

Final Report

Macadamia grower guide

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New South Wales Department of Primary Industries and Regional Development

Project code:

MC19001

Project:

Macadamia grower guide (MC19001)

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Funding statement:

This project has been funded by Hort Innovation, using the macadamia research and development levy 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: Hort Innovation

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www.horticulture.com.au

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Public summary

Digital Growers Guide for Macadamia Cultivation

This project, MC19001 – Macadamia digital grower's guide, developed a comprehensive and up-to-date 'Macadamia grower's guide' that outlines best management practice for macadamia growers covering five key aspects of production. This guide serves as the essential resource for both new and experienced growers seeking to implement industry best practice. It is designed with flexibility to allow for the integration of new knowledge as it becomes available. The grower's guide is organised into modules covering key aspects of macadamia production, from orchard establishment to ongoing management in mature orchards.

Working closely with the macadamia industry community, this project delivered:

1. **Grower's guide modules**, published both online and in hard copy are:
 - Nutrition and soil health – the foundations
 - Nutrition and soil health – the next level
 - New orchards
 - Cultivars
 - Young trees
 - Bearing trees
 - Integrated Orchard Management Drainage 2022* **note: updated to include new content on managing poorly drained soils including the use of subsurface drainage.*
2. **Resource Binder**: A binder has been created to help growers organize the hard copy booklets of the grower's guide modules. These have and will continue to be distributed to industry members via field days and other events.
3. **Online Presence**: A dedicated webpage for the grower's guide is live on the NSW DPIRD website: [Macadamia grower's guide](#)
4. **Order Form**: A web-based order form allows growers to request hard copies of the modules and binder. This order form has been provided to all industry processors and the Australian Macadamia Society (AMS) for distribution:
<https://forms.office.com/r/bygpL9Wiyk?origin=lprLink>
5. **Conference Presentation**: A poster presentation on this project was featured at the AUSMAC24 conference in October 2024.



Future research and development should consider the production of additional modules in areas such as postharvest handling to complement the five modules already produced. In addition, consideration should be given to reviewing and updating the modules in five years' time to ensure currency and add any new information on improved management practices.

Keywords

Macadamia; new orchards; establishment; cultivars; young trees; bearing trees; nutrition; soil health.

Introduction

The macadamia industry has a wealth of reference materials for both new and established growers. However, at the time of commencing this project, 'Macadamia digital grower's guide', many of these resources were outdated and did not reflect recent advances in research and industry practices. The 'Macadamia grower's handbook' published by the Queensland Government is a key industry resource, however has not been updated since publication in 2004. This project has focused upon updating key aspects of that resource to reflect the significant growth in the industry's size, geographical range, and productivity.

The target audience for macadamia information is evolving. New growers from diverse backgrounds are entering the industry with varying levels of knowledge about tree crops, including macadamias. These new growers need a comprehensive guide to help them avoid common pitfalls and achieve optimal productivity and environmental outcomes. Experienced growers are also looking to adopt new practices but need clear information to integrate these into their existing systems. Additionally, well-established growers, who have contributed significantly to the industry's development, are keen to stay informed about the latest research and best practice.

This project created an up-to-date, cohesive summary of macadamia knowledge and practices. Six modules of the digital grower's guide were researched, drafted, reviewed through industry focus groups, and published. The updated grower's guide will support growers, extension staff, and researchers by providing a clear picture of current industry practices. Initially, a physical, printed guide has been produced, as many growers prefer the tactile experience of a book. However, the guide is also available in digital pdf format, currently hosted by NSW DPIRD to increase long-term engagement and allow for ongoing updates. A Hort Innovation hosted Computer Management System (CMS) version was initially proposed to enhance the online experience and include links to additional information and offer print-on-demand functionality for those who prefer hard copies. However, the CMS did not eventuate through the life of this project but is a possibility for future similar resources depending on industry evolving preferred information delivery pathways.

This project aligns with the Macadamia Strategic Investment Plan, which emphasises the need for improved productivity and sustainable best management practices, including better Integrated Pest Management (IPM) and Integrated Disease Management (IDM). Providing clear, current information on advanced macadamia practices will enable growers to act strategically and reduce information gaps that impact upon sustainability.

Methodology

Early consultation and content development

The Macadamia digital grower's guide (Grower's guide) used a co-design process, seeking industry input into the design of the guide and areas of focus for improved content. A Project Reference Group (PRG) was established at the outset to provide strategic advice to the project. All project directions were first reviewed by the PRG and their feedback utilised to guide future direction.

An industry-wide survey was conducted upon project commencement to identify priority topics for review and understand the preferred format for resource materials for industry. The survey revealed a preference for hard copy manuals supported by online PDFs, with Soil Health and Nutrition being the top priority topic.

Based on the survey results, the modules were prioritised. Focus groups were established to delve into the required details of each module and review draft content. Focus group feedback was incorporated into module drafts. Regular meetings with module focus groups ensured module content was relevant and covered the key aspects of each topic. Near-completed modules were reviewed by the PRG (including a Hort Innovation representative) before final review by a NSW DPIRD publication specialist.

Delivery and communication of delivery

Modules were progressively completed and made available online over the project life. The Soil Health and Nutrition Foundations and Next Level modules were presented at the Australian Macadamia Society (AMS) 2022 conference. From industry feedback through MacGroups, direct discussion and from the PRG it was found that there was a preference for receiving the complete publication rather than "trickled" delivery of individual modules over the life of the project. As the original intention was to upload the modules onto a Hort Innovation CMS (to date unavailable), an alternative approach of publishing each module was taken. Modules were uploaded as a PDF to the DPIRD website as they were completed and individual modules combined into a 2-ring binder and distributed to industry at the completion of the project.

The Australian macadamia industry has many avenues in which communication of information is made available to growers and the wider industry. For example, processors are key communicators to growers and others within the industry due to the supply of nut from farm to a processor. This existing and strong relationship was leveraged, with information regarding the project supplied to processors for distribution to their networks. Additionally, information was also distributed through AMS E-Blasts via the 'Macadamia industry communications program' (MC21002), AMS News Bulletin articles, NSW DPIRD networks and through connections to other Hort Innovation projects for example 'Macadamia industry benchmarking and sustainability insights 2022-27' (MC22000).

The completed guide is now being distributed to all macadamia growers and supporting industry networks via attendance and distribution at field days, processor days and directly to growers via an online order system.

Results and discussion

Industry baseline survey

A survey was undertaken utilising SurveyMonkey that was open to all industry participants to complete. The survey was publicised through AMS e-blasts, processor newsletters and direct contact to macadamia industry members. The survey gathered insights on developing a new grower's guide to be published in a digital Content Management System (CMS). The survey was designed to understand how the macadamia industry (primarily growers) access and prefer to receive information, along with key areas of interest for further information. A copy of the full survey and results is included in Appendix 1. The survey received responses from 75 growers, representing approximately 10% of the industry.

The survey showed that the Macadamia Grower's Handbook (referred to Macadamia Growers Guide PRINTED COPY in survey) produced in 2004 is a key resource for the industry, with 77.03% of respondents having accessed it within the last 3 years (Table 1). The top 3 sources of information utilised in the last 3 years were printed versions of publications (Table 1). When asked how industry do members troubleshoot specific issues, the top responses were the use of printed guides, (either hardcopies or downloaded and printed from the web) or asking an advisor (Figure 1). These questions and the responses highlight the need to ensure up to date information is available for industry, in a format that can be readily printed.

Table 1. Summary of results for the question “Which of these information sources have you looked at? Tick all that apply”.

ANSWER CHOICES	RESPONSES
Macadamia plant protection guides PRINTED COPY	79.73%
Macadamia Integrated Orchard Management (IOM) guides PRINTED COPY	78.38%
Macadamia Growers guide PRINTED COPY	77.03%
AMS website	64.86%
AMS Fact sheets / MacAlerts	64.86%
AMS Bulletin	62.16%
AMS MacGroups	50.00%
Macadamia Growers guide ONLINE/DIGITAL PDF	36.49%
Macadamia Integrated Orchard Management (IOM) guides ONLINE/DIGITAL PDF	36.49%
Macadamia plant protection guides ONLINE/DIGITAL PDF	33.78%
NSW DPI website	32.43%
QLD DAF website	20.27%
Other (please specify)	12.16%
HIA website	9.46%
None of the above	1.35%

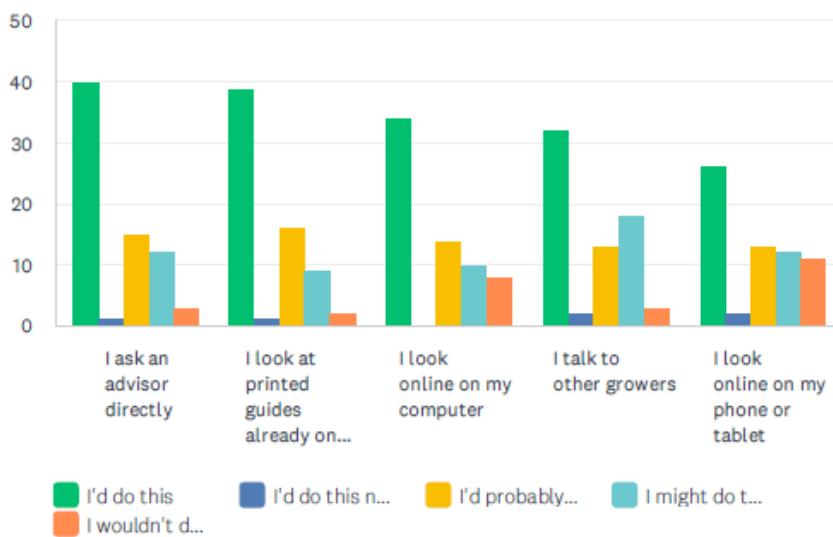


Figure 1. Summary of results for the question “How do you look for information: To troubleshoot a specific issue in macadamia growing that you need to act on straight away?”

Advisors are key providers of information that relates to improving production practices (Figure 1). Ensuring resources are available that support and can be accessed by advisors to share is important as it allows for consistent messages to be provided to producers.

The survey asked respondents to select topics they would be interested in, with respondents able to tick as many topics as they wished. Table 2 provides a summary of the number of respondents compared to the total for each topic. This information was used to prioritise module development. Through discussion with the PRG it was decided to create a module on orchard establishment over the topic of harvesting and handling. This decision was taken as the PRG advised that the answers within the survey were from existing growers and so orchard establishment would not have been a focus for existing growers and with many new entrants into the industry it was critical to provide guidance on best practice orchard establishment. Through discussions with the PRG the topic of Pest and Disease Management was not covered as a module as it was felt that this topic is well supported by the NSW DPIRD Macadamia Plant Protection Guide and duplication of information is not required.

Table 2. Summary of results for the question “Which of these topics are you interested in?”

ANSWER CHOICES	RESPONSES
Soil health	96.23%
Nutrition	92.45%
Pests and disease	88.68%
Integrated Orchard Management	86.79%
Canopy management	84.91%
Harvesting and handling	66.04%
Orchard establishment	39.62%
Irrigation	39.62%

Module Development

Six modules have been produced as part of the Macadamia Digital Grower's Guide. These are:

- Nutrition and soil health – the foundations
- Nutrition and soil health – the next level
- New orchards
- Cultivars
- Young trees
- Bearing trees

Nutrition and soil health: the foundations.

The foundation of an orchard environment is good soil health and nutrition, as this will support the development of a resilient orchard system and establish a robust framework for productive capacity. The foundations module introduces different approaches to soil management as a way of positioning an orchard for long-term productivity.

Foundation practices are relevant to all growers and will prove beneficial and low risk in almost all orchards. It is strongly recommended that growers address each foundational issue in their orchard before focusing on refining nutrition programs. Fixing the foundations is very likely to improve many of the nutrient 'problems' that may appear in early soil testing. Key practices include:

- correcting pH
- building organic matter
- fixing drainage problems and
- identifying toxicities and supplying adequate nutrients while monitoring soils and plants to develop a detailed understanding of tree needs and nutrient losses.

Taking nutrition and soil health to the next level.

The 'next level' module, which builds on 'the foundations' module, supports growers to extend their soil management from adequate towards optimal. This module is most relevant to growers whose orchards are already in good condition and who have access to information from soil and plant monitoring. Armed with these resources, they will be able to fine-tune the orchard's nutrient position and continue to build the capacity of the soil system to support trees. The next level module is more technical than the foundations module and looks at interdependent processes that affect nutrient availability. Ongoing work to enhance soil health is an opportunity to promote tree health, achieve greater productivity, sometimes with fewer inputs, and reduce vulnerability to some pest and diseases. The next level looks at:

- continuous improvement of foundational practices
- balancing crop needs with long-term orchard health
- using monitoring data to adjust nutrient additions and improve efficiency.

New orchards.

This module describes what to look for when obtaining land for planting a macadamia plantation. More importantly, it also looks at what to avoid when selecting a property. Understanding the limitations of the farm and each block will help develop a more realistic plan for the farm's future. The module emphasises the importance of early planning and site selection. Key actions include selecting favorable sites, seeking specialist advice and diligent financial planning.

Cultivars.

This module combines information from published sources and growers' experiences to aid in cultivar selection. It describes most macadamia cultivars and their characteristics, including growth habit, size and nut properties. It details the traits and performance factors of macadamia cultivars, and introduces performance ratings for cultivars in different regions, with the expectation that these will change over time.

Young trees.

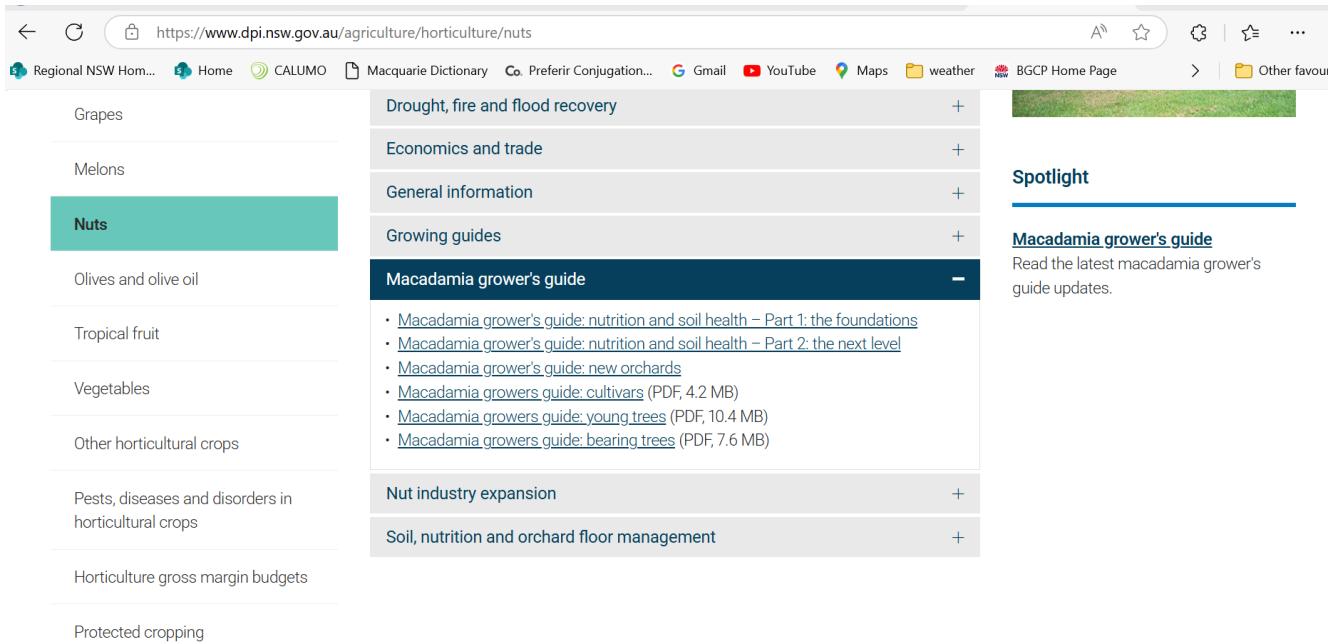
This module describes orchard management where trees have yet to bear commercially viable yields (Stage 1 orchard). It looks at different scenarios, including varying regional conditions. The module looks at goals of individual growers and covers the development phase from three months after planting until commercial yields are achieved including irrigation, canopy management, nutrition and pest control.

Bearing trees.

This module details management approaches for macadamia trees in commercially viable production (Integrated Orchard Management (IOM) late stage 1 and stage 2 orchard). At IOM stage 2, the orchard is approaching or meeting yield targets set at establishment. Growers with IOM stage 2 orchards aim to manage them so they remain high yielding for as long as possible. Bearing trees covers all management areas for bearing trees, including irrigation, pruning, nutrition, pests and disease. It also explores strategies for bringing orchard back from IOM stages 3 and 4 with further details for doing so described in the Integrated Orchard Management Guide 2016.

Module availability

The 6 completed modules have been added to the DPIRD Nuts webpage (Figure 2 below) and printed and combined within a ring binder. They are being distributed to macadamia growers within Australia utilising industry networks such as processor launching days, AMS field days (Showcase events and MacGroups) and other industry events. A QR code has been developed for growers to request a copy of the Macadamia Digital Grower's guide (Figure 3).



The screenshot shows a web browser window with the URL <https://www.dpi.nsw.gov.au/agriculture/horticulture/nuts>. The page is a navigation menu for horticultural crops. The 'Nuts' category is highlighted in a teal box. The 'Macadamia grower's guide' section is expanded, showing a list of resources. A 'Spotlight' box on the right features the 'Macadamia grower's guide' with a link to the latest updates.

- Grapes
- Melons
- Nuts**
- Olives and olive oil
- Tropical fruit
- Vegetables
- Other horticultural crops
- Pests, diseases and disorders in horticultural crops
- Horticulture gross margin budgets
- Protected cropping

Drought, fire and flood recovery +

Economics and trade +

General information +

Growing guides +

Macadamia grower's guide -

- [Macadamia grower's guide: nutrition and soil health – Part 1: the foundations](#)
- [Macadamia grower's guide: nutrition and soil health – Part 2: the next level](#)
- [Macadamia grower's guide: new orchards](#)
- [Macadamia grower's guide: cultivars](#) (PDF, 4.2 MB)
- [Macadamia grower's guide: young trees](#) (PDF, 10.4 MB)
- [Macadamia grower's guide: bearing trees](#) (PDF, 7.6 MB)

Nut industry expansion +

Soil, nutrition and orchard floor management +

Spotlight

Macadamia grower's guide

Read the latest macadamia grower's guide updates.

Figure 2. The DPIRD Nuts page showing the location of the Macadamia (Digital) Grower's Guide.



Figure 3. QR code for industry to order Macadamia Digital Grower's Guide.

To ensure currency of information and to allow for any future updates created, a QR code has also been included within the introduction section of each module. This will allow growers with hard copies to scan the code and check the currency of their copy to ensure they do not have an outdated version.

Outputs

Table 1. Output summary

Output	Listed in M&E Plan: • Yes • No	Description	Evidence and data
Final modules completed for uploading	Yes	All modules have been produced, uploaded onto the DPIRD website and hard copies have been produced.	Macadamia grower's guide 
Delivery of guides	Yes	The Macadamia grower's guide was delivered at the "On-farm machinery and equipment showcase event". Approximately 300. The guide will also be distributed at macadamia processor season launches. It is also available at all processor offices and the Wollongbar NSW DPIRD office.	

Outcomes

Table 2. Outcome summary

Outcome	Progress to achieving outcome	Description	Evidence
Short term Industry understands the purpose and direction of better management in the topic areas.	Achieved	Industry has been consulted and provided feedback at all stages of the project utilising a Project Reference Group and focus groups for each module.	In 2023 the peak industry body (Australian Macadamia Society) used Grower's guide modules as a resource for their Macadamia Masterclass courses. This has continued in further Masterclass courses in 2025.
Appropriate, up-to-date macadamia BMP information and resources are easily available to growers and industry.	Achieved	To have this resource available to all macadamia growers.	All modules are available on the NSW DPIRD website. Hard copies have been printed and will continue to be distributed throughout the macadamia growing regions. An online form for growers to request delivery of digital and print copies of Grower's guide modules has been

			established.
Medium term Deliver communication and extension capability in the areas of sustainable production, pest and disease management, pollination, orchard management, biosecurity and trade.	Achieved	All modules integrate information from various sources to increase current and future capability across macadamia production by providing guidance, targeted problem-solving information on all aspects of production. Industry survey recognised preference for developing information on other topics.	Published.
Growers have increased skills and knowledge leading to implementation of best practices and innovations.	Achieved	The Macadamia grower's guide is one resource for production information. Its presence and availability contribute to changes and growth in grower knowledge, skills, attitudes and aspirations.	The Macadamia grower's guide is complementary to other resources by NSW DPIRD, AMS, Hort Innovation, QDAF and private organisations. The grower's guide will be a foundational resource that has information that can be referred to now and into the future. It is expected signals of practice change and productivity growth will be apparent in benchmarking data (MC22000 "Benchmarking and Industry Sustainability Insights 2022-2027") through coming years, although attribution for initiating change and outcomes can be challenging.
Long term Improve industry productivity (inputs/outputs) to maintain local and international competitiveness, while maintaining viability and sustainability of supply.	Achieved	Industry has clear information on more sustainable practices through the Macadamia Grower's Guide , the NSW DPIRD Plant Protection Guide and the Macadamia Grower Toolkit . The Grower's Guide provides a reference to be utilised long term on best management practices to maximise productivity. The information contained within it can be utilised and complemented by	Published, the grower's guide provide current best practice information. Grower's can adopt information as appropriate to their individual farming operation, contributing to longer term farm and industry productivity.

		<p>workshops, field days and other targeted industry events held in the future. The principles and practices described in the modules will provide the basis for improved productivity.</p>	
Build capability that enables adoption across the supply chain of best practices and innovation supporting an innovative culture.	Partially achieved.	<p>The Macadamia grower's guide normalises and sets good practice at the centre of production activities in Australia. The principles outlined in the modules support growers to continue developing their farms and practices for long term productivity.</p>	<p>Over time, grower case studies can be developed from outcomes on farms that use the guidance in the Macadamia grower's guide. It is anticipated that a 3-5 year horizon before useful case studies emerge, which cannot be encompassed within this projects timeframe. It is recommended that case studies be produced through a revised program or current programs such as Benchmarking (MC22000).</p>

Monitoring and evaluation

Table 3. Key Evaluation Questions

Key Evaluation Question	Project performance	Continuous improvement opportunities
Effectiveness To what extent has the project achieved its expected outcomes?	The project has produced in digital and hard copy 6 modules on key macadamia production topics. All milestone requirements have been met throughout the project.	Further modules are required to complete coverage of all areas of macadamia production (eg postharvest handling).
Relevance How relevant was the project to the needs of intended beneficiaries?	The project updated best practice information in a Macadamia grower's guide. This information was previously available in a Handbook that was published in 2004. Since that time the industry has expanded considerably and information on improved practices needed capturing. The update of the 6 modules was approved by module focus groups and the program reference group.	Develop and update other modules and ensure current updates are continuously assessed for accuracy.
Process appropriateness How well have intended beneficiaries been engaged in the project?	Industry was informed of progress of the grower guide through Bulletin articles, MacGroups, conferences, NSW DPIRD field days and processor communication channels. Industry was engaged in the project through a PRG and module focus groups. Initially it was planned to deliver modules as they were completed. Industry overwhelmingly said that they would prefer the modules to be delivered as a completed manual/book. This was accommodated by withholding the physical hard copy version of the modules but releasing the modules electronically (pdf) as they were completed.	Any update of modules or development of new modules should continue to receive strategic and technical guidance through a PRG and subject and industry matter expert focus groups relevant to individual modules.
Efficiency What efforts did the project make to improve efficiency of delivering tool to all stakeholders?	Upon project commencement a survey was undertaken to understand grower preferred pathways to receive information such as that presented in the Macadamia grower's guide. Through	Industry preferred pathways change over time and so should continue to be surveyed prior to develop of new major information resources. An online CMS for the future should be

	<p>the life of the project, the project team made every attempt to deliver the progress of the grower's guide to industry through established pathways such as publications produced through the industry communications program and industry events. Now that the publication is complete, the grower's guide will be handed out to industry through organised events.</p>	considered.
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Recommendations

- Maintain currency of current modules with reviews on a regular basis, recommended every 5 years. This timeframe is suggested as it ensure currency of information, ensures information within each module is relevant due to new production regions being established, new R&D findings and reduces the size of the workload of updating modules, allowing all module areas to be reviewed and updated. Based on any changing preferred information delivery pathways, the format of modules could also be updated (e.g. use of a CMS).
- The survey highlighted the need for future modules on Harvesting and Postharvest Handling, Irrigation, and an update of Integrated Orchard Management (IOM). Although the industry typically has a harvest MacGroup, there is a clear requirement for updated information. Despite the availability of valuable tips for harvesting, the survey responses indicate a desire for a centralised source of information. Including these topics in the Macadamia grower's guide would address this need.
- Each module has a year of production on the cover to provide information on currency and allow a user to easily compare their printed version against the currency of an online version. The dating of publications has also been included to allow industry to quickly identify dated publications and work towards a review and update. This review and update is recommended to occur every 5 years, depending on the topic and the extent of changes within that timeframe. The review might result in minor updates or a complete overhaul of the topic.
- The industry has many “old” and useful resources still in circulation. For example the Queensland Government’s ‘Macadamia problem solver and bug identifier’ (2003) is an extremely useful resource but could easily be updated, refreshed and potentially made available through an app. In this format it would require an administrator to ensure the app remains current. The NSW DPIRD ‘NSW WeedWise’ is a good example of what is possible (<https://www.dpi.nsw.gov.au/biosecurity/weeds/nsw-weedwise-app>).

Refereed scientific publications

The modules created and the referencing for these is provided below. While not a refereed scientific publication they are provided here for future reference.

Modules

Bright J and Alt S. 2022. Nutrition and soil health – Part 1: the foundations. In: Macadamia grower's guide. NSW Department of Primary Industries, Orange, 24 pp

Bright J and Alt S. 2023. Nutrition and soil health – Part 2: The next level. In: Macadamia grower's guide. NSW Department of Primary Industries, Orange, 64 pp.

Bright J and Alt S. 2023. New orchards. In: Macadamia grower's guide. NSW Department of Primary Industries, Orange, 50 pp

Bright J and Alt S. 2024. Cultivars. In Macadamia grower's guide. NSW Department of Primary Industries, Orange, 50 pp

Bright J and Alt S (2024) Young trees. In Macadamia grower's guide. NSW Department of Primary Industries and Regional Development, Orange.

Bright J and Alt S. 2024. Bearing trees. In Macadamia grower's guide. NSW Department of Primary Industries and Regional Development, Orange.

Intellectual property

There is no commercialisation to report.

It was originally intended to use a Hort Innovation CMS to publish modules. A CMS was unavailable during the life of the project so a NSW DPIRD publishing format and website has been used, with DPIRD copyright ownership and Hort Innovation funding acknowledgement. Given the preference for printed material, printed copies of the grower's guides have also been made available. The content is readily available should a CMS be implemented in the future.

Acknowledgements

I would like to acknowledge Stephanie Alt as the co-author of these publications; without her, this task would have been even more challenging. I also extend my gratitude to all the members of the Project Reference Group: Chris Cook, Graham Wessling, Tim Salmon, Scott Allcott, Chris Searle, Chris Fuller, Adrian Hunt and Tom McCue (Hort Innovation), and all the focus group members for their invaluable assistance in keeping this project on track. Special thanks to Amanda Warren-Smith (NSW DPIRD) for all her contributions.

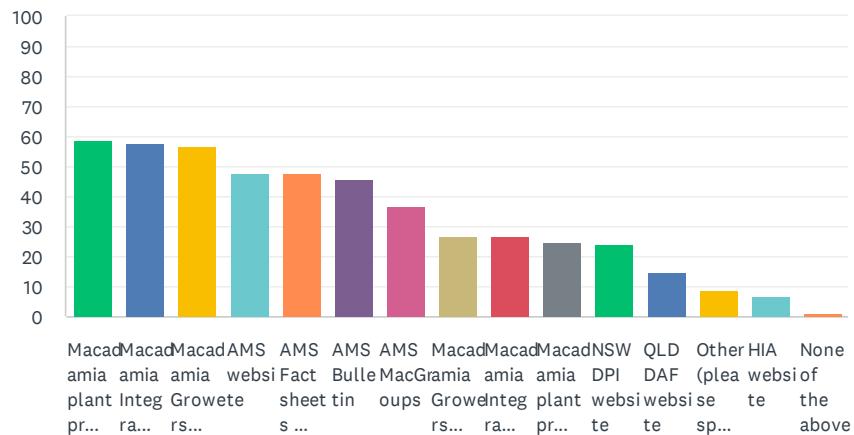
Focus group members included, Kevin Quinlan, Simon Andreoli, Steve McLean, Tim Slamon, Chris Cook, Chris Searle, Leoni Kojetin, Paul Hibbert, Mark Whitten, Eddie Dunn, Darren Litton, Chris Fuller, Stephan Vander Walt, Daniel and Belinda Blanco, Michael McMahon, Scott Norval, David Bell, Lindsay Bryen, Scott Hill, Brice Kaddatz, Bob Maier, Graham Matson, Joe Muscat, Jim Patch, Greg O'Neill and John Wilkie.

Appendices

APPENDIX 1 – Full industry survey questions and responses.

Q1 Which of these information sources have you looked at? Tick all that apply.

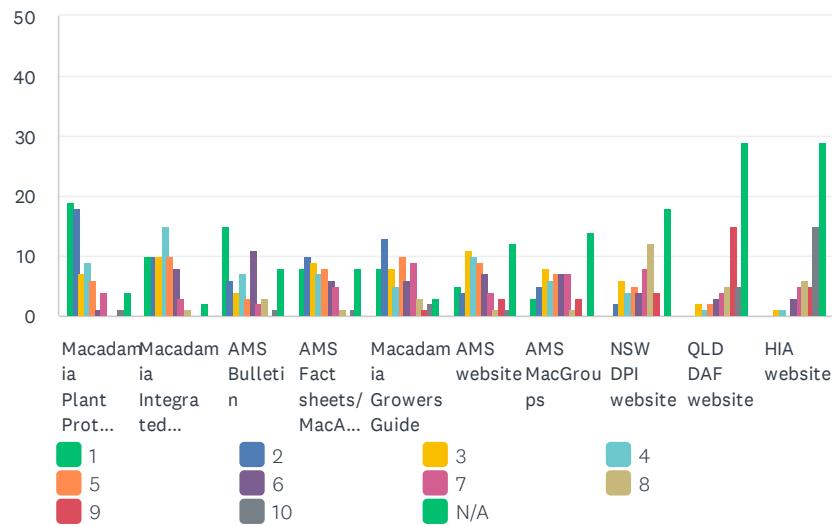
Answered: 74 Skipped: 1



ANSWER CHOICES	RESPONSES
Macadamia plant protection guides PRINTED COPY	79.73% 59
Macadamia Integrated Orchard Management (IOM) guides PRINTED COPY	78.38% 58
Macadamia Growers guide PRINTED COPY	77.03% 57
AMS website	64.86% 48
AMS Fact sheets / MacAlerts	64.86% 48
AMS Bulletin	62.16% 46
AMS MacGroups	50.00% 37
Macadamia Growers guide ONLINE/DIGITAL PDF	36.49% 27
Macadamia Integrated Orchard Management (IOM) guides ONLINE/DIGITAL PDF	36.49% 27
Macadamia plant protection guides ONLINE/DIGITAL PDF	33.78% 25
NSW DPI website	32.43% 24
QLD DAF website	20.27% 15
Other (please specify)	12.16% 9
HIA website	9.46% 7
None of the above	1.35% 1
Total Respondents: 74	

Q2 Could you rank these information sources based on how often you have used them in the past 3 years? Drag to arrange with your most frequently used source AT THE TOP of the list OR rank them 1-7 using the drop-down tool on each row. Tick the N/A box for any you have not looked at in the past 3 years.

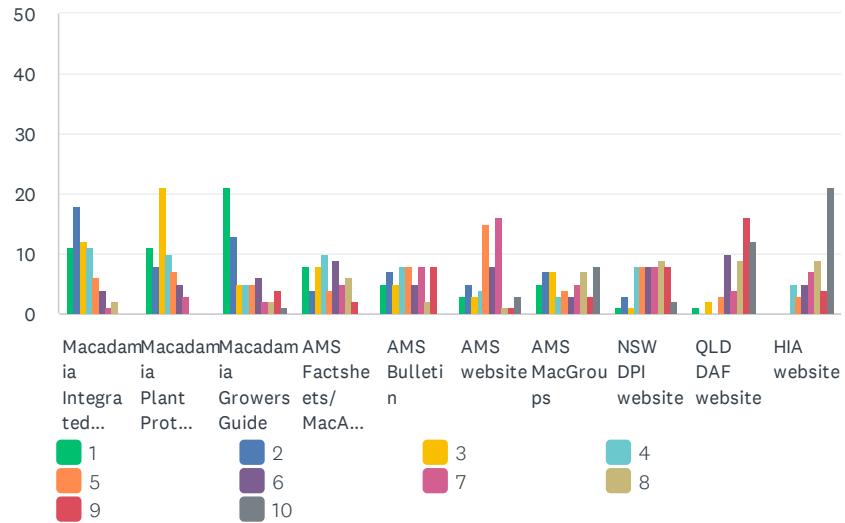
Answered: 72 Skipped: 3



	1	2	3	4	5	6	7	8	9	10	N/A	TOTAL
Macadamia Plant Protection Guides	27.54% 19	26.09% 18	10.14% 7	13.04% 9	8.70% 6	1.45% 1	5.80% 4	0.00% 0	0.00% 0	1.45% 1	5.80% 4	69
Macadamia Integrated Orchard Management Guides	14.49% 10	14.49% 10	14.49% 10	21.74% 15	14.49% 10	11.59% 8	4.35% 3	1.45% 1	0.00% 0	0.00% 0	2.90% 2	69
AMS Bulletin	25.00% 15	10.00% 6	6.67% 4	11.67% 7	5.00% 3	18.33% 11	3.33% 2	5.00% 3	0.00% 0	1.67% 1	13.33% 8	60
AMS Fact sheets/ MacAlert	12.70% 8	15.87% 10	14.29% 9	11.11% 7	12.70% 8	9.52% 6	7.94% 5	1.59% 1	0.00% 0	1.59% 1	12.70% 8	63
Macadamia Growers Guide	11.76% 8	19.12% 13	11.76% 8	7.35% 5	14.71% 10	8.82% 6	13.24% 9	4.41% 3	1.47% 1	2.94% 2	4.41% 3	68
AMS website	7.46% 5	5.97% 4	16.42% 11	14.93% 10	13.43% 9	10.45% 7	5.97% 4	1.49% 1	4.48% 3	1.49% 1	17.91% 12	67
MacGroups	4.92% 3	8.20% 5	13.11% 8	9.84% 6	11.48% 7	11.48% 7	11.48% 7	1.64% 1	4.92% 3	0.00% 0	22.95% 14	61
NSW DPI website	0.00% 0	3.17% 2	9.52% 6	6.35% 4	7.94% 5	6.35% 4	12.70% 8	19.05% 12	6.35% 4	0.00% 0	28.57% 18	63
QLD DAF website	0.00% 0	0.00% 0	3.03% 2	1.52% 1	3.03% 2	4.55% 3	6.06% 4	7.58% 5	22.73% 15	7.58% 5	43.94% 29	66
HIA website	0.00% 0	0.00% 0	1.54% 1	1.54% 1	0.00% 0	4.62% 3	7.69% 5	9.23% 6	7.69% 5	23.08% 15	44.62% 29	65

Q3 How useful have you found these information sources? Drag to arrange so the information that has most influenced your farming practice is at the top of the list OR rank them 1-7 using the drop-down tool on each row.

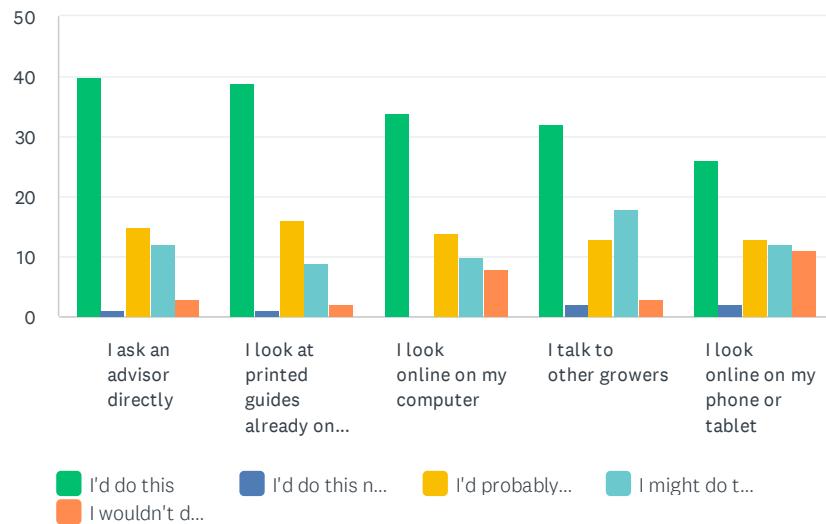
Answered: 69 Skipped: 6



	1	2	3	4	5	6	7	8	9	10	TOTAL	SCORE
Macadamia Integrated Orchard Management Guides	16.92% 11	27.69% 18	18.46% 12	16.92% 11	9.23% 6	6.15% 4	1.54% 1	3.08% 2	0.00% 0	0.00% 0	65	7.86
Macadamia Plant Protection Guides	16.92% 11	12.31% 8	32.31% 21	15.38% 10	10.77% 7	7.69% 5	4.62% 3	0.00% 0	0.00% 0	0.00% 0	65	7.68
Macadamia Growers Guide	32.81% 21	20.31% 13	7.81% 5	7.81% 5	7.81% 5	9.38% 6	3.13% 2	3.13% 2	6.25% 4	1.56% 1	64	7.58
AMS Factsheets/MacAlerts	14.29% 8	7.14% 4	14.29% 8	17.86% 10	7.14% 4	16.07% 9	8.93% 5	10.71% 6	3.57% 2	0.00% 0	56	6.45
AMS Bulletin	8.93% 5	12.50% 7	8.93% 5	14.29% 8	14.29% 8	8.93% 5	14.29% 8	3.57% 2	14.29% 8	0.00% 0	56	6.00
AMS website	5.08% 3	8.47% 5	5.08% 3	6.78% 4	25.42% 15	13.56% 8	27.12% 16	1.69% 1	1.69% 1	5.08% 3	59	5.58
AMS MacGroups	9.62% 5	13.46% 7	13.46% 7	5.77% 3	7.69% 4	5.77% 3	9.62% 5	13.46% 7	5.77% 3	15.38% 8	52	5.46
NSW DPI website	1.79% 1	5.36% 3	1.79% 1	14.29% 8	14.29% 8	14.29% 8	14.29% 8	16.07% 9	14.29% 8	3.57% 2	56	4.75
QLD DAF website	1.75% 1	0.00% 0	3.51% 2	0.00% 0	5.26% 3	17.54% 10	7.02% 4	15.79% 9	28.07% 16	21.05% 12	57	3.18
HIA website	0.00% 0	0.00% 0	0.00% 0	9.26% 5	5.56% 3	9.26% 5	12.96% 7	16.67% 9	7.41% 4	38.89% 21	54	3.00

Q4 How do you look for information: To troubleshoot a specific issue in macadamia growing that you need to act on straight away? Tick one box for each line.

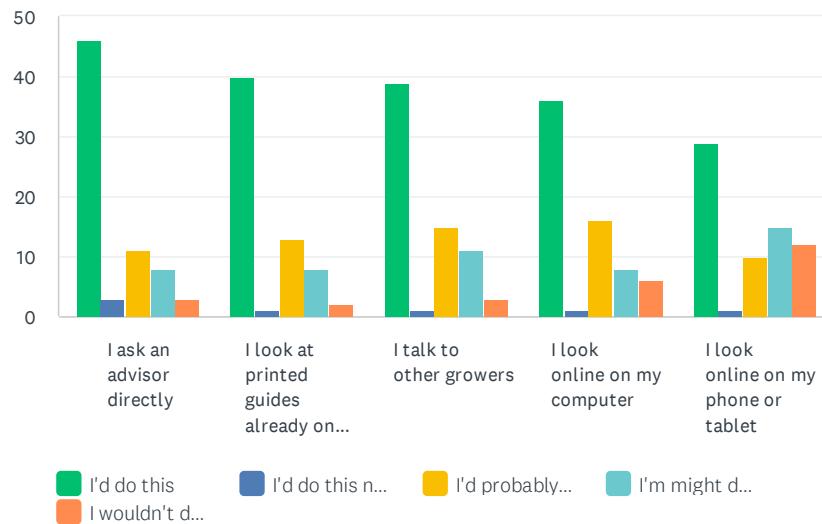
Answered: 72 Skipped: 3



	I'D DO THIS	I'D DO THIS NEXT	I'D PROBABLY DO THIS	I MIGHT DO THIS	I WOULDN'T DO THIS	TOTAL RESPONDENTS
I ask an advisor directly	57.14% 40	1.43% 1	21.43% 15	17.14% 12	4.29% 3	70
I look at printed guides already on my bookshelf, or download and print information	58.21% 39	1.49% 1	23.88% 16	13.43% 9	2.99% 2	67
I look online on my computer	51.52% 34	0.00% 0	21.21% 14	15.15% 10	12.12% 8	66
I talk to other growers	47.06% 32	2.94% 2	19.12% 13	26.47% 18	4.41% 3	68
I look online on my phone or tablet	40.63% 26	3.13% 2	20.31% 13	18.75% 12	17.19% 11	64

Q5 How do you look for the information: To learn more about proven practices and strategies for macadamias that you might use in the future to improve your farm?

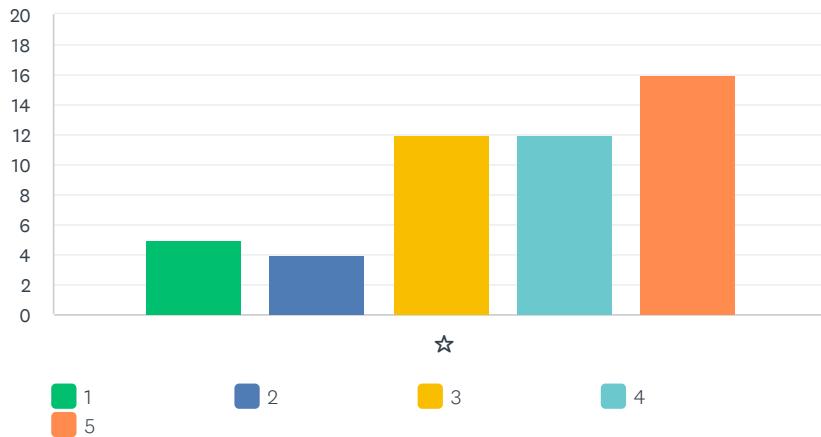
Answered: 71 Skipped: 4



	I'D DO THIS	I'D DO THIS NEXT	I'D PROBABLY DO THIS	I'M MIGHT DO THIS	I WOULDN'T DO THIS	TOTAL RESPONDENTS
I ask an advisor directly	65.71% 46	4.29% 3	15.71% 11	11.43% 8	4.29% 3	70
I look at printed guides already on my bookshelf, or download and print information	62.50% 40	1.56% 1	20.31% 13	12.50% 8	3.13% 2	64
I talk to other growers	56.52% 39	1.45% 1	21.74% 15	15.94% 11	4.35% 3	69
I look online on my computer	53.73% 36	1.49% 1	23.88% 16	11.94% 8	8.96% 6	67
I look online on my phone or tablet	43.28% 29	1.49% 1	14.93% 10	22.39% 15	17.91% 12	67

Q6 Website concept 1: Select region first, then topic area, then Integrated Orchard Management (IOM) stage, then a specific practice. Please watch the video then give the approach a rating below.

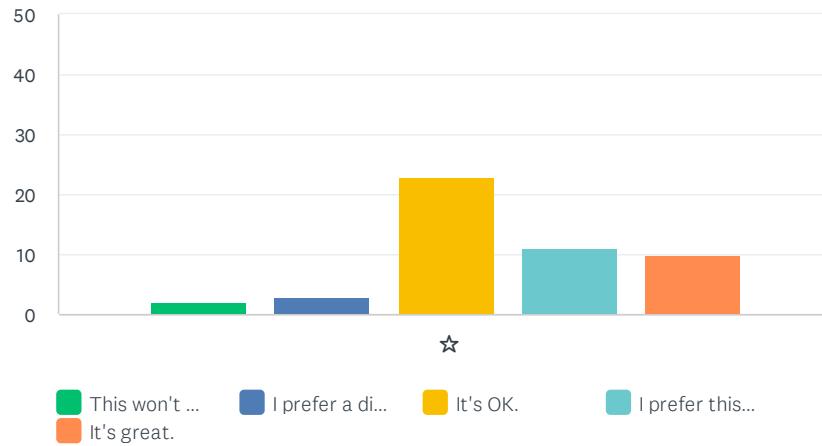
Answered: 49 Skipped: 26



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
☆	10.20%	8.16%	24.49%	24.49%	32.65%	49	3.61

Q7 Website concept 2: More like a traditional table of contents. Navigate by topic, then select Integrated Orchard Management (IOM) stage, then region. Please watch the video then give the approach a rating below.

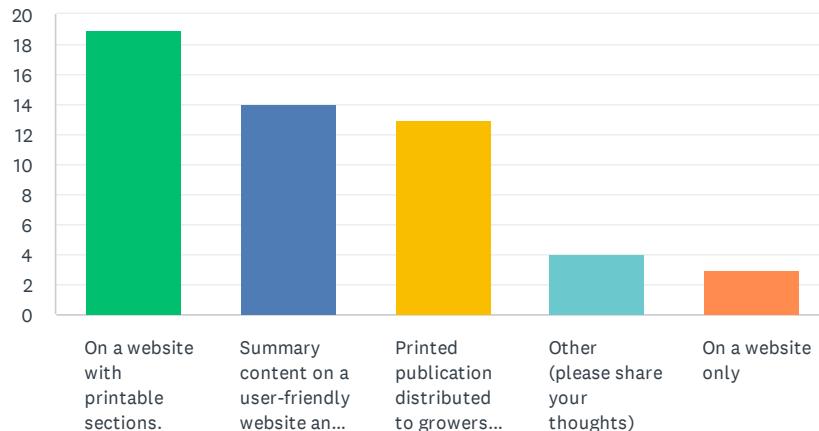
Answered: 49 Skipped: 26



	THIS WON'T WORK.	I PREFER A DIFFERENT APPROACH.	IT'S OK.	I PREFER THIS APPROACH.	IT'S GREAT.	TOTAL	WEIGHTED AVERAGE
★	4.08% 2	6.12% 3	46.94% 23	22.45% 11	20.41% 10	49	3.49

Q8 What mix of digital to printed information do you think would suit the macadamia growers guide best?

Answered: 53 Skipped: 22



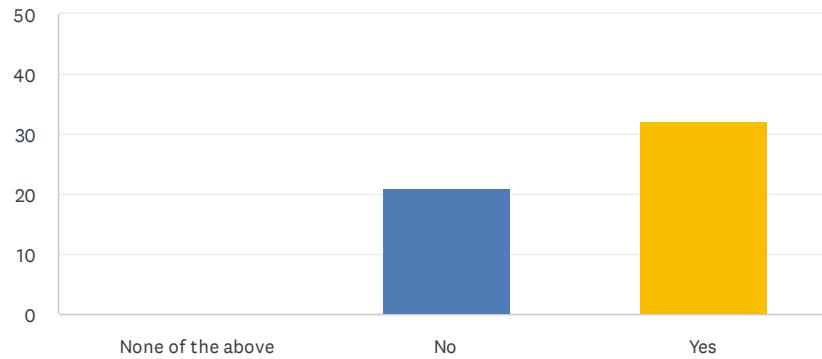
ANSWER CHOICES	RESPONSES
On a website with printable sections.	35.85% 19
Summary content on a user-friendly website and comprehensive printed information distributed to growers and printable on demand.	26.42% 14
Printed publication distributed to growers with PDF files available online.	24.53% 13
Other (please share your thoughts)	7.55% 4
On a website only	5.66% 3
TOTAL	53

Q9 Is there anything more you want to tell us about what you want from the new digital growers guide?If there's not enough room here please send an email to jeremy.bright@dpi.nsw.gov.au

Answered: 16 Skipped: 59

Q10 Would you be willing to participate in a focus group for your region?
This would involve attending 1 or more face-to-face 2-hour meetings with Jeremy Bright from NSW DPI and other growers from your region. The focus would be on the specific information needed for your region, and understanding regional variations in orchard practices.

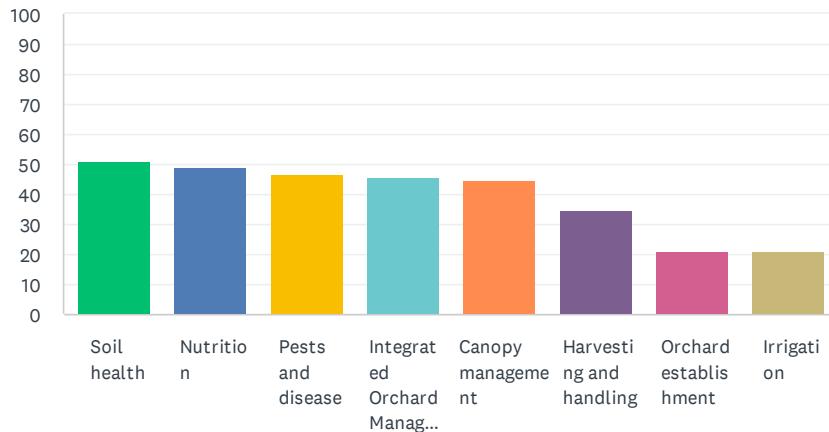
Answered: 53 Skipped: 22



ANSWER CHOICES	RESPONSES
None of the above	0.00%
No	39.62%
Yes	60.38%
TOTAL	53

Q11 Which of these topics are you interested in? Tick as many as you like.

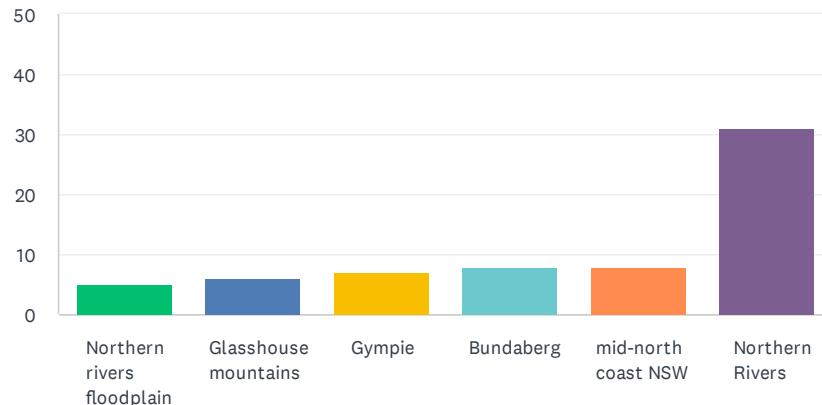
Answered: 53 Skipped: 22



ANSWER CHOICES	RESPONSES
Soil health	96.23% 51
Nutrition	92.45% 49
Pests and disease	88.68% 47
Integrated Orchard Management	86.79% 46
Canopy management	84.91% 45
Harvesting and handling	66.04% 35
Orchard establishment	39.62% 21
Irrigation	39.62% 21
Total Respondents: 53	

Q12 Which macadamia region are you based in? You can select more than one answer.

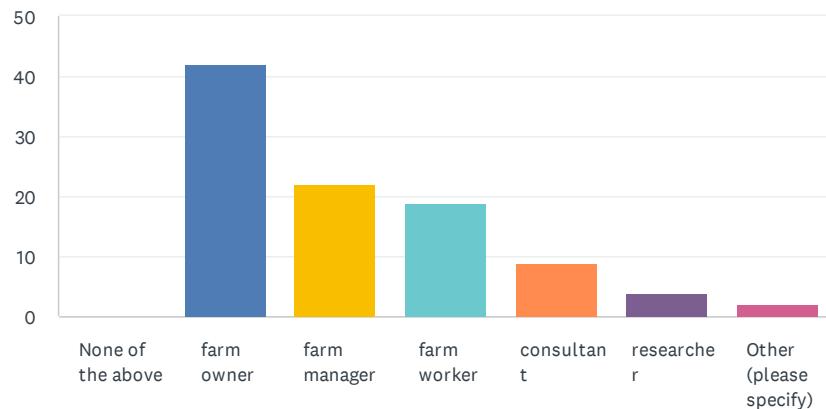
Answered: 53 Skipped: 22



ANSWER CHOICES	RESPONSES	
Northern rivers floodplain	9.43%	5
Glasshouse mountains	11.32%	6
Gympie	13.21%	7
Bundaberg	15.09%	8
mid-north coast NSW	15.09%	8
Northern Rivers	58.49%	31
Total Respondents: 53		

Q13 What role do you take in macadamia growing? You can select more than 1 answer.

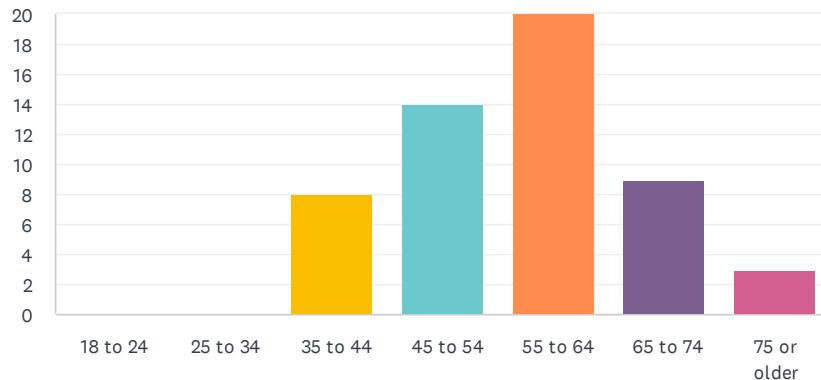
Answered: 54 Skipped: 21



ANSWER CHOICES	RESPONSES
None of the above	0.00%
farm owner	77.78%
farm manager	40.74%
farm worker	35.19%
consultant	16.67%
researcher	7.41%
Other (please specify)	3.70%
Total Respondents: 54	

Q14 What is your age?

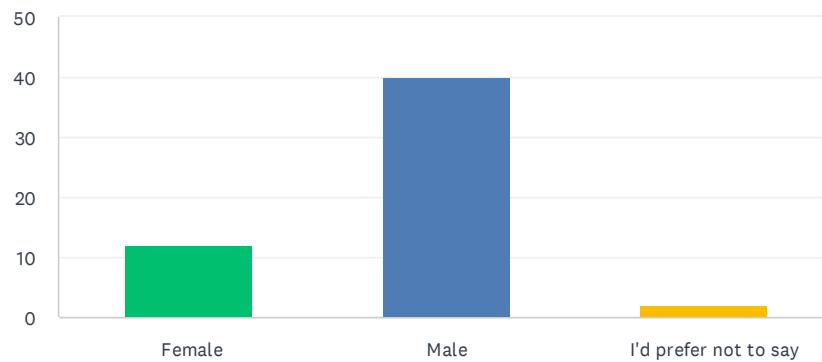
Answered: 54 Skipped: 21



ANSWER CHOICES	RESPONSES	
18 to 24	0.00%	0
25 to 34	0.00%	0
35 to 44	14.81%	8
45 to 54	25.93%	14
55 to 64	37.04%	20
65 to 74	16.67%	9
75 or older	5.56%	3
TOTAL		54

Q15 What is your gender?

Answered: 54 Skipped: 21



ANSWER CHOICES	RESPONSES	
Female	22.22%	12
Male	74.07%	40
I'd prefer not to say	3.70%	2
TOTAL		54