumer preferences, especially for seasonality, seed, appearance and juiciness Collaborative quality standards programs between industry and retail outlets, and ongoing retail chain liaison and training Expanded use of national quality standards

OUTCOME 4 – Industry participants have increased skills, capacity and knowledge	
STRATEGIES	**POSSIBLE DELIVERABLES**
4.1 Increase skills in existing participants, and attract a new generation of willing participants to the citrus industry	Communication products available that actively promote the exciting high-tech, marketing and international opportunities the industry offers Industry participants accessing integrated training programs to enhance their skills to better address citrus industry challenges (such as digital technology, export requirements) A new generation of highly skilled and enthused participants supported by training programs and other initiatives Industry participants have access to professional development programs in addition to those funded through Hort Innovation Pool 2 funds Industry succession planning and training activities
4.2 Ensure growers and other members of the value chain are fully aware of industry developments	Current and effective extension programs for: » **Up-to-date BMPs (refer to Strategies 3.1 and 3.2)** » **Phytosanitary conditions per export market (refer to Strategy 2.1)** Communication plan developed and successfully implemented so as to facilitate the two-way flow of information through the value chain



Aligning to Hort Innovation investment priorities

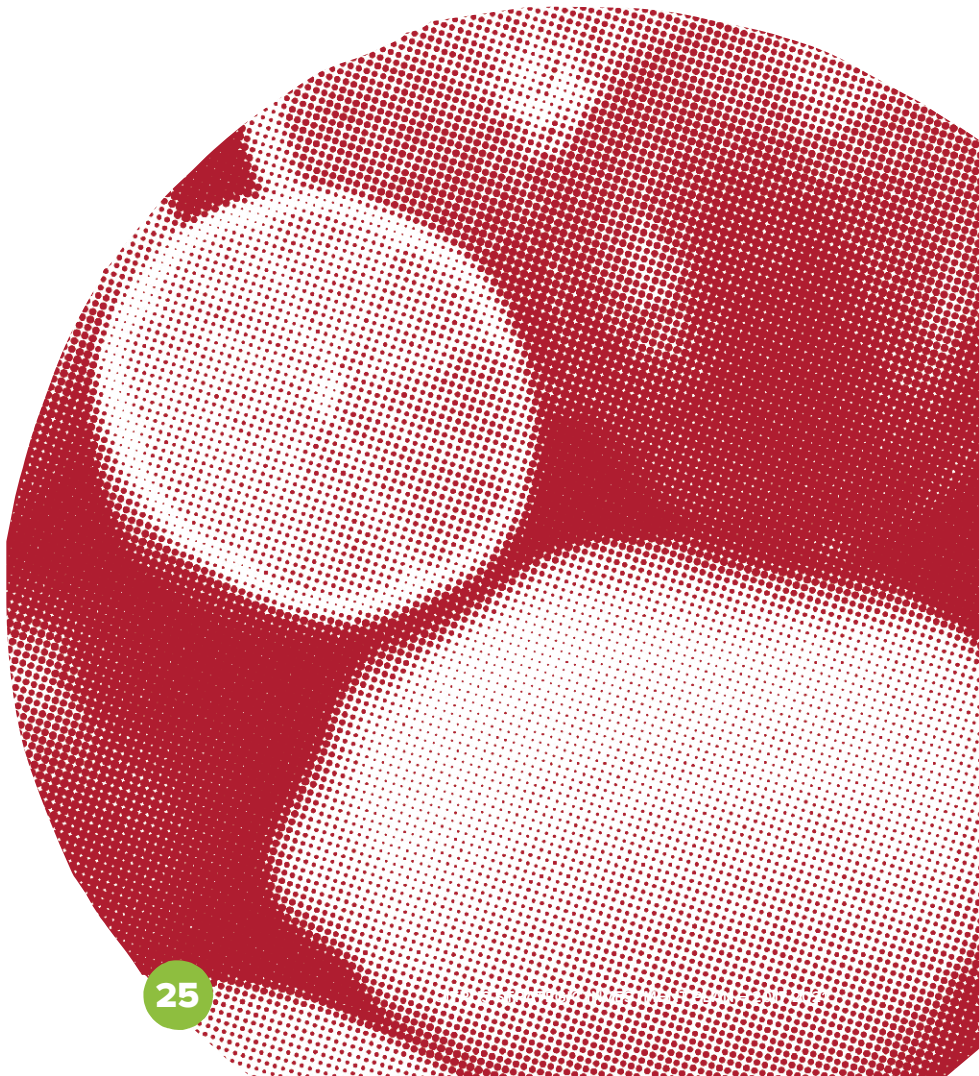
In establishing investment priorities, Hort Innovation analysed both historical and current levy and co-investment portfolios and priorities. From this analysis, we identified eleven cross-sectoral investment themes. We consolidated these themes further and considered their alignment with the Australian Government's Rural R&D and Extension Priorities and National Science and Research Priorities, to arrive at five investment priorities outlined in ***Figure 11***. ***Figure 11*** also shows how each cross-sectoral investment theme relates to the five investment priorities.

Figure 11: Hort Innovation's investment priorities

The alignment of citrus SIP outcomes to the Hort Innovation investment priorities and, as a consequence, the Australian Government's Rural R&D and Extension Priorities, and National Science and Research Priorities are shown in ***Table 2***.

Table 2: Alignment of citrus SIP outcomes to Hort Innovation investment priorities

Hort Innovation investment priorities	Citrus SIP outcomes
Support Industry efficiency and sustainability	Growers and the industry reduce phytosanitary and agrichemical-related risks
	Improved product quality and increased productivity from the application of innovation
Improve productivity of the supply chain	Improved product quality and increased productivity from the application of innovation
Grow the horticulture value chain capacity	Industry participants have increased skills, capacity and knowledge
Drive long-term domestic and export growth	Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus prices
	Growers and the industry reduce phytosanitary and agrichemical-related risks
Lead strategically to enhance the development of the Australian horticulture industry through operational excellence	Enabler



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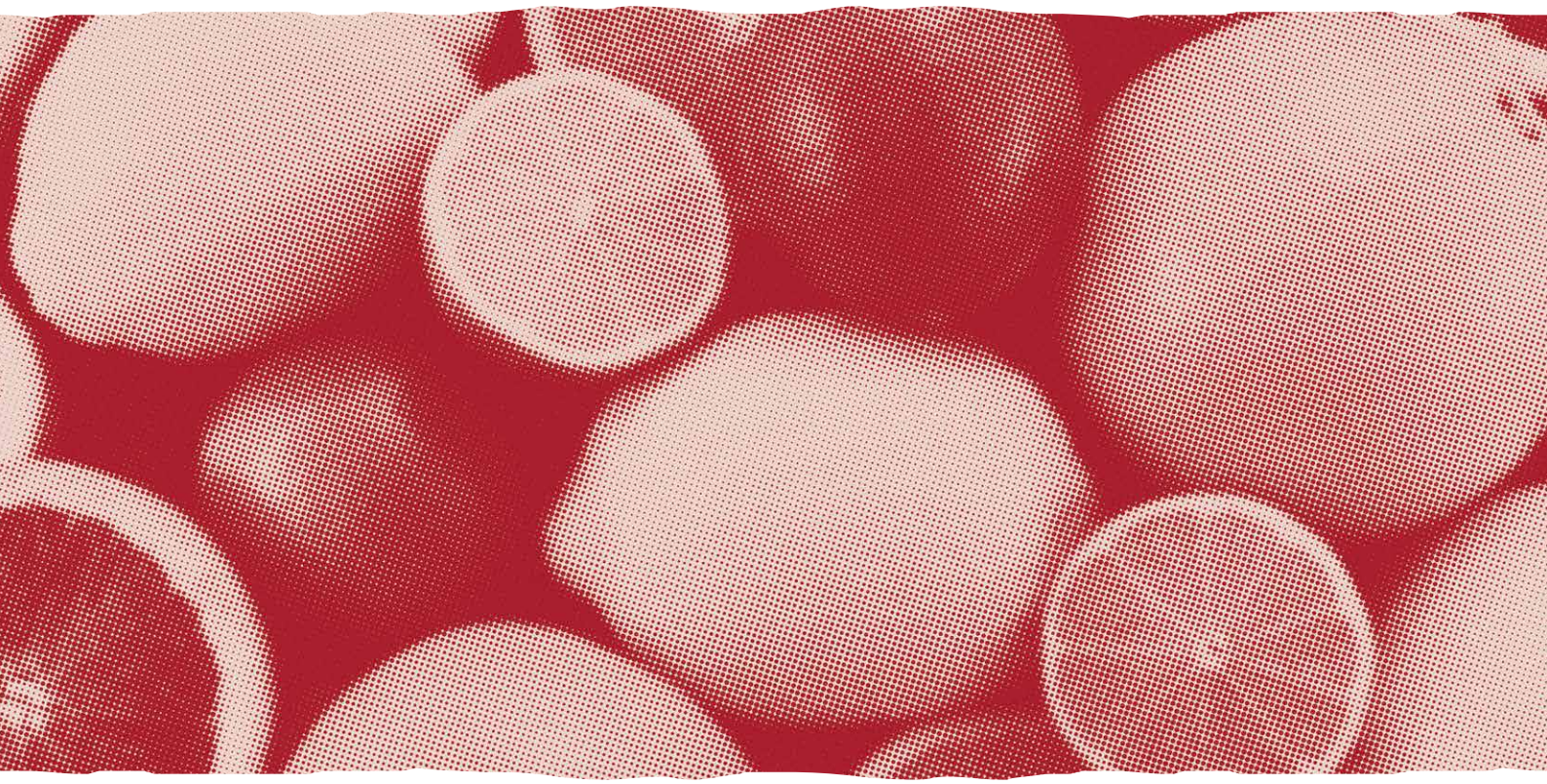
SECTION FOUR

Citrus SIP monitoring and evaluation

Citrus SIP monitoring, evaluation and reporting

A SIP program logic, and monitoring and evaluation (M&E) plan has been developed for the citrus SIP. These are informed by the Hort Innovation Organisational Evaluation Framework. The logic maps a series of expected consequences of SIP investment. The M&E plan shows the performance measures to demonstrate progress against the SIP and the data to be collected. Progress against the SIP will be reported in Hort Innovation publications and at industry SIAP meetings.

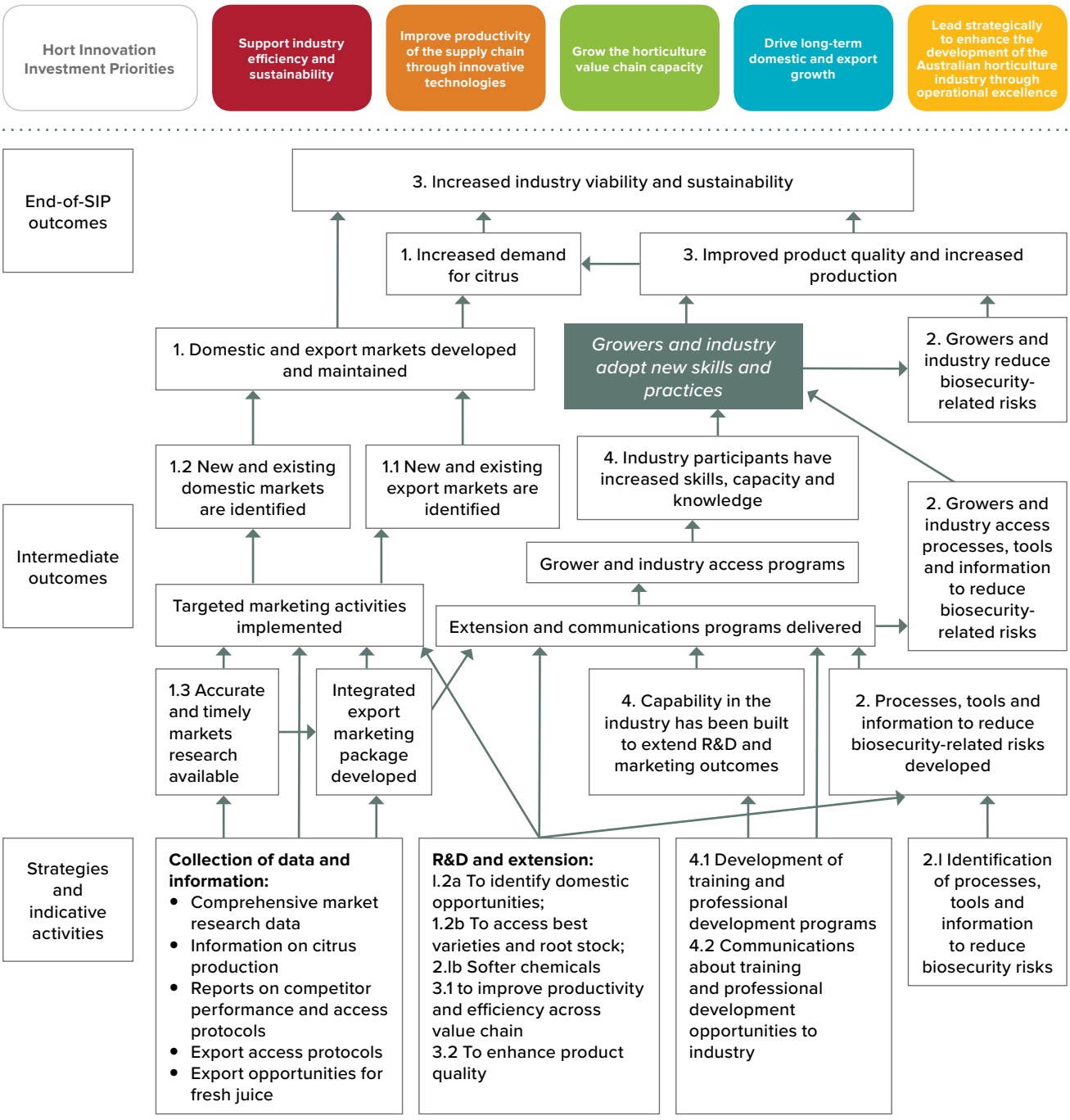
The SIP outcomes and strategies will be used to inform investments in individual projects to deliver the SIP. The results of M&E will be used to reflect on the results of investments and in decision-making. Hort Innovation will facilitate the regular review of SIPs to ensure they remain relevant to industry.



Citrus SIP logic

An indicative citrus SIP program logic is shown below in ***Figure 12***. The logic is based on the Hort Innovation SIP logic hierarchy (***Appendix 3***). The shaded boxes are not fully explicit in the strategy but necessary conditions for the achievement of expected outcomes.

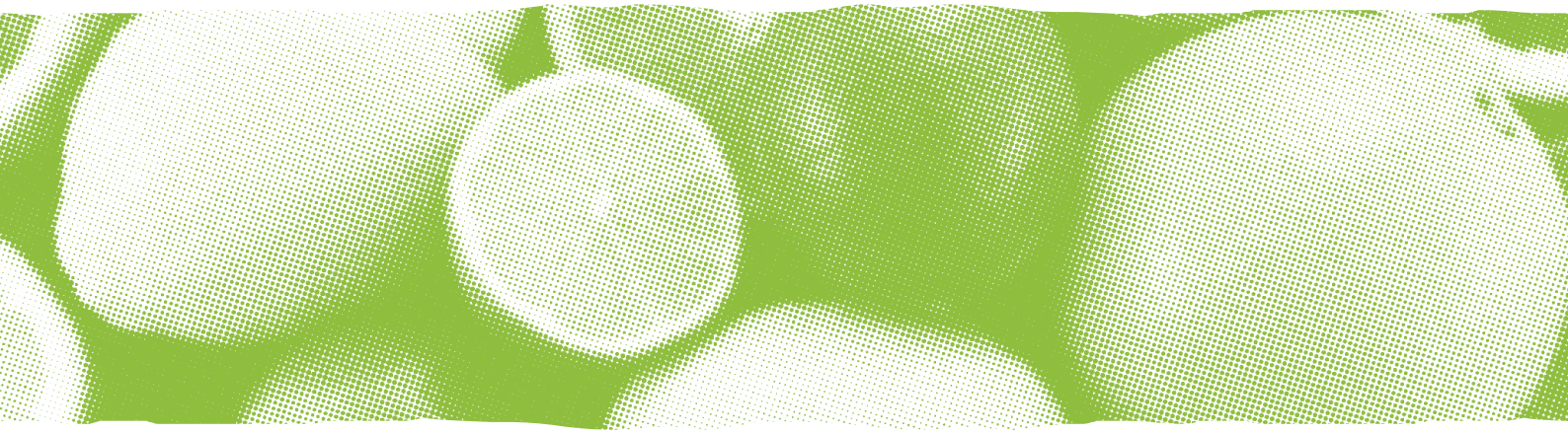
Figure 12: Citrus SIP logic



Citrus SIP M&E plan

The citrus SIP M&E plan is shown in ***Table 3***. The table includes KPIs and data collection methods both at a macro/industry (trend) level and at more specific SIP level/s.

Table 3: Monitoring and evaluation framework for the citrus SIP



Outcomes	Strategies	KPIs	Data collection methods and sources
OUTCOME 1: Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus products	1.1 Identify and develop new and existing export market opportunities	1. $400 million export revenue by end of plan 2. Export plan constantly reviewed and updated 3. Market premium for Australian citrus in export markets maintained 4. Improved protocols in line with export plan targets 5. New entrants to export markets have comprehensive knowledge and understanding of protocols (export training) 6. Evidence of successful collaborative inbound and export-focused trade missions 7. Juice export opportunities identified	• ABS/GTA export data • Updated plan • Price data in export markets (periodical) • Industry report on number and use of protocols • Feedback on export training activities • Research reports on trade missions • Export levels
	1.2 Identify and develop new and existing domestic market opportunities	1. Evidence of domestic marketing opportunities having been identified and implemented 2. At least 20 new varieties/rootstock evaluated for Australian conditions and accessible by growers 3. Market research data shows increase in consumer satisfaction of Australian product quality	• Industry marketing plan • Industry information • Consumer behaviour and attitudinal data
	1.3 Support demand-building activities in export and domestic markets through the provision of accurate and timely market research	1. Comprehensive market research data available to support demand-building programs 2. Availability of national tree census and annual national crop forecasts	• In-market research documents • Research reports

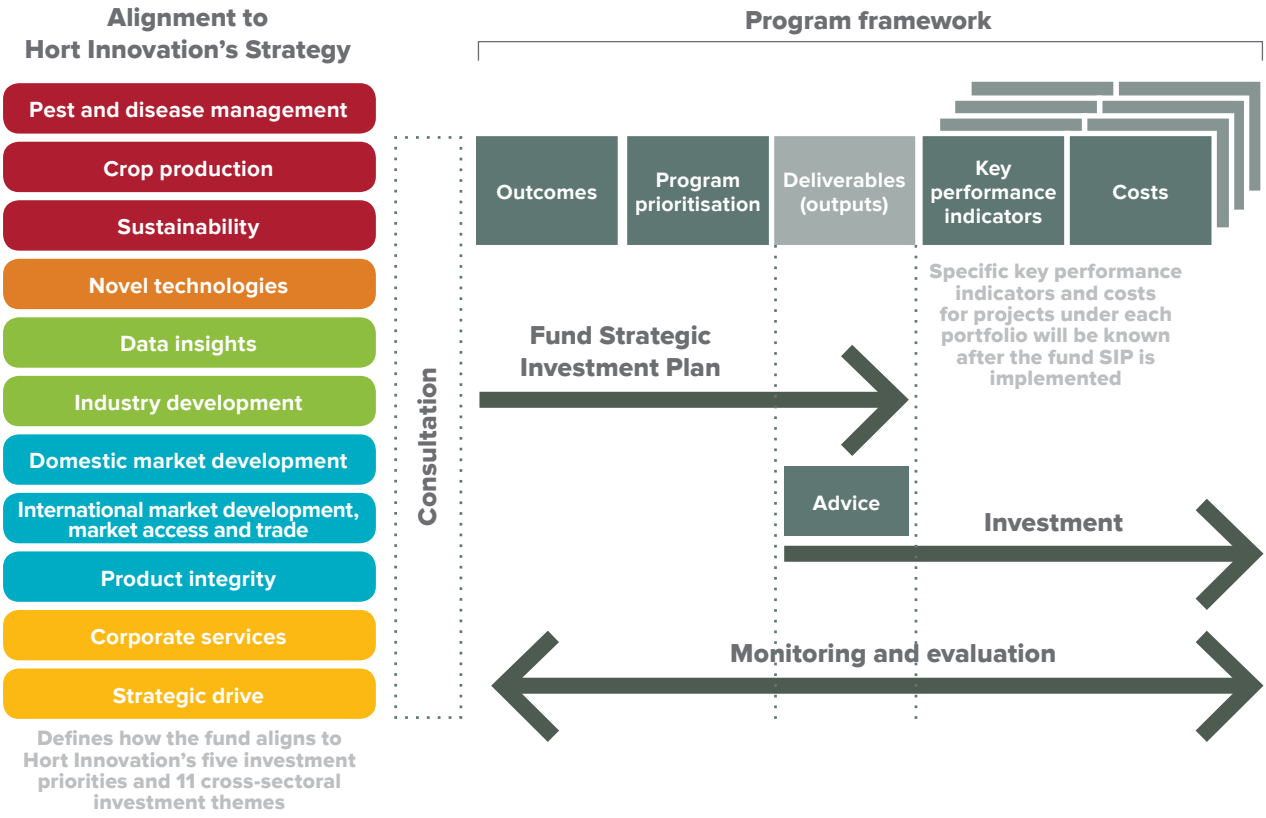
Outcomes	Strategies	KPIs	Data collection methods and sources
OUTCOME 2: Growers and the industry reduce biosecurity, phytosanitary and agrichemical-related risks	2.1 Safeguard the Australian citrus industry from future biosecurity and phytosanitary risks throughout the value chain 2.2 Gain industry agreement on the workable market access protocols into priority markets and complete required business cases	1. Scientific evidence available to support market access opportunities identified within the citrus export plan (see also Outcome 1) 2. Availability of protection plans and remediation/contingency plans against the introduction of new destructive invasive pests 3. Evidence of implementation of enhanced programs to manage serious endemic pests, diseases and weeds, including fruit fly, citrus gall wasp and fungal pathogens, and support for PFAs 4. Business case for an accreditation scheme for citrus industry nurseries established 5. New 'softer' chemicals available 6. Number of citrus participants in NRS has increased 7. Evidence of MRL compliance	• Scientific reports available • Availability of plans • Availability of ongoing programs and increase in PFA status • Research reports • Industry report on availability • Industry report on NRS • Industry report on performance

Reporting

The Program Framework in ***Figure 13*** is the mechanism that links Hort Innovation's strategy and investment priorities to the investment process through the industry SIP. SIPs assist Hort Innovation to prioritise and implement the specific industry R&D, extension and marketing programs.

Hort Innovation will use dynamic reporting against our monitoring and evaluation framework to report on investment progress. The contribution of investments to each industry SIP outcome will be reported regularly, including through industry Annual Reports, Hort Innovation's Annual Report and Hort Innovation's Annual Operating Plan.

Figure 13: Hort Innovation's program framework

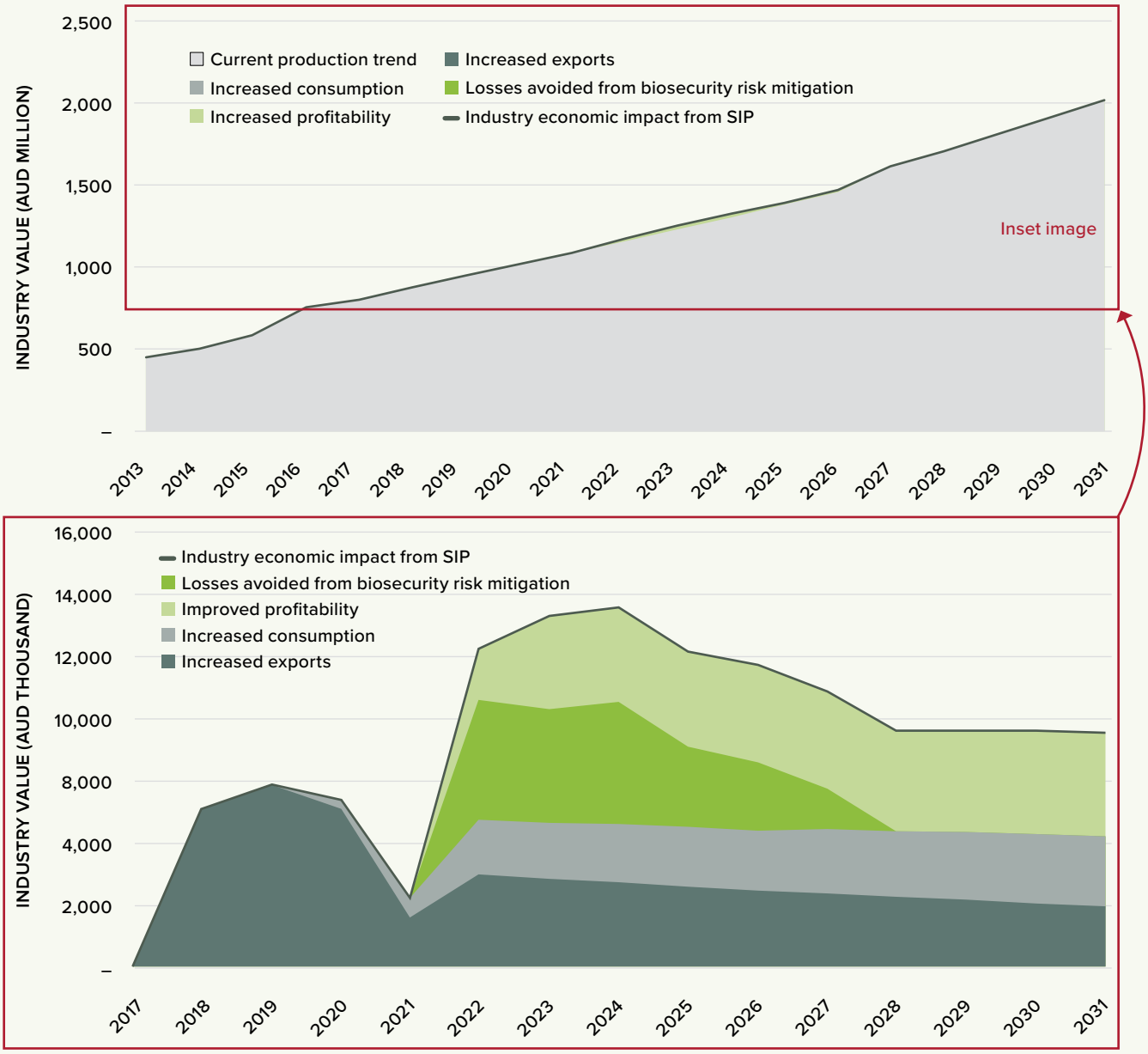


SECTION FIVE

5

Impact assessment

Figure 14: Economic benefit from investment in the citrus SIP



An independent assessment of the potential economic impacts from investment into the citrus SIP indicated a positive return on investment for the industry (***Figure 14***). The anticipated investment of $22.72 million over the next five years in R&D, extension and marketing activities is expected to generate $140.13 million in net benefits for the industry, representing a benefit cost ratio of 6.17 times to growers and service providers along the value chain.

The assessment draws from a wide range of available data sources, and projects economic impacts over a 15-year period starting from 2016/17. A five per cent discount rate has been applied and all values are adjusted for inflation and presented in 2016/17 dollar terms. The assessment takes a highly conservative approach and the presented figures have been adjusted to account for risks associated with achieving research outputs, expected adoption and impacts.

Table 4 provides a summary of the impacts assessed for the SIP, their corresponding outcomes, net economic benefits and benefit cost ratio.

Table 4: Overview of impacts assessed and alignment with SIP outcomes

Outcome	Expected deliverables	Anticipated SIP investment (over five years)	Net benefits (over 15 years)	Benefit cost ratio
OUTCOME 1: Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus products	Annual review of current export plan; integrated marketing package to further support commercial players, develop the science and engage with relevant government authorities on key market access protocols; comprehensive knowledge and understanding of protocols by new entrants to export markets; targeted in-market marketing activities for oranges; collaboration with other horticulture products and agencies in inbound and export focused trade missions; reports on production/performance of citrus in competing countries, along with relevant global import/export data; availability of best varieties and rootstocks; comprehensive market research; reports on production/performance of citrus in competing countries.	$5,679,852	$54,199,362	9.54
	Undertake R&D and extension to identify domestic marketing opportunities for oranges to support commercial entities; availability of best varieties and rootstocks; comprehensive market research; information on citrus production in Australia including the regular conduct of the national tree census and accurate and prompt annual national crop forecasts.	$5,679,852	$28,161,126	4.96
OUTCOME 2: Growers and the industry reduce biosecurity, phytosanitary and agrichemical-related risks	Protection plans and remediation/contingency plans against the introduction of new destructive invasive pests and pathogens (such as HLB) available and implemented; enhanced programs to manage serious endemic pests, diseases and weeds, including fruit fly, citrus gall wasp and fungal pathogens, including support for PFAs.	$5,679,852	$20,647,770	3.64
OUTCOME 3: Improved product quality and increased productivity from the application of innovation	Updated current best management practice in all areas of the pipeline to increase productivity (yield per hectare); Outcomes from R&D and extension that allow further improvements in productivity and/or reduce the cost of production (such as robotic harvesting, precision agriculture); updated current BMPs in all areas of the pipeline to increase product quality.	$5,679852	$37,123,487	6.54
OUTCOME 4: Industry participants have increased skills, capacity and knowledge	Increase the skills of industry participants and attract a new generation to the industry; increase awareness of levy funded activities throughout the industry.	Incorporated in above outcomes	Incorporated in above outcomes	Incorporated in above outcomes

The quantified impacts associated with Outcome 1 are:

- Increased exports in all citrus categories, to reach $400M by 2021. This will be driven by R&D and extension for all citrus and marketing activities for the orange industry
- Domestic increased consumption per capita across all sectors, driven largely by improved product quality and uptake of new varieties.

The quantified impact associated with Outcome 2 is:

- Impacts from avoiding one major biosecurity risk. Impacts were modelled on an incident of canker in Emerald, Queensland 2004.

The quantified impacts associated with Outcome 3 are:

- Price premium on orange and mandarin exports due to higher quality products achieved from better crop management, such as precision agriculture
- Increased yield across all citrus due to BMPs.

Outcome 4 compliments the adoption and implementation of R&D and marketing from Outcomes 1 to 3 and thus contributes to the delivery of all quantified impacts.

Increased exports in all citrus categories, to reach $400M by 2021. This will be driven by R&D and extension for all citrus and marketing activities for the orange industry.

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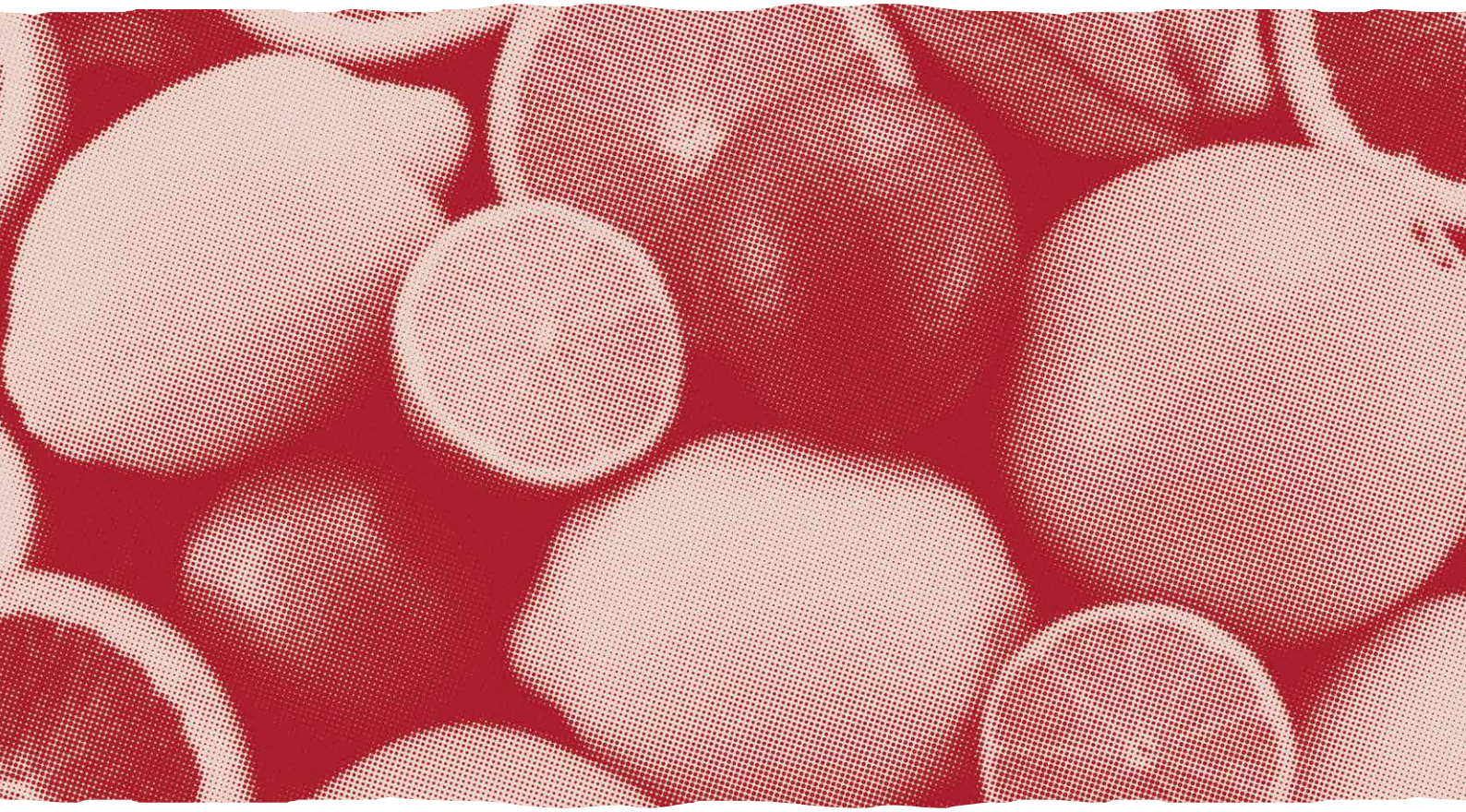
SECTION SIX

Risk management

The purpose of this risk section is to highlight any unique or specific risks that qualify the SIP. This is not intended to be an exhaustive risk review of the industry risks that are, in part, considered in the SWOT. This is also not reflective of the general investment risks that will be considered in the project investment process. Where such risks are identified, mitigation strategies are listed for consideration.

Risk	Mitigation strategy
Despite recent levy increases, available funds may limit ability to achieve desired outcomes	• Undertake only those activities with most potential • Do not over-promise on likely impact of the SIP
Many of the outcomes desired by industry are focused on marketing, but consumer marketing (both domestically and internationally) is expensive and available only for the orange industry	• Identify any R&D or extension activities that will help underpin industry marketing activities • Focus on trade marketing rather than consumer marketing



APPENDIX 1: Process to develop this plan

The process for the development of this SIP can be briefly summarised as follows:

- Review of the previous strategic plan and numerous reference documents
- Preparation of citrus industry SIP questionnaire (for open industry response through SurveyMonkey) and brief discussion paper
- Widespread industry consultation
- Discussion of consultation findings with the SIAP
- Synthesis and development of draft SIP, including analysis of potential industry impact and monitoring and evaluation plan
- Circulation of draft SIP to SIAP and receipt of feedback
- Revision of SIP and circulation to industry more broadly for feedback
- Revision of the draft SIPS to a final version.

APPENDIX 2: People consulted

The following individuals were consulted during the development of this SIP (and their assistance is gratefully acknowledged):

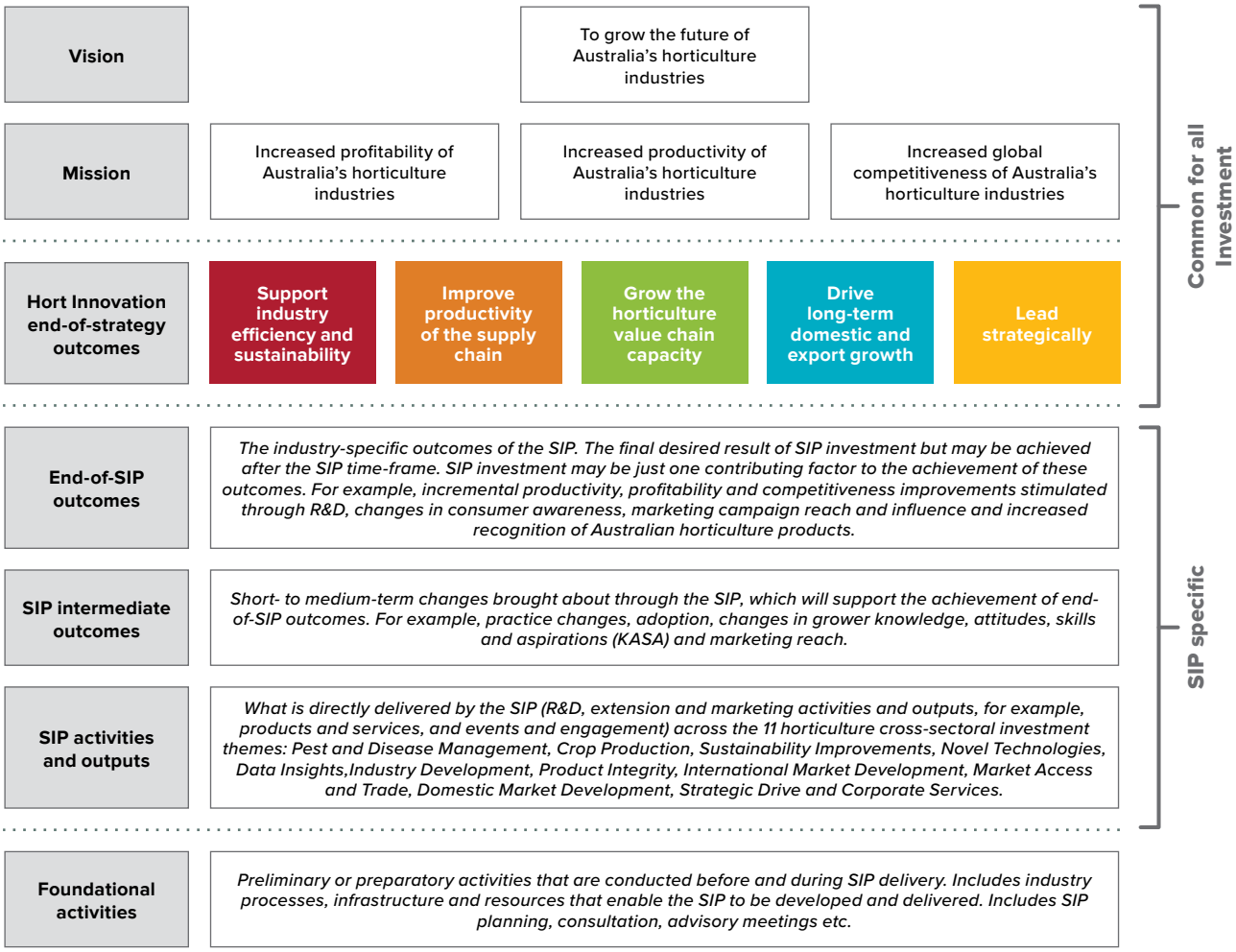
Judith Damiani	Citrus SIAP member
Tania Chapman	Citrus SIAP member
Danny Thornton	Citrus SIAP member
Allen Jenkin	Citrus SIAP member
Wayne Parr	Citrus SIAP member
Gavin Porter	Citrus SIAP member
Richie Roberts	Citrus SIAP member
David Arnold	Citrus SIAP member
Dean Morris	Citrus SIAP member
Stuart Burgess	Hort Innovation
Brad Wells	Hort Innovation
Lisa Troy	Hort Innovation
Nathan Hancock	Citrus Australia
David Daniels	Citrus Australia
Andrew Creek	DPI NSW
Steven Falivene	DPI NSW

Members of the citrus industry who participated in workshops or face-to-face meetings at: • **Gayndah, Queensland** • **Yanco, New South Wales** • **Griffith, New South Wales** • **Mildura, Victoria** • **Renmark, South Australia** • **Moora and Gingin, Western Australia**	
Ben Cant	Citrus Australia Export Marketing Committee
Marcus Scott	Citrus Australia Export Marketing Committee
Brett Jackson	Citrus Australia Export Marketing Committee
Paul Scheffer	Citrus Australia Export Marketing Committee
Bindi Pressler	Citrus Australia Export Marketing Committee
Richie Roberts	Citrus Australia Export Marketing Committee
Allen Jenkin	Citrus Australia Export Marketing Committee
Greg Dhnaram	Citrus Australia Domestic Marketing Committee
Michael Littore	Citrus Australia Domestic Marketing Committee
Frank Mercuri	Citrus Australia Domestic Marketing Committee
Dean Morris	Citrus Australia Domestic Marketing Committee
Mano Babiolakis	Citrus Australia Domestic Marketing Committee
Michael McMahon	Citrus Australia Domestic Marketing Committee

In addition to consultation with the citrus industry SIAP and informal discussions with industry members, the following groups and individuals attended workshops or face-to-face consultation meetings. Their assistance is gratefully acknowledged:

Steve Burdette
Ben Haslett
Nick Ulcoq
Deb Scott
Kevin Cock
Vito Mancini
Bronwyn Walsh
Shane Kay
Mick Mann
John Sergi
Joe Zucco
Frank Mercuri
Anthony Nardi
Alan Harrison
Riaz Ahmed
Gus Cristofaro
Graham Minchin
Mark Trott
Ainsley Emmerton
Sandy McClay
Ian Shepherd
Judy Shepherd
Brian Gallagher
Cris Bryant
David Wagner
Rob and Ned Taddei

APPENDIX 3: Logic hierarchy



APPENDIX 4: Reference documents

Agknowledge (2015), *WA Citrus Industry Strategic Plan 2015–2030*

Citrus Australia (2012), *A plan to guide strategic investment in citrus R&D 2012–17*

Citrus Australia (2013), *3-Year Strategy 2013–16*

Citrus Australia (2016), *Australian Citrus National Forecast: 2016 Season*

Fitzgerald & Associates and Ridge Partners (2014), *Australian Citrus Industry Export Strategy*

Fresh Intelligence Consulting (2015), *Australian Citrus Exports January to December 2015*

Freshlogic/Hort Innovation (2016), *Australian Horticulture Statistics Handbook 2014/15*

HAL (2012), *Australian Horticulture Statistics Handbook 2012*

IHS *Global Trade Atlas*

Mead (2016), *Queensland Citrus Priority Issues*

QDAF (2015), *Citrus Industry Stakeholder Consultations in the Central Burnett*

Hort Innovation
ACN 602 100 149
Level 8, 1 Chifley Square
Sydney NSW 2000
Telephone 02 9295 2300
Fax 02 8295 2399
www.horticulture.com.au