

Custard apple

Strategic Investment Plan

2022-2026



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EXECUTIVE SUMMARY

The overarching strategic intent of this SIP is to maintain profitability for the Australian custard apple industry by concentrating on driving demand in domestic markets through improved and consistent product quality, and increasing productivity through varietal development.

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

The Australian custard apple industry situation in 2019/20 is described on **page 4** with further information provided in **Appendix 1**. The industry production volumes have remained relatively stable over the past five years due to limited access to new rootstocks for growers to increase their plantings. Given this, supply into the domestic market has remained stable. The major custard apple growing regions include Atherton and Sunshine Coast regions of Queensland, and Lismore in northern New South Wales, with the majority of holdings being small to medium operations.

The strategic intent of the custard apple SIP provides a summary of how the custard apple industry will drive change over the life of the SIP. This will be realised through innovation to establish improved rootstock propagation and growers having access to tools to help them meet the demands of domestic consumers.

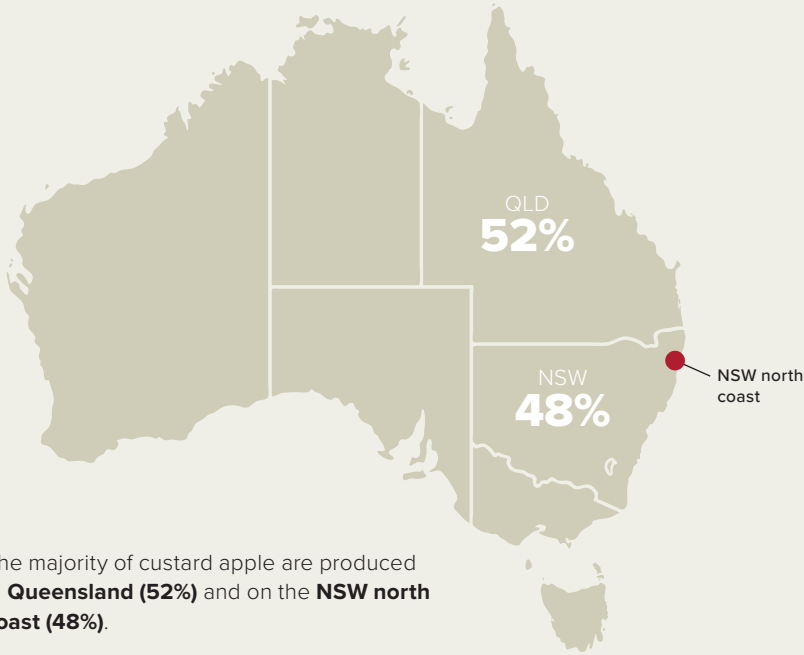
The financial estimates give an indicative overview of the funding availability for the period of FY2022-FY2026. Although a major portion of the custard apple research and development (R&D) fund is currently allocated to key projects until FY2023, available funds for investment will increase over the life of the SIP, due to current projects concluding. Careful prioritisation of future investment needs will be required when the funds to invest become available in FY2024.

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 custard apple industry. Demand creation continues to be crucial for the industry, with a particular focus on raising awareness and consideration of Australian custard apples. Rootstock propagation and managing quality through postharvest and supply chain management are the priority areas for investment under the outcome of productivity.

The key performance indicators (KPIs) detail how the impact of each strategy will be measured, for example, positive influence on consumer preference, and availability of new scion varieties for grower adoption.

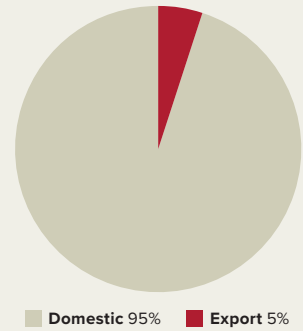


PRODUCTION REGIONS:

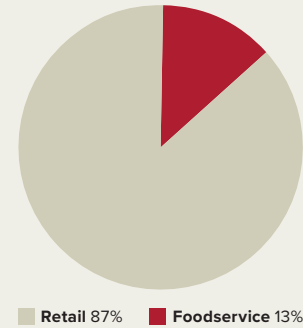


The majority of custard apple are produced in **Queensland (52%)** and on the **NSW north coast (48%)**.

EXPORT/DOMESTIC:



DOMESTIC RETAIL VS FOODSERVICE:



PRODUCTION WINDOW:



Jan-Oct

NUMBER OF GROWERS:



100-130

PER CAPITA CONSUMPTION:



0.05 kg

PRODUCTION VOLUMES:



1,422 tonnes

in 2019/20

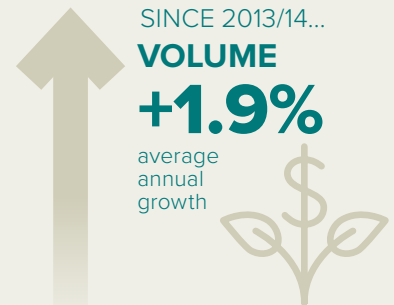
FARMGATE VALUE OF PRODUCT:



\$5.9 million

in 2019/20

GROWTH TRENDS:



Production volumes have grown at an average annual growth rate of **1.9%** over the past seven years

VARIETIES:



Pinks Mammoth
and
African Pride

THE CUSTARD APPLE STRATEGIC INVESTMENT PLAN

The custard apple SIP is the roadmap that will guide Hort Innovation's oversight and management of the custard apple industry's investment programs. It lays the foundation for decision-making in custard apple 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 custard apple industry priorities.

Hort Innovation has led the process for preparing the refresh of the custard apple 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 future industry profitability and sustainability.

Hort Innovation has valued the support, advice, time, and commitment of all stakeholders that contributed to producing this SIP, especially custard apple 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 custard apple 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 custard apple 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 custard apple Strategic Investment Advisory Panel (SIAP), IRBs and other key stakeholders.

Producers in the custard apple 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 custard apples that are produced in Australia and either sold by the producer or used by the producer in the production of other goods. The R&D levy rate on custard apples is set at 27 cents per standard box and per standard tray for packaged fruit, and \$34 per tonne for bulk custard apples. The marketing levy is set at 13 cents per tray or per box, and \$16 per tonne for bulk fruit.

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

This SIP represents the Australian custard apple industry's collective view of its R&D and marketing needs over the next five years (2022-2026). Learning, achievements and analysis of the previous SIP, consultation with Australian custard apple 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 custard apple SIP. Importantly, a portion of these funds is already committed, as the industry has current multi-year projects for R&D and marketing activities. In addition, the levy income from year to year will vary due to changes in seasonal and market conditions.

The financial estimates used for the purpose of developing this SIP are presented in **Table 1** below and are indicative. The intention of the table is to offer a strategic overview of the industry fund at a specific point in time, and the figures will be regularly reviewed to reflect the latest information for the industry and any changes in investment priority. Further details will be available within the AIP each year.

TABLE 1. Indicative financial estimates for the custard apple SIP over the life of the SIP

	2022 \$	2023 \$	2024 \$	2025 \$	2026 \$
R&D					
Balance end FY2021	508				
Estimated levy funds (growers)	62,000	62,000	60,000	60,000	60,000
Australian Government contribution	56,789	23,805	20,969	28,269	28,417
Current investments	96,541	10,468	5,648	28,058	28,309
New investments	–	30,000	30,000	20,000	20,000
Total project investments	96,541	40,468	35,648	48,058	48,309
CCR	17,037	7,141	6,291	8,481	8,525
Projected end balance	3,700	32,800	64,300	89,500	114,700
MARKETING					
Balance end FY2021	8,032				
Estimated levy funds (growers)	30,000	30,000	25,000	25,000	25,000
Current investments	20,000	–	–	–	–
New investments	–	16,000	16,000	16,000	16,000
Total project investments	20,000	16,000	16,000	16,000	16,000
CCR	5,000	4,000	4,000	4,000	4,000
Projected end balance	13,360	22,660	26,960	31,260	35,560

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

CUSTARD APPLE INDUSTRY OUTCOMES



The overarching strategic intent of this SIP is to maintain profitability for the Australian custard apple industry by concentrating on driving demand in domestic markets through improved and consistent product quality, and increasing productivity through varietal development.

Industry outcomes

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

OUTCOME 1: Demand creation

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

Demand creation will support the industry to develop existing and future domestic and international markets. This will contribute to improved consumer knowledge and attitudes, in addition to encouraging purchase intent to drive category volume growth.

The strategic intent of this outcome is to maintain and strengthen consumer demand for custard apples, as the foundation for sustainable expansion of production and consumption in domestic markets. It means the industry is investing to broaden consumer awareness so that custard apples are more top of mind and purchased more frequently.

OUTCOME 2: Industry supply, productivity and sustainability

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

Supply and productivity will be supported through improvements to production efficiencies which 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 optimise returns and reduce risk to growers. Achieving the outcome will involve:

- Ensuring availability of superior scion varieties with superior performance and enhanced sensory attributes
- Developing new knowledge on custard apple rootstock propagation
- Developing new knowledge on the relationship between quality and postharvest and supply chain management
- Developing an industry biosecurity plan and biosecurity risk analyses
- Developing new knowledge of optimal pest and disease management
- 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 3: Extension and capability

Building capability and innovative culture.

Building capability and an innovative culture will support industry cohesion and increase knowledge, attitudes, skills and aspirations (KASA) to use the investment outputs across the supply and demand initiatives to better manage risk and create positive change.

The strategic intent of this outcome is to manage the knowledge, relationships, systems and processes required to communicate effectively with internal and external stakeholders. Achieving the outcome will involve a change in custard apple industry knowledge, awareness and attitudes of new varieties and rootstock propagation outcomes from the demand and supply investments.

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, production statistics, and forecasting to enable better decision-making process by industry and individual businesses.

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



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

CUSTARD APPLE INDUSTRY STRATEGIES



Strategies to address industry investment priorities

The strategies and identified impacts for each of the key outcome areas are described in the tables below. 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 term (0-3 years), medium term (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 adequate or sufficient resources. Further resources and efficiencies may become available through alternative funding sources such as Hort Frontiers strategic partnership initiative, external grants and/or cross-industry initiatives.

OUTCOME 1: Demand creation

Demand creation supports the Australian custard apple industry to develop existing and future domestic markets.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Increase domestic consumer demand for fresh, quality Australian custard apples through knowledge, attitudes and purchase intent	<ul style="list-style-type: none"> Increased consumer demand for Australian custard apples Increased consumer awareness of health benefits of custard apples

OUTCOME 2: Industry supply, productivity and sustainability

The Australian custard apple industry has increased profitability, efficiency and sustainability through innovative R&D, sustainable best management practices (BMPs) and varieties.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Complete the commercialisation of new scion varieties with enhanced performance and sensory attributes for grower adoption	<ul style="list-style-type: none"> New scion varieties available New knowledge on the performance of new scion varieties
2. Develop new propagation methods to increase supply of rootstock material	<ul style="list-style-type: none"> New knowledge on propagating rootstock material
3. Review postharvest handling, storage, and processing across the supply chain to understand impacts on quality	<ul style="list-style-type: none"> Review undertaken of the custard apple supply chain and areas for improvement identified. This will inform future quality assurance processes for the custard apple industry
4. Improve industry preparedness and resilience to biosecurity threats	<ul style="list-style-type: none"> Improved industry biosecurity preparedness reducing the risk of an incursion
5. Develop and optimise fit-for-purpose pest and disease management strategies	<ul style="list-style-type: none"> Optimal pest management systems available for growers
6. Prioritise the major crop protection gaps through a Strategic Agrichemical Review Process (SARP)*	<ul style="list-style-type: none"> 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

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OUTCOME 2: Industry supply, productivity and sustainability

The Australian custard apple industry has increased profitability, efficiency and sustainability through innovative R&D, BMPs and varieties.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
7. Support and co-ordinate crop protection regulatory activities with the potential to impact plant protection product access, both in Australia and internationally*	<ul style="list-style-type: none"> Regulatory Risk Assessments have informed proactive strategic priority setting to avoid pest management gaps in the event access or use is negatively impacted
8. Generate residue, efficacy and crop safety data to support applications to the Australian Pesticides and Veterinary Medicines Authority (APVMA) that seeks 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"> Crop protection solutions meet industry priority needs as identified in the industry SARP or biosecurity plan

OUTCOME 3: Extension and capability

Improved capability and an innovative culture in the Australian custard apple industry maximises investments in productivity and demand.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Deliver communication programs that support positive change in the areas of productivity and demand	<ul style="list-style-type: none"> A change/progression in awareness, knowledge and attitudes for grower profitability and sustainability which support the adoption of best practice and innovations Participation in cross-industry communication activities

OUTCOME 4: Business insights

The Australian custard apple industry is more profitable through informed decision-making using consumer knowledge and tracking, production statistics and forecasting and independent reviews.

STRATEGIES	POTENTIAL BENEFIT OR IMPACT
1. Increase industry alignment with quality and brand-positioning opportunities driven by consumer insights*	<ul style="list-style-type: none"> Provision of business knowledge to deliver against demand, supply and extension outcomes
2. Use production forecasts to inform long-term and/or in-season market planning and supply strategies	<ul style="list-style-type: none"> Increased industry or other stakeholder capacity Provision of information on supply to further enhance marketing strategies and timing

* 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.





CUSTARD APPLE SIP MONITORING AND EVALUATION

The custard apple SIP Monitoring and Evaluation (M&E) Framework has been developed and 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.

Custard apple SIP Monitoring and Evaluation Framework

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

OUTCOME	STRATEGIES	KPIs
Demand creation		
<p>Outcome 1: Demand creation supports the Australian custard apple industry to develop existing and future domestic markets.</p>	<p>1. Increase domestic consumer demand for fresh, quality Australian custard apples through knowledge, attitudes and purchase intent</p>	<ul style="list-style-type: none"> • Positive influence on consumer preference, knowledge, attitudes, and purchase intent • Use of nutritional information to support consumer demand



OUTCOME	STRATEGIES	KPIs
Industry supply, productivity and sustainability		
<p>Outcome 2: The Australian custard apple industry has increased profitability, efficiency and sustainability through innovative R&D, sustainable BMPs and varieties.</p>	1. Complete commercialisation of new scion varieties with enhanced performance and sensory attributes for grower adoption	<ul style="list-style-type: none"> • Availability of new scion varieties • New knowledge on the performance of new scion varieties delivered to growers
	2. Develop new propagation methods to increase supply of rootstock material	<ul style="list-style-type: none"> • New knowledge for growers on propagating rootstock material
	3. Review postharvest handling, storage and processing across the supply chain to understand impacts on quality	<ul style="list-style-type: none"> • Postharvest factors impacting retail quality are identified
	4. Improve industry preparedness and resilience to biosecurity threats	<ul style="list-style-type: none"> • Maintenance/tracking of the implementation of an industry biosecurity plan • Development of risk analyses of high priority pests including entry pathways, establishment and spread potential
	5. Develop and optimise fit-for-purpose pest and disease management strategies	<ul style="list-style-type: none"> • Development of pest and disease management strategies that mitigate crop loss in collaboration with growers
	6. Prioritise the major crop protection gaps through a SARP*	<ul style="list-style-type: none"> • Coordinated industry priority setting with a clear outlook of gaps and risks in existing pest control options • Industry priority needs published and shared with stakeholders, including registrants
	7. Support and co-ordinate crop protection regulatory activities with the potential to impact plant protection product access, both in Australia and internationally*	<ul style="list-style-type: none"> • Regulatory Risk Assessments maintained
	8. Generate residue, efficacy and crop safety data to support applications to the APVMA that seeks 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"> • Data to support applications to the APVMA and the establishment of Maximum Residue Levels (MRLs)



OUTCOME	STRATEGIES	KPIs
Extension and capability		
<p>Outcome 3: Improved capability and an innovative culture in the Australian custard apple industry maximises investments in productivity and demand.</p>	<p>1. Deliver communication programs that support positive change in the areas of productivity and demand</p>	<ul style="list-style-type: none"> An increase in engagement, awareness and knowledge of R&D project outputs especially in relation to new varieties and rootstock propagation outcomes from the demand and supply investments
Business insights		
<p>Outcome 4: The Australian custard apple industry is more profitable through informed decision-making using consumer knowledge and tracking, production statistics and forecasting and independent reviews.</p>	<p>1. Increase industry alignment with quality and brand-positioning opportunities driven by consumer insights*</p>	<ul style="list-style-type: none"> Delivery of consumer insights strategy Evidence that consumer insights inform strategic market engagement New consumer knowledge available for growers
	<p>2. Use production forecasts to inform long-term and/or in-season market planning and supply strategies</p>	<ul style="list-style-type: none"> Production forecast available Evidence that production forecasts support marketing and production decisions

* 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 custard apple 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. It will involve Hort Innovation’s whole-of-horticulture reporting obligations and corporate plan and involve 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 more 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 opportunities identified for the custard apple industry include:

- New dwarfing rootstock for automation-enabled high-density tree crop production
- Improving farm productivity and profitability with new varieties
- Health claims for Australian horticultural products.

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 custard apple SIP 2022-2026 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 it provides 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

Collaboration across the agriculture research community is essential, including with IRBs and organisations such as the CSIRO, 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. The lead agency involved with the custard apple industry investment program, Department of Agriculture and Fisheries, Queensland (DAFQ), was engaged during the development of this SIP to ensure consideration and strategically-aligned priorities for the custard apple industry. In addition, strategic priorities and opportunities identified by Custard Apples Australia have been considered in the development of the custard apple SIP where applicable.

TABLE 2. Government and key agency priorities

Custard Apples Australia priorities	DAFQ priorities	Rural RD&E for Profit priorities	Australian Government Science and Research priorities
Fostering communications across all industry sectors	New varieties (green and red skin)	Advanced technology	Food
Efficient, effective, equitable and accountable use of industry resources	Postharvest to support export	Biosecurity	Soil and water
Pursuing comprehensive domestic and export marketing	Export	Soil, water and managing natural resources	Advanced manufacturing
	Pest and disease	Adoption of R&D	Environmental change
	Rootstock supply (clonal and seedling)		Health

This SIP has been developed alongside the government and key agency priorities that are listed in **Table 2**, with consideration of issues faced by the custard apple 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 custard apple 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 custard apple SIAP, which is 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 SIAP 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 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 and to invest in specific impact areas to drive innovation and sustainability initiatives.

The custard apple industry views a number of these investment areas as opportunities for success into the future, including:

- Health, nutrition and food safety
- International markets
- Leadership.

Partnering with Hort Frontiers on these areas would provide the custard apple 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, aiming to strengthen the horticulture industry’s sustainability to meet the changing expectations and needs of growers, consumers, the community, investors and governments. The framework applies across the whole of Australian horticulture, including fruits, vegetables, nuts, nursery stock and turf. 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 3 provides examples of custard apple SIP strategies that illustrate how the industry is already aligning to the framework.

TABLE 3. Custard apple SIP strategy examples showing how the industry is already aligning to the Australian-grown Horticulture Sustainability Framework

STRATEGY	IMPACT	SUSTAINABILITY GOAL
Develop and optimise fit-for-purpose pest and disease management strategies	<ul style="list-style-type: none"> Optimal pest management systems available for growers 	Planet & Resources
Deliver communication programs that support positive change in the areas of productivity and demand	<ul style="list-style-type: none"> A change/progression in awareness, knowledge and attitudes for grower profitability and sustainability which support the adoption of best practice and innovations Participation in cross-industry communication activities 	People & Enterprise
Increase domestic consumer demand for fresh, quality Australian custard apple through knowledge, attitudes and purchase intent	<ul style="list-style-type: none"> Increased consumer demand for Australian custard apples Increased consumer awareness of health benefits of custard apples 	Nourish & Nurture
Improve industry preparedness and resilience to biosecurity threats	<ul style="list-style-type: none"> Improved industry biosecurity preparedness reducing the risk of an incursion 	Planet & Resources
Develop new propagation methods to increase supply of rootstock material	<ul style="list-style-type: none"> New knowledge on propagating rootstock material 	People & Enterprise



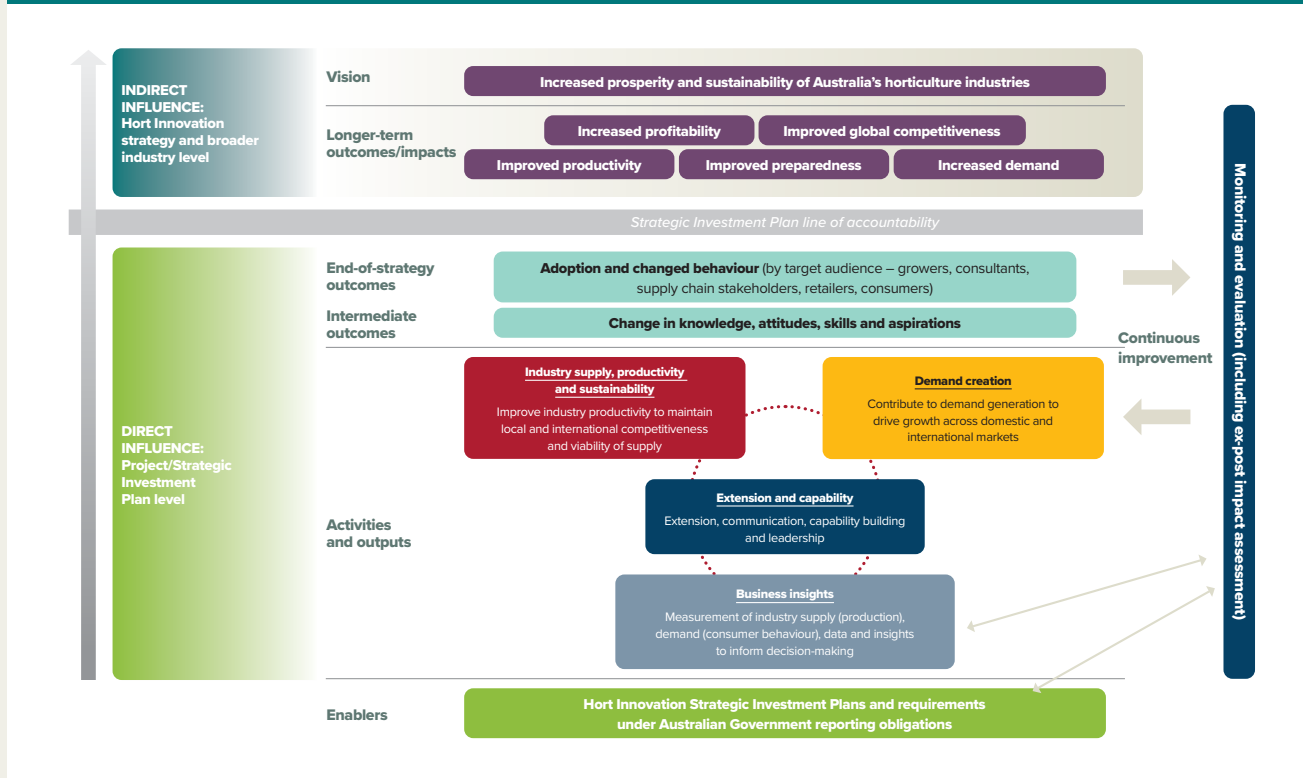
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Strategic Investment Plan logic

The SIP logic (Figure 2) identifies how investment activities and outputs (delivered through each SIP outcome area) will support changes in industry 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 Australian Government contributions 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, competitiveness and sustainability.



SECTION

6

APPENDICES

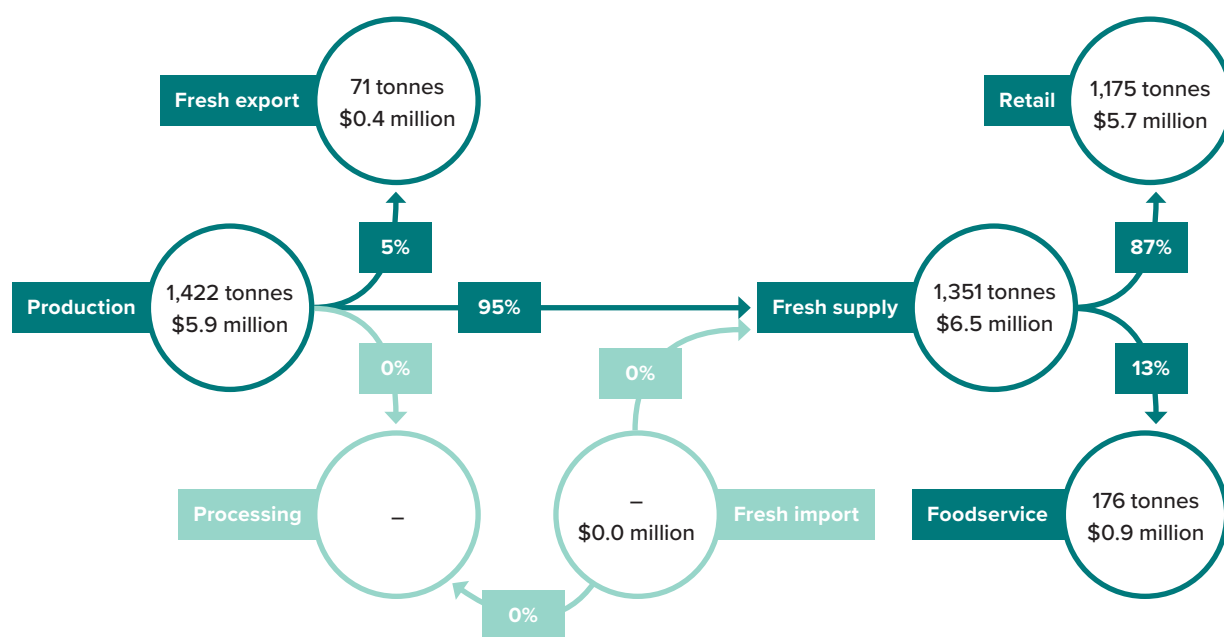
APPENDIX 1: Industry context

Industry supply chain

The custard apple industry is a small tropical fruit industry with approximately 100-130 custard apple growers centred on the north coast of New South Wales and Queensland. In addition to growers, the supply chain is also supported by agronomists, consolidators, wholesalers and distributors. Currently there is no large-scale commercial processing of custard apples. Two major marketing groups exist for custard apples – The National Jadedfruit Custard Apple Marketing Association Inc (J-CAM) and The Avocado Marketing Co-op (AMCL), more commonly known as Sunfresh.

Custard apple production is highly labour intensive. Minimal mechanisation is possible due to the delicate nature of the product. Consequently, production units are relatively small and intensive. The development of the KJ Pinks variety is expected to result in a significant improvement in production efficiency.

FIGURE 3. Fresh custard apple supply chain, 2019/20



Source: Australian Horticulture Statistics Handbook (2019/20)

Australian custard apples are almost exclusively sold in the domestic fresh market, 5% are exported and there is no processing market. Foodservice accounts for 13% of the domestic market, which is higher than the average for fruit (Figure 3).



Domestic consumers and drivers of demand

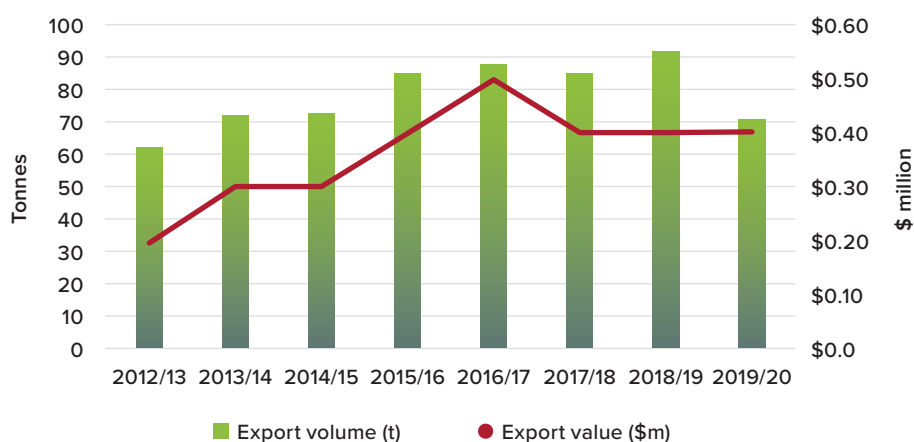
The domestic fresh market is the most important channel for the Australian custard apple industry and accounted for 95% of the total production volume in 2019/20. This has continued to grow in recent years underpinned by an increased availability of product across an extended season, and growing consumer awareness. Custard apples were purchased by just 6% of Australian households in 2019/20, so overall awareness remains low compared to other tropical fruits.

Custard apples are sought after domestically due to their exotic nature, unique flavour profile and versatility. However, several barriers to purchase exist impacted by the variable visual presentation of the fruit and limited consumer knowledge around selection and preparation. Consumer research has not been conducted since the 1990s but key findings from the research conducted showed that:

- Generally, consumers have poor knowledge of how to buy, ripen and prepare custard apples
- Consumers cannot identify different varieties but there is a general preference for Pinks Mammoth
- There is significantly higher consumption of custard apples among the Asian-Australian population and older demographics
- Most consumers see custard apples as an occasional purchase and 62% consume it no more than once a month
- Custard apples are consumed fresh and are used as a recipe ingredient across a broad range of times and occasions
- Custard apples are considered a high risk, impulse purchase.

Export markets

FIGURE 4. Custard apple exports, 2012/13 to 2019/20



Source: Australian Horticulture Statistics Handbook (2019/20)

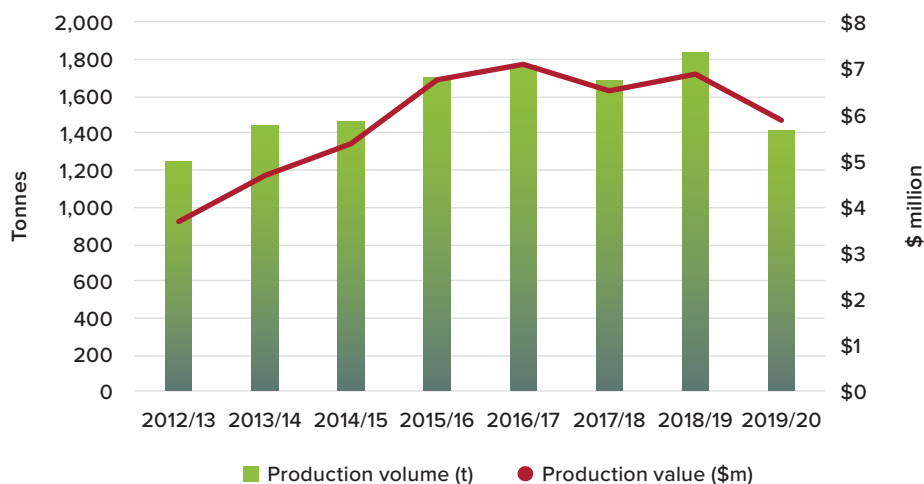
Approximately 5% of the volume of custard apple production (71 tonnes) was exported in 2019/20 (**Figure 4**). There is limited global trade of custard apples.

The main Australian export market is Singapore and newly developed export markets include Malaysia with Hong Kong starting to take regular small consignments. Small volumes of export have also started in the United Arab Emirates.

Other potential countries for export have quarantine restrictions due to Queensland Fruit Fly (Qfly). Market access using irradiation into USA, New Zealand and Taiwan has been instigated. Trials have been conducted using irradiation through a nuclear facility with little success. Market access applications are at a standstill until further research can be conducted into microwave irradiation.

Industry production

FIGURE 5. Custard apple production, 2012/13 to 2019/20



Source: Australian Horticulture Statistics Handbook (2019/20)

Australian custard apples are grown in northern New South Wales (48%) and Queensland (52%). Production is mainly between January to October, peaking in June to July. The two main varieties of custard apples grown in Australia are Pinks Mammoth (Hilary White, KJ Pinks) and African Pride. Of the total custard apple production, African Pride and Pinks Mammoth make up approximately 50% each. Increased plantings of KJ Pinks have resulted in increased volumes of Pinks Mammoth on the market, with the market showing a general preference to this variety over African Pride.

Custard apple volume has been increasing, with production increasing from 1,247 tonnes in 2012/13 to a peak of 1,836 tonnes (47% increase) in 2018/19 before experiencing a 23% dip to 1,422 tonnes in 2019/20. The industry recorded a farmgate value of \$5.9 million in 2019/20. The farmgate unit value has been increasing over time, rising from \$2.97 per kilogram in 2012/13 to an average of \$3.87 per kilogram between 2017-2020 (Figure 5).

The industry has prioritised development of new, high-yielding varieties with enhanced consumer appeal and product differentiation through its current Hort Innovation project *New custard apple varieties and enhanced industry productivity* (CU16002). This investment has now developed new green and red varieties of custard apple that are currently being evaluated in grower-led trial sites. In recent years, the industry has also invested in research to develop new genetic tools for fruit colour and fruit set, developed an up-to-date integrated pest and disease manual for growers to identify, monitor and control pests and diseases and conducted trials of clonal varieties and rootstocks to support grower knowledge of their performance across custard apple growing regions.

Projects have also been responsible for staying on top of emerging pests and diseases, with the industry having access to an up-to-date integrated pest and disease manual.

TABLE 4. Seasonality of custard apples in Australia

STATE	2019/20 TONNES	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
New South Wales	688	High	High	High	High	Medium	None	None	None	None	None	None	None
Queensland	734	High	High	High	None	None	None	None	None	None	None	None	None
Availability legend		High			Medium			Low				None	

Source: Australian Horticulture Statistics Handbook (2019/20)

APPENDIX 2: Custard apple 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. The outcome and ultimate impact of the pandemic are unknown. Investment areas 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 have 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 5 has been used to analyse the custard apple 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 5. Custard apple SWOT analysis

The custard apple industry	
Strengths	<ul style="list-style-type: none"> • Sweet, unique and tasty product • Niche product • Limited competition in the cooler months • Unusual appearance • Healthy product with high vitamin C and low GI levels • Low acid • Soft fruit that suits babies and elderly • Small, unified industry • Good cohesive industry organisation • New high-yielding, precocious variety (KJ Pinks) • New scion varieties with enhanced performance and sensory attributes



The custard apple industry

Weaknesses	<ul style="list-style-type: none"> • Price takers • Lack of value adding/processing • Impulse purchase • Limited shelf life • Difficulty handling/sensitive product • Lack of consumer knowledge handling/using • Limited access to export markets • Lack of volume to service export markets • Lack of adherence to quality assurance standards • Lack of awareness of product • Market acceptance problems with African Pride • Low production per hectare • High production costs • Lack of mechanical grading • Poor disinfestations treatments • Lack of funds to address industry issues
Opportunities	<ul style="list-style-type: none"> • New varieties – seedless/colour • Market access – domestic and export • Value-adding/processing • New packaging/products • Room to increase market share • New varieties and training systems • Efficiency improvements • Encouragement for new growers • An increasing older demographic (an identified market) • Expand production • Better rootstocks • Optimise second-grade product through value-adding • Capitalise on market window in the cooler months • Get the consumer-preferred variety (Pinks Mammoth) into supermarkets • Complete commercialisation of new scion varieties



The custard apple industry

Threats

- South African production of KJ Pinks
- Consumers/market discouraged because of inferior quality of fruit
- Flooded domestic market if export not developed
- Cost of regulation/red tape
- Exotic pests and diseases
- Ageing growers leaving the industry
- Overproduction due to downturns in other industries
- Ageing trees
- Increasing costs/lower profit margins
- Decreased production leading to decreased levies and R&D
- Loss of crop protectants
- Lack of access to new crop protectants
- Increased public resistance to use of crop protectants
- Traditional markets eroded by more organised industries
- Pest and disease resistance
- Access to casual/seasonal labour
- Water restrictions
- Climate change
- Industry disunity



APPENDIX 3: People consulted

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

NAME	INDUSTRY ROLE	REGION
Daniel Jackson	Custard apple SIAP member; President, Custard Apples Australia; Grower	Glasshouse Mountains, QLD
Wendy Graham	Custard apple SIAP member; Grower	Ballina, NSW
Andrew Burnet	Grower	Ballina, NSW
Brian Keating	Grower	Tweed, NSW
Wayne Stewart	Committee member, Custard Apples Australia; Grower	Bibohra, QLD
Jarod Pringle	Grower	Glasshouse Mountains, QLD
Cindy Hogan	Grower and marketer	Ballina, NSW
Ken Brown	Grower	Rockhampton, QLD
Cassandra Waren	Secretary, Custard Apples Australia; Grower	Bundaberg, QLD
Dan DeClara	Grower	Moreton Bay, QLD
Cole Williams	Grower	Northern Rivers, NSW
Phillip Banks	Grower	Brookfield, QLD

APPENDIX 4: Reference material

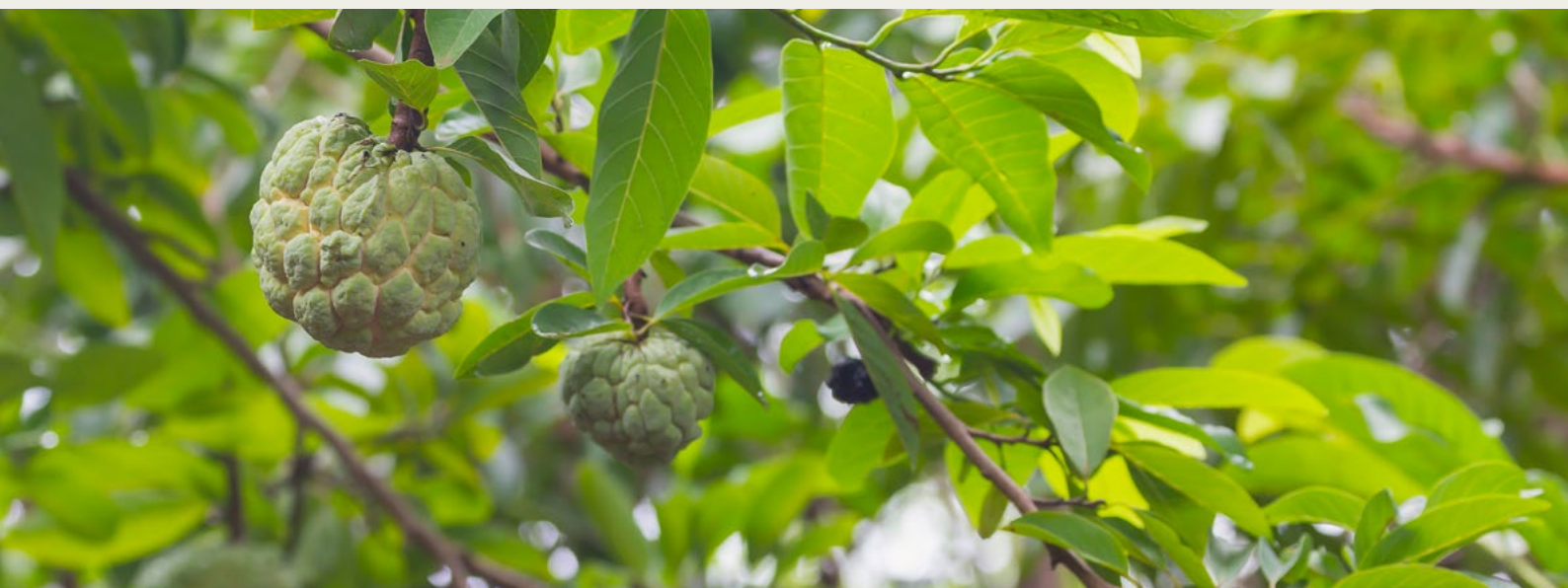
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APPENDIX 5: List of acronyms

AIP	Annual Investment Plan
AMCL	The Avocado Marketing Co-op
APVMA	Australian Pesticides and Veterinary Medicines Authority
BMP	best management practice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFQ	Department of Agriculture and Fisheries, Queensland
FY	financial year
GI	glycemic index
IRB	Industry Representative Body
J-CAM	The National Jadefruit Custard Apple Marketing Association Inc
KASA	knowledge, attitudes, skills and aspirations
KPI	key performance indicator
M&E	monitoring and evaluation
MRL	Maximum Residue Limit
NHRN	National Horticulture Research Network
Qfly	Queensland Fruit Fly
R&D	research and development
RDC	Research and Development Corporation
RD&E	research, development and extension
SARP	Strategic Agrichemical Review Process
SIAP	Strategic Investment Advisory Panel
SIP	Strategic Investment Plan
SWOT	strengths, weaknesses, opportunities, and threats



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