Final report

Project title:

Nut biosecurity and implementation plan

Project leader:

Stuart Kearns

Delivery partner:

Plant Health Australia

Report author/s:

Rebecca Powderly

Dr Stephen Quarrell

Project code:

MT24022

Date:

1 May 2026

Disclaimer:

Funding statement:

This project has been funded by Hort Innovation, using the almond and Macadamia research and development levies and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

Publishing details:

Published and distributed by: Horticulture Innovation Australia Limited
ABN 71 602100149

Level 15
141 Walker Street
North Sydney NSW 2060

Telephone: (02) 8295 2300

www.horticulture.com.au

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Public summary

Australia's tree nut industries span a wide variety of nut crops including almonds, chestnuts, hazelnuts, macadamias, pecans, pistachios and walnuts. The importance of biosecurity to the Australian tree nut industry cannot be underestimated. The industry has experienced several exotic pest incursions including the recent incursion of *Varroa destructor* (varroa mite). This broad geographic spread and differences in scale and subsequent resource availability have the potential to impact the sector's susceptibility to exotic pest threats as some exotic species may impact several industries that differ in their resource base and therefore their biosecurity preparedness.

The current tree nut Biosecurity Plan (version 3.0) was published in 2016, and due for review. This is to ensure the pests that pose the greatest threat to industry are identified and activities that improve the industry's preparedness and response capability are implemented prior to an incursion taking place. To progress the development of a new Biosecurity Plan, in 2024 Plant Health Australia (PHA) and the Australian Nut Industry Council (ANIC) revised the Threat Summary Tables (TST) and High Priority Pest (HPP) lists of Australia's seven tree nut industries. An industry's HPPs are species that have the greatest potential to be introduced, establish and spread through Australia's nut production regions. More importantly, if introduced, these species would have a significant economic impact on industry through yield losses, increased management costs and/or loss of market access.

Despite the TST and HPP lists having already been developed, several key elements including the Preparedness table and Action Plan remain outdated. This project saw the development of these elements in order the complete the Biosecurity Plan. Due to resource constraints within some nut industries, Action Plans were developed for the almond and macadamia industries only. The finalisation of the *Biosecurity Plan for the Australian Tree Nut Industries (Version 4.0)* was produced as the primary output from this project.

The new Biosecurity Plan will provide both industry and government with a pathway for improving biosecurity preparedness and response capability of Australia's tree nut industries. Both Action Plans for the almond and macadamia industries will be included in the Biosecurity Plan to enable collaborative efforts across all nut industries to occur where appropriate following the completion of this project.

Keywords

Biosecurity Plan, High Priority Pests, Biosecurity Action Plan, pests, diseases, tree nuts, almond, chestnut, hazelnut, macadamia, pecan, pistachio, walnut.

Introduction

Biosecurity planning provides a mechanism for agricultural industries, government, and other relevant stakeholders to actively determine pests of highest priority and analyse the risks they pose. It also provides a mechanism for industry, governments and other stakeholders to assess current biosecurity practices and future biosecurity needs. The identification, prioritisation and management of key biosecurity risks, through the development and implementation of preparedness resources including a Biosecurity Plan is a critical industry preparedness activity.

The Australian tree nut industry comprised of almonds, chestnuts, hazelnuts, macadamias, pecans, pistachios and walnuts. Each of the seven nut industries is represented by a Peak Industry Body: Almond Board of Australia (ABA), Chestnuts Australia Inc (CAI), Hazelnut Growers of Australia (HGA), Australian Macadamia Society (AMS), Australian Pecan Association (APA), Pistachio Growers' Association Inc (PGA) and the Australian Walnut Industry Association (AWIA) respectively.

Each Peak Industry Body is represented within the Australian Nut Industry Council (ANIC). ANIC was established in 1988 and serves as the collective body representing seven tree nut growing industries. As a collective, ANIC works to unify and strengthen the nut sector while supporting the growth, development, and consumption of Australian nuts both locally and globally.

In 2024/2025, Australia exported a total of 176,197 tonnes of tree nuts, contributing to export revenues of approximately $1,676 million[1]. In 2024/25, the Australian tree nut industries produced 290,176 t (in-shell) of nuts valued at $1,656 m. Of this, 36% of the total occurred in Victoria with a 103,207t production followed by 26% in NSW, 23% in South Australia, 14% in Queensland, 1% in Tasmania and Western Australia. Production and the associated value by industry is included in Table 1.

Table 1. Australian tree nut production for the year 2024/2025[1].

Industry	Production (tonnes)	Value (millions)	Tree nut production (tonnes/%) by State					
			QLD	NSW	SA	TAS	VIC	WA
Almonds	155,531	$1,327.9		38,261 (25%)	46,659 (30%)		69,833 (45%)	778 (0 %)
Chestnuts	952	$7.2		148 (15%)	48 (5%)	48 (5%)	671 (70%)	38 (4%)
Hazelnuts	617	$8.4		524 (34%)	31 (2%)	185 (12%)	771 (50%)	31 (2%)
Macadamias	43,800	$181.8	34,602 (79%)	9,198 (21%)				
Pecans	1,841	$35.7	412 (12%)	2,885 (84%)	34 (1%)			103 (3%)
Pistachios	3,000	$33.5		1,252 (42%)	615 (20%)		1,102 (37%)	30 (1%)
Walnuts	10,000	$35.5		6,500 (65%)	100 (1%)	2,200 (22%)	900 (9%)	300 (3%)

To better understand the exotic pest threats faced by the nut industries, in 2024, ANIC funded Plant Health Australia (PHA) to perform exotic pest risk assessments for all seven nut industries via a project titled the "*Identification of the high priority pests across each of Australia's Tree Nut industries*". Outputs of this project included the Threat Summary Tables (TSTs), the High Priority Pests (HPPs) and Exotic Pests to Monitor (EPMs) lists for each tree nut commodity. However, several key elements require revising to develop an updated *Biosecurity Plan for the Australian Tree Nut Industries (Version 4.0).*

To complete an updated Biosecurity Plan for the nut industries, several key elements including the Preparedness table and Action Plan required revision. This Horticulture Innovation project's aim was to develop these remaining elements to finalise the Biosecurity Plan. Due to resource constraints within some nut industries, Action Plans were developed with a specific focus on the almond and macadamia industries. It is intended that the learnings with these Action Plans will be leveraged by the remaining nut industries to improve their biosecurity preparedness. The new Biosecurity Plan provides both industry and government with a pathway for improving biosecurity preparedness and response capability.

Methodology

As both the TST and HPP lists were developed by PHA and subsequently endorsed by ANIC in July 2024 and then by Plant Health Committee in December 2024, the three key areas of activity within this project were to:

- Establish almond and macadamia industry Biosecurity Reference Panels (BRP) (Tables 1 and 2) which will guide the development and review the extant elements of the final Biosecurity Plan including the HPP lists.
- Development of Biosecurity Action Plans for the almond and macadamia industries which describe the strategies and activities to be implemented over the next 5 years to improve biosecurity preparedness and response capability.
- Compile these elements to complete the *Biosecurity Plan for the Australian Tree Nut Industries (Version 4.0).*

Table 1. Members of the Biosecurity Reference Panel (BRP) for the almond industry.

NAME	ORGANISATION
Stephen Quarrell	Plant Health Australia (PHA)
Rebecca Powderly	PHA
Antonette Walford	Department of Energy, Environment and Climate Action (DEECA)
Brittany Oswald	Department of Primary Industries and Regions SA (PIRSA)
Cathryn Todd	PIRSA
Deidre Jaensch	Almond Board of Australia (ABA)
Leonie Martin	NSW Department of Primary Industries and Regional Development (NSW DPIRD)
Mee-Yung Shin	DEECA
Patsavee Utaipanon	Hort Innovation
Tim Jackson	ABA
Zac Hemmings	NSW DPIRD

Table 2. Members of the Biosecurity Reference Panel (BRP) for the macadamia industry.

NAME	ORGANISATION
Stephen Quarrell	Plant Health Australia (PHA)
Rebecca Powderly	PHA
Clare Hamilton-Bate	Australian Macadamia Society (AMS)
Emily Grieve	AMS
Leoni Kojetin	AMS
Jeremy Bright	NSW DPIRD
Leonie Martin	NSW DPIRD
Patsavee Utaipanon	Hort Innovation
Saleh Adnan	NSW DPIRD
Sandy Watts	Queensland Department of Primary Industries (QDPI)
Zac Hemmings	NSW DPIRD

While the TST was developed in the previous project, members of the BRP were given the opportunity to review the HPPs and the EPMs for both the almond and macadamia industries. Updates were recorded and incorporated into the updated Biosecurity Plan.

The primary focus of the BRP was to develop an Action Plan for both the almond and macadamia industries. Action Plans are a critical component of the Biosecurity Plan and highlight current gaps in an industry's biosecurity preparedness and RD&E that could be ameliorated through future investment. It is developed in accordance with industry priorities and resource availability and aims to improve preparedness and response capability. A number of these priorities are still being addressed by industry or due to the duration of this project are yet to commence.

The activities described within Action Plans are broken down into three key themes: Prepare, Detect, and Respond & Recover. Each of the activities outlined within each Action Plan were aligned with the five strategic priority areas of the National Biosecurity Strategy and provides industry with a plan with agreed activities and timeframes. The five strategic areas include:

1. Preparedness and Response
2. Capacity and Capability
3. Communications and Engagement
4. Innovation, Research Development and Extension
5. Collaboration and Partnerships

To ensure the Action Plans met the needs of the almond and macadamia industries, addition Action Plan development meetings were held prior to the industry's BRP meeting. These meetings with ABA and AMS enabled both industries to customise the layout and format of the Action Plans. Additional work was done out of session by ABA and AMS to populate the table, which included the development of focus areas important to the nut sector. These focus areas included:

- Governance/Project management
- Communication & Awareness
- Maintaining social licence – community and industry
- Understanding exotic pest risk and impact
- Surveillance and diagnostic
- Rapid decisions and immediate response actions
- Coordinated emergency response
- Co-ordinated recovery limiting supply chain and market impacts

The BRP for the macadamia industry was held on 16 February 2026 and the BRP for the almond industry was held on the 10 March 2026. Following both meetings' minutes and any changes made were circulated to members of the BRP (Appendices 1 and 2). Towards the conclusion of the project, a combined Biosecurity Reference Panel was held with ABA and AMS on 24 April 2026. This meeting discussed areas of similarity across both Action Plans and future collaborative opportunities.

Results and discussion

The updated Biosecurity Plan has been completed and distributed to members of ANIC (see Appendix 3 for a copy of the Plan). The Plan features an analysis of all known exotic pests and diseases of the tree nut industries. This review highlighted over 855 exotic pests and diseases that, if introduced, could impact the tree nut industries. These species' reviews informed the development of risk ratings for each of the identified exotic species. The risk ratings focus on the potential of each species to enter, establish and spread within Australia and an estimate of their potential economic impact.

Based on the risk assessments, 30 High Priority Pests (HPPs) were identified for the tree nut industries (see Appendix 3, page 25). The HPPs are those deemed to have an elevated likelihood of entry, establishment and spread in Australia and the potential to cause substantial economic impact to the tree nut industries through impacts on production including additional management cost and/or loss of domestic and international market access. An additional list was developed comprising of 162 Exotic Pests to Monitor (EPMs). EPMs are also assessed to have a high economic impact but may have a lower entry, establishment or spread potential in Australia (see Appendix 3, page 35) due the species' geographic range etc. impacting on their ability to enter Australia.

A further suite of pests and diseases were identified as Other Pests of Biosecurity Significance (see Appendix 3, page 72). These pests are economically important to the tree nuts industries and are considered to prioritise RD&E investment but do not undergo a formal pest risk assessment due to their limited distribution in Australia. The pests listed in these tables include species such as *Euwallacea fornicatus* (Polyphagous shot-hole borer), which is restricted to Western Australia with a Quarantine Area in place, and *Perixera illepidaria* (Mango shoot looper) which is a notifiable pest for Queensland and the Northern Territory.

The Action Plans (Appendices 4 and 5) were created in consultation with the almond and macadamia BRPs to provide guidance into future biosecurity related activities that aim to improve industry preparedness and response capability. As previously described, the Action Plans describe the activities aligned to the strategic priority areas of the National Biosecurity Strategy and provides industry with an overarching plan with agreed activities and timeframes. Many of the activities highlighted within the Action Plan are ongoing and will continue after this project's completion. Other activities have yet to commence and will require additional resources including levy allocation to be implemented.

The final combined BRP meeting held on 24 April discussed areas of similarity across both Action Plans and potential future collaborative opportunities. This meeting did not include jurisdictional staff as the meeting's focus was on exploring collaborative opportunities and seeking feedback from both ABA and AMS regarding the project's M&E and future recommendations reported on in MS190. It is envisaged that following the completion of this project that areas of similarity across Actions Plans can be utilised to enable cross-sectoral collaboration and generate outputs of benefit to all tree nut industries. A list of common activities drawn from both Action Plans can be found in the Recommendations section below. However, concerns were raised by both ABA and AMS throughout the meeting regarding the implementation of the Action Plans beyond the project's completion. These concerns focussed on both financial and human resource availability within both PIBs. Concerns were also raised regarding how the implementation of the activities within each Action Plan will be monitored. It was communicated to industry that monitoring the implementation is normally achieved through annual BRP meetings convened by PHA, which aren't funded through this project. While outside of the scope of this project, PHA has committed to support ABA and AMS where possible regarding the implementation of the Action Plans. However, PHA's ability to provide ongoing support to ensure the Action Plans are implemented is limited.

Outputs

Table 3. Output summary

Output	Description	Detail
Foundational Documents	Project logic, Monitoring and Evaluation plan and project risk register.	The Foundational documents have been provided to Hort Innovation (MS102).
Biosecurity Plan for the Australian Tree Nut Industries (Version 4.0) including the almond and macadamia industries' Biosecurity Action Plans	The Biosecurity Plan identifies the exotic pests and pathogens which pose the greatest threat to Australia's seven Tree Nut industries (almonds, chestnuts, hazelnuts, macadamias, pecans, pistachios and walnuts). The Biosecurity Plan also contains focussed Action Plans for the almond and macadamia industries that details strategies and activities to reduce the threat they pose to almond and macadamia production and trade and provides businesses a pathway for improving biosecurity preparedness and response capability.	The Biosecurity Plan is high level planning document that has been provided to each nut industry, ANIC and Hort Innovation and uploaded onto the Biosecurity Portal.[1] The Portal allows for restricted access by the relevant peak body(s), RDCs and State and Federal Governments to manage any potential trade sensitivities.
Milestone Reports	A Milestone Report (MS102) has been generated which communicated the Foundational documents and progress towards	Milestone reports are submitted to Hort Innovation and disseminated at their discretion.

[1] The Biosecurity Portal is being decommissioned as of 1st July 2026, alternative measures are being explored.

Output	Description	Detail
	the overarching project aims to Horticulture Innovation.	
Final Report	A Final Report has been generated as outlined by the research contract.	The Final Report is available through Hort Innovation's standard communication channels.

Outcomes

Both almond and macadamia industry funding was used in the development of this project, and both relevant Strategic Investment Plans (SIPs) have been considered in the alignment to fund outcome, strategy and KPI. It should also be noted that the SIPs were developed for the 2022-26 timeframe.

Table 4. Outcome summary

Outcome	Alignment to fund outcome, strategy and KPI	Description	Evidence
Tree nut growers have an increased knowledge and understanding of their biosecurity threats Improved on-farm biosecurity preparedness that limits the impact of exotic pest and disease incursions	**Almond SIP**[2] **Outcome 1:** The Australian almond industry has increased profitability, efficiency and sustainability through innovative R&D focusing on an integrated approach to plant improvement, orchard productivity, soil health, water-use efficiency, pollination, IPDM and emerging technologies. **Strategy:** Improve resilience to biosecurity threats by enhancing rapid diagnostic and surveillance capacity and capability for high priority pests and diseases **KPIs:** • Development and implementation of up-to-date tree nut industry biosecurity plans, and biosecurity incident standard operating procedure • Development of an Owner Reimbursement Cost framework developed in conjunction with PHA **Outcome 3:** Improved capability and an innovative culture in the Australian almond industry maximises investments in productivity and demand. **Strategy:** Deliver extension and communication capabilities and business insights to support positive change in the areas of productivity and demand **KPIs:** • Establishment of a baseline and then demonstrate an increased share of industry (ha) with positive change in KASA, practice	PHA has developed the *Biosecurity Plan for the Australian Tree Nut Industries (Version 4.0).* This includes: • Threat Summary Tables (TSTs), • High Priority Pest (HPP) lists, • Exotic Pests to Monitor (EPM) lists, • Other Pests of Biosecurity Significance, • Preparedness Table and, • Actions Plans for the almond and macadamia industries. The Plan provides the nut industries with knowledge of the exotic pest threats and the preparedness resources currently available to safeguard the industry from exotic	The Biosecurity Plan improves industry knowledge of industries' High Priority Pests (HPP) (see Appendix 3). A key component of the Biosecurity Plan is the Action Plans, which outlines extension and communications activities that focus on improving grower knowledge of their respective HPPs (Appendices 4 and 5). The involvement of state and territory jurisdictions in the BRP meetings has enabled new collaboration opportunities for both ABA and AMS. This includes AMS engaging with NSW DPIRD's Macadamia Development Officer for training opportunities and ABA being informed about Xylella preparedness work ongoing also via

Outcome	Alignment to fund outcome, strategy and KPI	Description	Evidence
Implementation of biosecurity preparedness initiatives for the almond and macadamia industry that reduce the impact of exotic pest and disease incursions	and impact in targeted high priority areas (e.g., IPDM, biosecurity, soil and water management) **Macadamia SIP[3]** **Outcome 2:** The Australian macadamia industry has improved profitability, efficiency and sustainability through innovative R&D, sustainable BMPs and varieties. **Strategy:** Support an IPDM program that addresses key economic, social and environmental outcomes for the macadamia industry **KPIs:** • Maintenance/tracking of the implementation of an industry biosecurity plan • Increased adoption of IPDM strategies **Outcome 3:** Improved capability and an innovative culture in the Australian macadamia industry maximises adoption of investments in productivity and demand. **Strategy:** Deliver extension and communication capability in the areas of sustainable production pest and disease management, pollination, orchard management biosecurity and trade development **KPIs:** • Establishment of a baseline and then demonstrate an increased share of industry (in hectares) with positive change in knowledge, attitude, skills, aspirations (KASA) and practices concerning targeted high-priority areas	pest threats. Activities within the Action Plans seek to improve on-farm biosecurity activity through improved biosecurity extension and Peak Industry Body resource availability.	NSW DPIRD.

Monitoring and evaluation

This project had three key objectives:

1. Establish an almond and macadamia industry Biosecurity Reference Panel (BRP) which will guide the development and review of the Action Plans and the Biosecurity Plan.
2. Develop Biosecurity Action Plans for the almond and macadamia industries that describes a program of activities to improve industry preparedness and response capability and provide guidance for future investment.
3. Finalise the Biosecurity Plan which identifies the exotic pests and pathogens that pose the greatest threat to the Australian tree nut industries.

Table 5. Key Evaluation Questions

Key Evaluation Question	Project performance	Continuous improvement opportunities
1. To what extent has the project achieved its expected outcomes?	This project improved biosecurity preparedness of the Australian tree nut industries against exotic pests and diseases through finalisation of the Biosecurity Plan (Objective 3). A core part of this process also involved the development of Biosecurity Action Plans for the almond and macadamia industries, which provides insight and a gap analysis into the biosecurity preparedness of each industry and their future RD&E needs (Objectives 1 & 2).	A new Action Plan template has been developed by Plant Health Australia (PHA) and was used for the second time in this project. This template includes prioritising effort and investment over the short (1-3 years), medium (4-8 years) and long (8+ years) term. The Almond Board of Australia (ABA) and the Australian Macadamia Society (AMS) requested the Action Plans to be tailored to suit the needs of their respective industries. The new template provided flexibility for ABA and AMS to make changes easily while maintaining its strategic intent to encourage industry to consider its biosecurity needs while considering there human and levy capacity and capability. This led to both industries developing Action Plans that provide a roadmap of future biosecurity preparedness activity and investment that better prepares their industries for future exotic pest incursions and improved integration of biosecurity into daily on-farm pest mangement pratice.
2. How relevant was the project to the needs of intended beneficiaries?	Both the almond and macadamia industries' Strategic Investment Plans (SIPs) covered general themes of improving resilience and communication in the face of biosecurity threats. Working with industry representatives confirms that activities in the Action Plan are relevant and in the best interest of growers.	Ongoing consultation with industry following the implementation of activities in the Action Plan helped both ABA and AMS to modify the Action Plans to best suit their needs into the future. As the Action Plans were developed in close consultation with ABA and AMS it ensured clear understanding of their biosecurity-focussed investment needs following the project's completion. However, concerns were raise by both ABA and AMS throughout the project centring around the implementation of the Action Plans beyond the project's completion. Many of these concerns remain and are largely focussed on financial and human resource availability. While outside of the scope of the project, PHA has committed to support ABA and AMS where possible to support the implementation of the Action Plan. However, PHA's ability to provide ongoing support to ensure the Action Plans are implemented is limited.
3. How well have intended beneficiaries been engaged in the project?	As Biosecurity Plans are a high level, peak-body facing documents therefore industry engagement was monitored though attendance of key industry stakeholders at the Biosecurity Reference Panel (BRP) meetings.	PHA were in frequent contact with ABA and AMS staff throughout the project including via email, phone and online meetings. ABA and AMS staff availability was frequently limited requiring PHA to regularly check in via the above channels to keep the project on track. Throughout the project, there were instances where industry was challenged by the intent of developing their biosecurity Action Plans. These challenges were centred on several factors including a lack of understanding of what biosecurity preparedness involves and resources required to implement the activities outlined within each Action Plan. This required PHA staff to implement alternative approaches to the development of the Action

Key Evaluation Question	Project performance	Continuous improvement opportunities
		Plans including elevating industry understanding of biosecurity preparedness. This included the development of information resources to support an uplift in their biosecurity preparedness knowledge and elevated levels of ongoing, open communication to help industry develop biosecurity preparedness strategies that were considerate of their finite resources.
4. To what extent were engagement processes appropriate to the target audience/s of the project?	The project's key industry stakeholders included staff in ABA and AMS, were engaged early and frequently throughout the project. As the industry representatives for the almond and macadamia industries, ABA and AMS staff contributed significantly to the development of their industry Action Plans to ensure relevance of activities.	As stated above, the industry partners were adequately engaged throughout the project through BRP meetings in addition to out of session online meetings, emails and phone calls. Setting regular meeting times at the start of the project will be utilised where possible for future projects to minimise the likelihood of schedule clashes for multi-industry projects. Several information resources were also developed to support biosecurity preparedness understanding and activity intent.
5. What efforts did the project make to improve efficiency?	Efficiencies were largely borne through reducing the PHA salary component and meeting costs via the adoption of online meetings formats, which reduced travel and the drafting of documents (i.e., Action Plan) prior to stakeholder meetings.	These learnings - including improvements in the Action Plan format (see above) - are already being implemented in new Horticulture Innovation-funded projects. The information resources developed to support biosecurity preparedness understanding and activity intent will be utilised to inform other industry stakeholders where greater preparedness understanding is needed.

Recommendations

During the development of the almond and macadamia Action Plans, several key activities were identified as high priority for ABA and AMS. As the scope of this project is limited to the development of the Action Plan and finalising the Biosecurity Plan, efforts from ABA and AMS should be focused on the delivery of short-term Action Plan activities. Where appropriate, this should also expand to working with other members of the Australian Nut Industry Council (ANIC) to support the tree nut industries' biosecurity preparedness as many of the HPPs are shared across multiple industries, but resources limitations differ significantly creating potential risk for the sector more broadly.

Short-term activities noted as a priority for both ABA and AMS include:

- Having key ABA and AMS staff members undertake biosecurity training and begin succession planning to share knowledge within each organisation.
- Developing a biosecurity social media campaign to raise awareness of the importance of good on-farm biosecurity practices and rapidly communicate 'biosecurity alerts' to industry stakeholders in the event of an incursion taking place.
- Running or participating in biosecurity workshops targeted at growers, agronomists and crop scouts to increase biosecurity awareness, HPP knowledge and early exotic pest reporting to improve eradication success.
- Investigating potential HPP impacts in Australia to understand potential control costs and disruptions to the supply chain and trade.
- Identifying and prioritising gaps in biosecurity surveillance and diagnostics for almonds and macadamia pests.

- Developing and maintaining Biosecurity Incident Standard Operating Procedures (BISOP) and Owner Reimbursement Cost (ORC) frameworks.
- Determining the requirements for Emergency Use permits in the event of an incursion.

Another activity with variances in timeframes but seen in both Action Plans included investigating funding and the appointment of a Biosecurity Officer. PHA recommends utilising the momentum gained via the delivery of this project to develop projects proposed via the Action Plan.

BRP meetings gave both ABA and AMS the opportunity to connect with state and territory jurisdictions to raise awareness of priority areas of work and identify collaborative opportunities (as highlighted in the Outcomes). It is recommended that ABA and AMS continue to build on these relationships following the completion of this project.

Beyond the involvement of ABA and AMS, some opportunities for large scale, cross-industry collaboration have also been identified. As some industries have limited resources, regionally focussed multi-industry funded Biosecurity Officer(s) would alleviate the burden on Industry Development Officers to undertake additional biosecurity work in addition to their business-as-usual tasks. Similarly, a multi-industry funded biosecurity social media campaign could be used by industry members of Hort Innovation to have clear and consistent messaging about the benefits of biosecurity and growers' General Biosecurity Obligations should be considered.

Refereed scientific publications

None to report.

Intellectual property

No project IP or commercialisation to report.

Acknowledgements

Plant Heath Australia would like to thank our industry partners, the Almond Board of Australia, the Australian Macadamia Society, the Commonwealth and state and territory governments for their valuable support and advice, without which this project would not have been possible.

Appendices

- Appendix 1 – Almond BRP minutes **CONFIDENTIAL**
- Appendix 2 – Macadamia BRP minutes **CONFIDENTIAL**
- Appendix 3 – Biosecurity Plan **CONFIDENTIAL**
- Appendix 4 – Almond Action Plan
- Appendix 5 – Macadamia Action Plan

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[1] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/australian-horticulture-statistics-handbook/

[2] https://www.horticulture.com.au/globalassets/hort-innovation/levy-fund-financial-and-management-documents/sip-2022-2026-pdfs/hort-innovation-sip-2022-26-almond-r.pdf

[3] https://www.horticulture.com.au/globalassets/hort-innovation/levy-fund-financial-and-management-documents/sip-2022-2026-pdfs/hort-innovation-sip-2022-26-macadamia.pdf

Implementing biosecurity for the Australian almond industry 2026–2036

This Action Plan was developed by industry and government to set out shared biosecurity goals and objectives to support Australian almond growers and stakeholders. This Action Plan was developed to guide biosecurity activities undertaken by growers, the peak industry body, governments, and other stakeholders from 2025–2030. It is intended that the plan be monitored and reviewed annually.

Action Plan for the Australian almond industry (2026–2036)

The Action Plan for the Australian almond industry documents the priorities of the industry in relation to biosecurity. The Action Plan outlines the strategies and activities that may be implemented over the life of the Biosecurity Plan through the efforts of the almond industry, Almond Board of Australia (ABA), Hort Innovation, Plant Health Australia (PHA), government, almond growers and stakeholders.

The key priority areas of the Action Plan align with the key priority areas of the National Biosecurity Strategy 2022-2032 (NBS)[1]. The Action Plan highlights activities currently underway as well as those that may be addressed in the future in accordance with industry priorities and resource availability.

An industry may also have a five-year strategic plan or have mechanisms in place to discuss industry needs (eg. advisory panels or committees). In addition to the aligning the Action Plan to the NBS, consultation with industry representatives on the BRP ensures priorities relevant to the almond industry specifically, are considered.

The Action Plan has been developed in recognition that biosecurity is a shared responsibility between industry, government, and other stakeholders. For this reason, the Action Plan has been produced to help coordinate actions and resources across the biosecurity system, with the intention of creating effective and productive biosecurity partnerships. The process of involving a diverse representation also allows for business-as-usual activities, which often align with priorities in the Action Plan, to be acknowledged in addition to different goals.

Implementing the specific actions listed in the Action Plan will not only strengthen the almond industry, but also the broader national plant biosecurity system. Future versions of this Biosecurity Plan will update on the progress towards long-term outcomes, noting that some activities will require continuous revisions over the life of the Biosecurity Plan.

In summary, the Action Plan aims to:

- Build upon the themes outlined in the NBS and industry developed strategic plans by providing a clear line of sight between the development of the Biosecurity Plan and broader plant health policy and legislation.
- Provide focus and strategic direction for plant biosecurity activities relating to the Australian almond industry over a ten-year period from 2026–2036.

Prove specific recommendations for potential biosecurity activities identified by key stakeholders to improve biosecurity preparedness for pest threats.

Tracking progress in the Action Plan

- Activities considered to be business-as-usual include those carried out by Almond Board of Australia (ABA) as the Peak Industry Body (PIB). This includes:
    - maintaining an up-to-date industry database
    - maintaining the ABA website, and industry communications channels to members and stakeholders,
    - work with Hort Innovation to develop projects to support the almond industry,
    - assessing and maintaining industry levies.
- Outcomes will be assessed over the period of the Action Plan (2025-2030) against corresponding activities.
- Activities (current or proposed) that have been completed during the period of the Action Plan and are not part of business-as-usual practices will be acknowledged below.

Funded projects or programs referenced in the action plan.
An integrated pest management program for the Australian almond industry – Phase 2 (AL22003)[2]
An integrated disease management program for the Australian almond industry – Phase 2 (AL22002)[3]
Almond industry communications and events program (AL22008)[4]
Almond Innovation and adoption program (AL21001)
National Bee Pest Surveillance Program: Transition program (MT21008)[5]
Nut biosecurity and implementation plan (MT24022)[6]
Strategic Agrichemical Review Process (SARP) 2023 updates (MT23001)[7]

Acronyms referenced in the Action Plan.			
ABA	Almond Board of Australia	ILO	Industry Liaison Officer
ANIC	Australian Nut Industry Council	IPM	Integrated Pest Management
BISOP	Biosecurity Incident Standard Operating Procedures	MRIC	Mallee Regional Innovation Centre
BOLT	Biosecurity OnLine Training	NDP	National Diagnostic Protocol
BRP	Biosecurity Reference Panel	NSP	National Surveillance Protocol
DAFF	Department of Agriculture, Fisheries and Forestry (Australian Commonwealth)	NSW DPIRD	New South Wales Department of Primary Industries and Regional Development
EPPRD	Emergency Plant Pest Response Deed	ORC	Owner Reimbursement Cost
HPP	High Priority Pest	PHA	Plant Health Australia
Hort Innovation	Horticulture Innovation Australia Limited	PIB	Peak Industry Body
IDO	Industry Development Officer	SARP	Strategic Agrochemical Review Process
IDM	Integrated Disease Management	TST	Threat Summary Table

Action Plan for the Australian almond industry (2026–2036).

Focus Area	Outputs and Outcomes	Activities (2026-2036)				Potential partners[8]	Strategic Investment	National Biosecurity Strategy[9]
		Existing (2025)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)			
Prepare								
Governance / Project Management	Nut Biosecurity Strategy & Almond Action Plan provide clear direction for future investment and priority activities.	• Establish an Almond Biosecurity Reference Panel. • Develop almond industry action plan. • Strategic alliances and collaborations (ANIC, Plant Health Industries, PHA, state jurisdictions etc). • IDM and IDOs completed ILO training. • International guest speakers at annual almond events. • Supporting international counterparts with pest and disease knowledge. • Previous study tour to Spain and Portugal in 2025.	• Industry consultation and establishment of biosecurity levy to fund Biosecurity Officer and action plan implementation. • Annual review and progress report against the action plan. • Biosecurity Training Schedule – Board, Reference Panel and Staff e.g. EPPRD, BOLT, ILO. • Succession planning to ensure biosecurity related roles can be maintained. • International study tours (planned trip for June 2026 including pests and diseases topics in California). • Proactive international network development and collaboration.	• Identify and scope future projects relevant for funding and guide project delivery.	• Review and update the Nut Biosecurity Plan.	DAFF (including the National Action Plan for Pests of Horticultural Crops), PHA, Relevant state and/or territory jurisdictions Hort Innovation	Nut biosecurity project (MT24022) Almond Innovation and adoption (AL22001)	1, 2
Communication & awareness	Informed almond community	• ABA membership list and ABA communication avenues e.g. almondbytes, grower notices, In-a-Nutshell magazine, ABA website. • ABA website housed grower resources on IPDM including fact sheets, videos, webinar recordings etc. • IPDM guidelines for almonds – in development. • Virus testing for high health budwood supply – standards,	• Fact sheets. • Biosecurity Field days, Workshops, Industry events. • Grower notices. • Xylella on-farm preparedness guide developed by NSW DPIRD in final stages of development (2026). • Publishing findings from study tours and response procedures for growers understanding of HPPs and pest and disease risk.	• Biosecurity BMP for Australian almond orchards. • Poster for key pests and Almond Orchard Biosecurity measures. • Communicating good biosecurity practices and the need to maintain orchard health (minimising abandonment impacts) in		Hort Innovation, PBRI	Almond Communication & Events (AL22008) Almond Innovation and adoption (AL22001) IPDM resources (AL22002 & AL22003).	1, 2, 3

Focus Area	Outputs and Outcomes	Activities (2026-2036) Existing (2025)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)	Potential partners[8]	Strategic Investment	National Biosecurity Strategy[9]
		guidelines and agreement template.	• Highlighting the tree-survival signatures project led by University of Melbourne.[10]	conjunction with future drought fund research.				
Maintaining social licence – general public & growers	Ongoing acceptance of biosecurity activities earned through responsible practices and engagement beyond legal requirement [11].	• NSW DPIRD Xylella awareness week (2025).	• Biosecurity social media campaign. • Both industry and jurisdictions to deliver coordinated messaging in the event of a response. • Expanded NSW DPIRD Xylella awareness week for 2026, national campaign.	• Supply chain community awareness program to incorporate biosecurity messaging. • Early detection awareness for urban and grower communities.		PBRI	Almond Communication and Events program (AL22008)	1, 2, 3, 4
Understanding exotic pest risk and impact	Exotic pest risks, entry pathways and transmission identified, and supply chain impacts understood within almond industry. Indirect risks and impacts of HPP for European Honey Bees.	• Spatial mapping of almond production areas and processing facilities. • HPPs of almonds have been identified and documented[12]. - **Khapra beetle** (*Trogoderma granarium*) - **Almond leaf scorch** - *Xylella fastidiosa* subsp. *fastidiosa* (with vector) - *Xylella fastidiosa* subsp. *multiplex* (with vector) - *Xylella fastidiosa* subsp. *pauca* (with vector). • **Exotic pests and diseases of honey bees** • NSW DPI Xylella workshop – Griffith 2025. • PBRI Xylella simulation exercises.	• Review HPP for entry pathways, risk of spread, reinfestation potential. • Investigate and document supply chain impacts of HPP (cost of control, disruptions to supply chain continuum and trade implications). • *Xylella fastidiosa*: on-farm preparedness guidelines for almonds – NSW DPI • Consider long term impacts of pests and diseases on honeybees and limitations for almond pollination. • Collaborate with the honey bee industry to understand risks and pollination impacts	• Strategies to control entry and transmission pathways (will depend on outcome of earlier activities).		Honey bee industry	Almond Board funded project – Spatial mapping	1, 2, 4

Focus Area	Outputs and Outcomes	Activities (2026-2036) Existing (2025)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)	Potential partners[8]	Strategic Investment	National Biosecurity Strategy[9]
Detect								
Surveillance and diagnostics	Gaps in capability/ technology to detect and diagnose HPP are filled.	• Almond R&D levies support National Bee Pest Surveillance Program. • National Diagnostic Protocols (NDP) for Khapra beetle (*Trogoderma granarium*) and *Xylella fastidiosa* (in review) have been developed. • National Surveillance Protocols (NSP) has been developed for Khapra beetle (*Trogoderma granarium*) and drafts are in development for Xylella and vectors.	• Identify and prioritise gaps in biosecurity surveillance and diagnostics for HPPs of almonds. • Support surveillance activities for HPP of European Honeybees. • Collaborate with researchers/PhD students if an opportunity to develop a NDP or NSP relevant to almonds arises.	Comment on National Diagnostic Protocols (NDPs) for HPPs of almonds. Comment on National Surveillance Protocols (NSPs) for HPPs of almonds. Boost near real-time surveillance and diagnostic capabilities/ iMapPESTS. Regional weather station networks installed – pest forecast/ prediction models. Develop an industry surveillance and diagnostics strategy that links industry and government surveillance efforts.		PHA, ANIC, DAFF, Relevant state and/or territory jurisdictions, SPHD, SNPHS PBRI	National Bee Pest Surveillance Program (MT25001). Plant Biosecurity Research Initiative (PBRI)	1, 2, 4, 5
Respond & recover								
Fast decisions on response actions	Greater chance of minimising the impact of almond HPP.	• EPPRD signatory & annual biosecurity statement. • EPPRD levy.	• Assess feasibility of eradication – digital support tool (Biosecurity Commons). • Review categorisation and cost sharing of HPPs under the EPPRD.					1, 3, 4
Emergency response	Growers know what is being done and	• ABA grower database and existing communication	• Develop and maintain Biosecurity Incident Standard	• Develop and maintain Owner		PHA, ANIC, DAFF,	• Comms and events project.	4, 5

Focus Area	Outputs and Outcomes	Activities (2026-2036)						
		Existing (2025)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)	Potential partners[8]	Strategic Investment	National Biosecurity Strategy[9]
	what they are required to do during an emergency.	channels maintained (as above). • Benchmarking project for almond industry is underway and may inform the ORC framework with input costs.	Operating Procedures (BISOP). • Grower notices /SMS. • Establish clear channels of communication between jurisdictions for a tri-state agreement on continued ability to trade.	Reimbursement Cost (ORC) framework.		Relevant state and/or territory jurisdictions	• Innovation and adoption project	
Include recovery in response plans	Minimal distress and rapid recovery for all involved.		• Identify psycho-social impacts on growers and stakeholders and develop strategies where ABA can assist. • Facilitate debrief with impacted growers following an incursion.				•	4, 5
Limit trade impacts	Business continuity is prioritised for almond growers to enable trade where the impact of preventing trade is greater than the impact of the HPP.	• Database of stakeholders e.g. Nurseries and Beekeepers maintained. • Strategic alliances and collaborations (ANIC, Plant Health Industries, PHA, state jurisdictions etc). • Contingency Plans have already been developed for Khapra beetle in grains (*Trogoderma granarium*) (2005) and Brown marmorated stink bug (*Halyomorpha halys*) (2017). • Maintain awareness of relevant biosecurity legislation and regulations in all states/territories. • Almond SARP review 2023.	• Determine the requirements and gain "pre-approval" for Chemical Emergency Use permit applications in the event of an exotic pest incursion – shelf permits may be an option for this. • NSW DPIRD Xylella response readiness plan in development (2026).	• Develop and maintain Business Continuity Plans[13] for HPPs of almonds.			• Strategic Agrichemical Review Process (SARP) 2023 updates (MT23001)14	4, 5

[1] https://www.biosecurity.gov.au/sites/default/files/2024-02/national-biosecurity-strategy.pdf
[2] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/al22003/
[3] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/al22002/
[4] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/al22008/
[5] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt21008/
[6] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt24022/
[7] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt23001/
[8] ABA – Almond Board of Australia; PHA – Plant Health Australia; HIA – Hort Innovation; Govt - State and territory governments; Cwth - Commonwealth government; Edu - Universities and tertiary education providers; PIBs - Other relevant Peak Industry Bodies; Hort Innovation, Other RDCs, Mallee Regional Innovation Centre.
[9] 1 - Shared biosecurity culture; 2 - Stronger partnerships; 3 - Highly skilled workforce; 4 - Coordinated preparedness and response; 5 - Integration supported by technology, research and data
[10] https://vicdroughthub.org.au/projects/project/long-term-trials-ltt-for-drought-resilient-farming-practices
[11] The ABA maintains an industry database which holds current contact information for almond growers and managers and key industry stakeholders.
[12] Plant Health Australia Ltd. (2024). Threat Summary Tables for the Australian Tree Nut industries (Version 4.0). Plant Health Australia, Canberra, ACT.
[13] Collated resources on the management practices used internationally for HPPs of almond and how these can be applied in Australia to minimise disruption to the market chain in the event of an exotic pest incursion/outbreak.
[14] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt23001/

Implementing biosecurity for the Australian macadamia industry 2026–2036

This Action Plan was developed by industry and government to set out shared biosecurity goals and objectives to support macadamia growers and stakeholders. This Action Plan for the Australian macadamia industry, which was developed to guide biosecurity activities undertaken by grower, the peak industry body, governments, and other stakeholders from 2026–2036. It is intended that the plan be monitored and reviewed annually.

Action Plan for the Australian macadamia industry (2026–2036)

The Action Plan for the Australian macadamia industry documents the priorities of the industry in relation to biosecurity. The Action Plan outlines the strategies and activities that may be implemented over the life of the Biosecurity Plan through the efforts of the macadamia industry, Australian Macadamia Society (AMS), Hort Innovation, Plant Health Australia (PHA), government, macadamia growers and other stakeholders.

The key priority areas of the Action Plan align with the key priority areas of the National Biosecurity Strategy 2022-2032 (NBS)[1]. The Action Plan highlights activities currently underway as well as those that may be addressed in the future in accordance with industry priorities and resource availability.

In addition to aligning the Action Plan to the NBS, consultation with industry representatives on the BRP ensure priorities remain relevant to the macadamia industry specifically, are considered.

The Action Plan has been developed in recognition that biosecurity is a shared responsibility between industry, government, and other stakeholders. For this reason, the Action Plan has been produced to help coordinate actions and resources across the biosecurity system, with the intention of creating effective and productive biosecurity partnerships. The process of involving a diverse representation also allows for business-as-usual activities, which often align with priorities in the Action Plan, to be acknowledged in addition to different goals.

Implementing the specific actions listed in the Action Plan will not only strengthen the macadamia industry, but also the broader national plant biosecurity system. Future versions of this Biosecurity Plan will update on the progress towards long-term outcomes, noting that some activities will require continuous revisions over the life of the Biosecurity Plan.

In summary, the Action Plan aims to:

- Build upon the themes outlined in the NBS and industry developed strategic plans by providing a clear line of sight between the development of the Biosecurity Plan and broader plant health policy and legislation.
- Provide focus and strategic direction for plant biosecurity activities relating to the Australian macadamia industry over a ten-year period from 2026–2036.
- Provide specific recommendations for potential biosecurity activities identified by key stakeholders to improve biosecurity preparedness for pest threats.

Tracking progress in the Action Plan

- Activities that foundationally support and engage with the macadamia industry include those carried out by Australian Macadamia Society (AMS) as the Peak Industry Body (PIB). This includes:
    - maintaining an up-to-date industry database
    - maintaining content on the AMS website,
    - industry communications to members and stakeholders,
    - working with Hort Innovation to develop projects to support the macadamia industry,
    - assessing and maintaining industry levies.
- Outcomes will be assessed over the period of the Action Plan (2026-2036) against corresponding activities.
- Activities (current or proposed) that have been completed during the period of the Action Plan and are not part of business-as-usual practices will be acknowledged below.

Funded projects or programs referenced in the Action Plan.
An integrated systems based approach for pest management in Australian macadamia (MC21000)[2]
An integrated disease management approach for the Australian macadamia industry (MC21001)[3]
Macadamia innovation and adoption program (MC20000)[4]
Macadamia industry communications project (MC21002)[5]
Strategic Agrochemical Review Process (MT23001)[5]
Nut biosecurity and implementation plan (MT24022)[6]
Macadamia industry risk and crisis management project (MC23002)[8]

Acronyms referenced in the Action Plan.			
AMHA	Australian Macadamia Handlers Association	NDP	National Diagnostic Protocol
AMS	Australian Macadamia Society	NSP	National Surveillance Protocol
ANIC	Australian Nut Industry Council	NSW DPIRD	New South Wales Department of Primary Industries and Regional Development
BISOP	Biosecurity Incident Standard Operating Procedures	ORC	Owner Reimbursement Cost
BOLT	Biosecurity OnLine Training	PBRI	Plant Biosecurity Research Initiative
BRP	Biosecurity Reference Panel	PHA	Plant Health Australia
COSOP	Code of Sound Orchard Practice	PIB	Peak Industry Body
DAFF	Department of Agriculture, Fisheries and Forestry (Australian Commonwealth)	QDPI	Queensland Department of Primary Industries
EPPRD	Emergency Plant Pest Response Deed	SARP	Strategic Agrochemical Review Process
HPP	High Priority Pest	WA DPIRD	Western Australia Department of Primary Industries and Regional Development
Hort Innovation	Horticulture Innovation Australia Limited	WMC	Wild Macadamia Conservation
IDM	Industry Development Manager	WMO	World Macadamia Organisation
IDO	Industry Development Officer		

Action Plan for the Australian macadamia industry (2026–2036).

Focus Area	Outcomes	Activities (2026-2036) Existing (2026)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)	Potential partners[7]	Strategic Investment	National Biosecurity Strategy[8]
Prepare								
Governance / Project Management	Nut Biosecurity Strategy & the Macadamia Action Plan provide direction for future investment and priority activities.	• Establish a Macadamia Biosecurity Reference Panel. • Document macadamia industry action plan. • Strategic alliances and collaborations (ANIC, Plant Health Industries, PHA, state jurisdictions and agencies such as NSW DPIRD and QDPI). • IDM, IDO and AMS Board members completed ILO training.	• Investigate biosecurity funding models. • Annual review/progress report against action plan. • Biosecurity training for key AMS staff, Board and Reference Panel e.g. EPPRD, BOLT, ILO. • Succession planning to ensure biosecurity related roles can be maintained.	• Identify and scope future projects relevant for funding and guide project delivery. • Industry consultation re: establishment of potential biosecurity levy to fund Biosecurity officer and action plan implementation.	• Review and update the Nut Biosecurity Plan and Macadamia Action Plan.	DAFF PHA NSW DPIRD QDPI WA DPIRD Hort Innovation ANIC	Nut biosecurity project (MT24022) Macadamia Innovation and adoption (MC20000 and MC25002)	1, 2
Communication & awareness	Informed macadamia supply chain	• AMS industry contact database and AMS communication channels e.g. eNews, industry notices, MacAlerts, Macadamia News Bulletin, AMS website. • AMS website is a repository of industry resources on IPDM including fact sheets, videos, podcasts, articles, research etc. • MACSAFE program. • NSW DPIRD Grower guides, Macadamia Toolkit, NSW DPIRD Plant Protection Guide, articles on HPPs. • Pest Consultant meetings.	• Review macadamia COSOP. • Fact sheets and general resources which feed into the biosecurity page on the NSW DPIRD nut website.[9,10] • MacGroups, biosecurity workshops facilitated by NSW DPIRD/LLS and other industry events. • Farm biosecurity plan templates. • NSW DPIRD/LLS and AMS to discuss future	• Biosecurity BMP for Australian macadamia orchards. • Biosecurity poster for macadamia biosecurity preparedness and response.	• Industry Biosecurity Officer funded and appointed.	DAFF Hort Innovation NSW DPIRD QDPI WA DPIRD ANIC AMHA	Macadamia Communications (MC21002) Macadamia Innovation and adoption (MC20000 & MC25002) IPM in macadamia (MC21000) IDM in macadamia (MC21001)	1, 2, 3

Focus Area	Outcomes	Activities (2026-2036)				Potential partners[7]	Strategic Investment	National Biosecurity Strategy[8]
		Existing (2026)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)			
		• Grower Liaison Officer network and meetings.	on-farm biosecurity planning workshops.					
Maintaining social licence – community and industry	Ongoing acceptance of biosecurity activities with responsible practices and stakeholder engagement.	• Macadamia COSOP, Plant Protection Guide • AMS communications. • Wild Macadamia Conservation activities.	• Biosecurity social media campaign (incl. neglected orchards). • Engagement in community events and stakeholder-focussed activities (i.e. Landcare).	• Engagement with local schools/school leavers program.		WMC Landcare and other local/state NRM groups	Macadamia Communications (MC21002)	1, 2, 3, 4
Understanding exotic pest risk and impact	Exotic pest risks, entry and transmission pathways identified, and supply chain impacts understood within macadamia industry.	• Spatial mapping of macadamia production areas and orchards through AMS Block Builder app. • HPPs of macadamia have been identified and documented. • Review for further emerging exotic pests annually. • PBRI Xylella simulation exercises. • National and state based Varroa mite preparedness and response programs • Collaborative pest and disease research with other macadamia origins – South Africa, China, Hawaii, Brazil, Kenya, Guatemala, etc.	• Review HPP's for entry pathways, risk of spread, re: infestation potential. • Investigate and document supply chain impacts of HPP's (cost of control, disruptions to supply chain continuum and trade implications).	• Strategies to control entry and transmission pathways of HPP's • Map exotic Threat Summary Tables and HPP's equivalent international exercise with world macadamia growing origins.	• Industry biosecurity officer funded and appointed.	DAFF Hort Innovation NSW DPIRD QDPI WA DPIRD ANIC International Macadamia Symposium Committee WMO Strategic Foundations Committee	AMS funded project – spatial mapping and Block Builder application	1, 2, 4

Focus Area	Outcomes	Activities (2026-2036)				Potential partners[7]	Strategic Investment	National Biosecurity Strategy[8]
		Existing (2026)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)			
Detect								
Surveillance and diagnostic	Gaps in capability/ technology to detect and diagnose HPP's are filled.	• Macadamia R&D levies support National Bee Pest Surveillance Program.	• Identify and prioritise gaps in biosecurity surveillance and diagnostics for HPP's of macadamia. • Macadamia pollination honey bee hive standard and inspection criteria developed.	• Develop a national macadamia surveillance and diagnostics strategy that outlines industry, in collaboration with state/federal government efforts. • Develop and maintain National Diagnostic Protocols (NDPs) for HPP's of macadamia. • Develop and maintain National Surveillance Protocols (NSPs) for HPP's of macadamia.	• Industry biosecurity officer funded and appointed.	PHA ANIC DAFF Relevant state jurisdictions	National Bee Pest Surveillance Program (MT25001). Plant Biosecurity Research Initiative (PBRI)	1, 2, 4, 5
Respond & recover								
Rapid decisions and immediate response actions	Greater chance of minimising the impact of HPP's.	• EPPRD signatory & annual biosecurity statement. • EPPRD levy.	• Update AMS biosecurity statement in the EPPRD. • Assess feasibility of eradication and inform coordinated response. • Review categorisation and cost sharing of HPP's under the EPPRD. • Develop and maintain macadamia ORC framework			PHA DAFF Relevant state jurisdictions and agencies		1, 3, 4
Coordinated emergency response	Growers and industry are aware of response	• AMS database and existing communication channels maintained (as above).	• Develop and maintain Biosecurity Incident			PHA DAFF	Macadamia Communications (MC21002)	4, 5

Focus Area	Outcomes	Activities (2026-2036) Existing (2026)	Proposed (short term) (2026-29)	Planned (medium term) (2030-33)	For future consideration (long term) (2034-36+)	Potential partners[7]	Strategic Investment	National Biosecurity Strategy[8]
	activities and know protocols in an emergency.	• MACSAFE program. • Maintain awareness of relevant biosecurity legislation and regulations in each state.	Standard Operating Procedures (BISOP). • Grower and industry communication channels informed by AMS processor databases, Tree crop map and Block Builder App contacts. • Determine the requirements for Emergency Use permit that may be needed.			Relevant state jurisdictions and agencies	Macadamia Innovation and adoption (MC20000 & MC25002)	
Co-ordinated recovery limiting supply chain and market impacts	Business continuity and rapid recovery for all industry stakeholders.	• AMS database and existing communication channels maintained (as above). • MACSAFE program. • Strategic alliances and collaborations (ANIC, Plant Health Industries, PHA, state jurisdictions etc). • Maintain awareness of relevant biosecurity legislation and regulations in each state. • Macadamia SARP review 2025.	• Co-ordinate BISOP process with relevant agencies • Identify psycho-social impacts on growers and stakeholders to develop strategies where AMS and government can assist. • Determine the requirements for any minor-use permits/registration of chemicals.	• Develop and maintain business continuity plans for HPP's of macadamia.		PHA DAFF ANIC NFF Relevant state jurisdictions and agencies	Strategic Agrichemical Review Process (SARP) updates National Residue Survey and Australian MRL database	4, 5

[1] https://www.biosecurity.gov.au/sites/default/files/2024-02/national-biosecurity-strategy.pdf
[2] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mc21000/
[3] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mc21001/
[4] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt21008/
[5] https://www.horticulture.com.au/globalassets/hort-innovation/current-sarps/macadamia-sarp-2024-final.pdf
[6] https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt24022/
[7] AMS – Australian Macadamia Society; PHA – Plant Health Australia; HIA – Hort Innovation; Govt - State and territory governments; Cwth - Commonwealth government; Edu - Universities and tertiary education providers; PIBs - Other relevant Peak Industry Bodies; Hort Innovation, Other RDCs, Mallee Regional Innovation Centre.
[8] 1 - Shared biosecurity culture; 2 - Stronger partnerships; 3 - Highly skilled workforce; 4 - Coordinated preparedness and response; 5 - Integration supported by technology, research and data
[9] https://www.dpi.nsw.gov.au/agriculture/horticulture/nuts
[10] https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/1659316/Farm-biosecurity-for-the-macadamia-industry.pdf