

# **Improving the usability of information for the Australian macadamia industry through a web-based information "bank"**

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Project Number: MC09002

## **MC09002**

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## Media summary

A key goal of the Australian macadamia industry is to increase on-farm productivity. Accessing quality information in a usable form is critical for increasing awareness and driving adoption of industry best practices that lead to increased farm productivity and efficiency.

The development and delivery of web-based information and extension materials to support improved farm productivity in the Australian macadamia industry was the primary focus of this project. The highly visual nature of video in particular provides a compelling medium for distilling complexity and aiding understanding. Three electronic guides and 55 YouTube style videos were developed during this project. Key topics included canopy management, grower innovation, latest research findings and highly productive farms and farming practices.

A content management system (CMS) was also developed to provide a cost-effective, independent platform for web-based delivery of this content. The resulting macSmart web site was launched in November 2011. A total of 347 users subscribe to the macSmart site. These include growers, researchers, processors, consultants and other industry stakeholders. Site analytics revealed more than 34,752 web page views and more than 6,150 video views by subscribers during the project term.

Previous evaluation work has revealed that growers are an important source of useful information for other growers. A key part of the strategy for information delivery and uptake within this project was therefore to maintain a strong emphasis on grower-based content, including grower experience and testimonials. The user survey revealed that drawing on the experience of others in similar farm situations provided not only valuable insight but also the confidence to try new practices.

A 2014 user evaluation revealed that video was overwhelmingly the most popular content on the macSmart web site. More than 94% of respondents found video either useful or very useful as a medium for accessing relevant information for their business and two thirds of those surveyed also indicated that the videos had directly contributed to practice change on their farms. This included changes to orchard floor management, canopy management, equipment modification, increased use of pollinators and modifications to nutrition programs.

## Keywords

Macadamia video extension information

# Acknowledgements

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The team would also like to acknowledge and sincerely thank the industry steering group for providing ongoing direction and assistance to the project. Members of this steering group included **Lindsay Bryen, Jolyon Burnett, Paul Chapman, Chris Searle, Andrew Starkey** and **Kim Wilson**.

The team also gratefully acknowledges the vision and efforts of the original project leader, **Noel Vock**, who developed and led the original project and who has provided so much valuable guidance and assistance throughout.



# Introduction

A key goal of the Australian macadamia industry is to increase on-farm productivity. Economic analysis studies have shown that macadamia orchard productivity is the major driver of farm profitability. Highly variable productivity has been observed between farms through industry on-farm benchmarking work (MC09001), suggesting that there is significant potential for productivity improvement across industry. Accessing quality information in a usable form is critical for enabling awareness and driving adoption of industry best practices that lead to increased farm productivity and efficiency.

A substantial volume of information has been produced for the Australian macadamia industry over many years, including papers, books, bulletins, posters, fact sheets and software. Much of the research and development undertaken on behalf of the Australian industry over the last 20 years has been well documented and made available to growers and stakeholders via the Australian Macadamia Society's web site. Despite the availability of this significant information resource and also other specialised macadamia industry publications, macadamia research has often been perceived as very technical and its results not always in a format that is readily adoptable by the industry.

The transfer of technical information has traditionally been seen within agricultural industries and research agencies as trickling down from researchers to extension officers to industry leaders and then on to the bulk of the industry. Evaluation by the project team in 2005 found however that other farmers were the most common source of useful information for Australian macadamia growers.

Based on successful limited trials in other agricultural industries, the project team saw potential for combination of social and electronic media as a mechanism for distilling research results, as well as the experience of leading growers and consultants, into a format where growers can effectively relate what is being presented to their own situation. A content management system (CMS) was developed to provide a platform for ongoing delivery and management of content to the Australian macadamia industry and associated stakeholders. Access to this system ([macSmart.com.au](http://macSmart.com.au)) was restricted to Australian AMS members and macadamia industry levy payers.

Web-based delivery of content in both e-book and video format provided novel alternative approaches to traditional industry publications. The use of short YouTube style video in particular was something to which the macadamia had previously had only limited exposure. The highly visual nature of video provides a compelling medium for distilling complexity and aiding understanding, particularly when stories are carefully crafted to ensure key messages are clearly articulated. Video subsequently became the primary focus of the macSmart web site and project.

A project steering group was established to guide all content development. The initial focus on canopy management during the 2-year pilot project was subsequently broadened to include latest research findings, grower innovation and case studies of highly successful farms and farming practices.

A total of 55 videos were produced and published via the macSmart web site. Formal notification of each new release was a critical part of on-going engagement with subscribers which totaled 347 by the end of the project.

## Technology transfer strategy and methodology/activities

The development and delivery of web-based information and extension materials to support improved farm productivity was the primary focus of this project. A project steering group comprising key members of the macadamia industry was established at the beginning of the project to guide all major activities and products. Two industry focus groups were also established for the purpose of reviewing and directing content development.

A two year pilot project commenced in April 2010 to trial the updating and web-based delivery of selected industry publications. These included the *Code of Sound Orchard Practices (COSOP)* and the *Macadamia Growing Guide*. Focus was limited to these publications during the pilot stage in order to test the concept, with a view to providing a clear plan for ongoing development and updating of other information products in due course.

Following consultation with the project steering group and focus groups, a stand-alone web site was initially proposed. A content management system (CMS) was developed to provide a cost-effective, independent platform for web-based delivery of content. The CMS, which is based on the open source Drupal™ system, supported both the delivery of all electronic content as well as management of user access and accounts. The use of a standardised open-source platform and independent hosting meant that any of the collaborating organisations could co-manage the macSmart resource and that the system could be independently developed further in the future as needed.

The name macSmart™ was trademarked and the domain macSmart.com.au was registered to provide a persistent, dedicated web presence for the duration of the project. Access to the macSmart web site was provided free of charge to Australian-based AMS members and Australian macadamia industry levy payers for the duration of the project.

A web based forum bulletin board system was incorporated into the macSmart web site to evaluate the potential for using more modern and powerful industry communication tools than existing systems such as the MacNet e-mail discussion group, which was implemented as part of the MC09001 project. The macSmart forum supported threaded discussions across many topics with the ability for users to opt in for notification of new messages.

Integration or incorporation of content into or with the existing AMS web site was ultimately planned for the longer term. While this remains a viable option for the future it has not been practical during the project term due to the recent major restructure of the AMS web site and transfer of its content to a new platform. Migration of some electronic content to the new AMS web site, such as the *Code of Sound Orchard Practices*, is however underway and additional content could potentially be similarly migrated in the future.

Previous evaluation work has revealed that growers are an important source of useful information for other growers. The approach used for information delivery within this project therefore included strong emphasis on grower-based information, such as grower experience and testimonials. This included a focus on grower-oriented interpretation of R&D results, which built on the successful Agrilink concept of improving the grower usability of information.

While development of video was originally only a small part of the macSmart project, the team's confidence in the use of internet-based video for delivery of content was strengthened by a 2008 macadamia industry survey, which revealed that 99% of respondents had reliable internet access in their home or business at that stage. A few examples of limited application of short video in other horticultural industries had also produced positive outcomes and feedback, so trialing the use of video became an important component of the pilot project.

At the request of the project's industry steering group, canopy management was the key topic selected to trial the use of video. Despite substantial previous research and development investment in this area, canopy management remained contentious, with several different approaches and methods being employed nationally and no single clear and obvious recommendation available to growers. Despite this, many growers had developed significant experience in a range of canopy management techniques on their own orchards. There were also several growers achieving above industry average yield and quality results who were using diverse methods of pruning and training their macadamia trees. Video provided a useful platform for sharing those experiences more widely across industry.

The release of video-based information about the latest canopy management findings and grower experiences was enthusiastically received by industry. Site subscription rates increased significantly following the official launch of the web site in November 2011. Of all of the content available on the macSmart site, video was overwhelmingly the most popular among subscribers and this trend continued throughout the whole project term.

This new video-based approach to information delivery required the development of detailed storyboards in order to produce carefully crafted videos that would distil key findings and recommendations. These storyboards are typically developed in collaboration with the relevant growers, researchers or consultants who appear in the video, to ensure findings and key messages are clearly articulated.

The project team has managed the process of selecting and prioritising stories to maintain an appropriate balance between greatest need, likelihood of impact and availability of knowledge, experience and resources. The team has also directly managed all aspects of video production including storyboarding, scripting, shooting, editing and publication.

All video content is streamed via YouTube using embedded links on the macSmart web site. This delivery model is both cost effective and supports a broad range of computers and other devices.

Ongoing signs of site activity are regarded as very important to the long-term viability of this information resource so the project team has aimed to release new video content on average at least every three to four weeks during the term of the project. All subscribers are notified via e-mail following the release of each new video on the macSmart web site, to sustain ongoing uptake of content.

Evaluation has been important for assessing both uptake and usefulness of content on the macSmart site. A combination of formal user evaluation, web site analytics and YouTube metrics has provided useful insights into actual usage patterns, user perceptions and resulting impact through changes to decision making and practice change.



# Evaluation and measurement of outcomes – impact and adoption

## E-book content

Three manuals were published in e-book format on the macSmart web site. These included the *Code of Sound Orchard Practices*, the *Macadamia Growing Guide* and a *Pest Facts Guide* comprising a series of fact sheets on pests, diseases and disorders in macadamia. Much of the content for these manuals was based on information previously published in hard copy guides that was updated and re-formatted to suit the e-book format. The guides were further enhanced to suit the e-book environment through addition of hyperlinks and in some cases embedded video.

## Video content

A total of 55 videos were produced and published on the macSmart web site. During the pilot stage of the project 22 videos were produced relating to the initial canopy management topic. These included latest R&D findings, key strategies and recent grower experience relating to all major aspects of canopy management. Methods covered included hedging and topping, tree limb removal, tree and tree row removal and training of young trees.

Following consultation with the project's industry steering group in 2012, the focus of topics was expanded to include productivity, innovation and research. A further 33 videos covering these topics were subsequently produced and published on the macSmart web site. These included case studies of highly productive farms and farm practices (10), results from latest research and development (6) and examples of grower innovation (12).

All videos were produced in close consultation with leading growers, researchers and consultants. The length of these videos ranged from 2 to 15 minutes, with an average of around 8 minutes.

## Subscribers

During the project term a total of 347 users subscribed to the macSmart web site. This includes 290 growers (84%), 12 researchers (3%), 8 consultants (2%), 12 processor representatives (3%) and 25 other stakeholders (7%). This represents a grower adoption rate of approximately 41% based on AMS estimates of around 700 Australian macadamia growers in total. Given that some subscribers play the videos to multiple clients, the actual reach is expected to be slightly higher than this figure.

As expected the majority of macSmart users subscribed following the official launch of the web site in 2011 (138), however users also continued to subscribe in 2012 (111), 2013 (46) and 2014 (52).

User retention rates throughout the project were very strong with no requests received to unsubscribe from the macSmart site. Site analytics data also reveals sustained usage throughout the project. During the project term subscribers collectively totaled in excess of 34,750 web page views and 6,159 video views. This equates to an average of more than 17 video views and over 2 hours of video viewing time per subscriber.

## Evaluation

A user evaluation was conducted in 2014 via a detailed on-line survey of all macSmart subscribers. The full report from this evaluation is attached (appendix A). More than 20% of subscribers (70) responded to the survey, which sought feedback about usage patterns, relevance of the content, coverage of subject matter, importance for decision making and impact on practice change.

The survey results indicated that videos represent the most popular content on the macSmart site. Site metrics confirm that while subscribers do also access the e-books, they do so far less frequently than the video material on the website.

While 62% of survey participants found the Growing Guide either useful (37%) or very useful (25%), almost 69% of survey participants had looked at it either rarely or not at all. Interestingly, 47% of respondents indicated they had changed their farm management practices as a result of their use of the Growing Guide, although at least some of these users may also own and be using the original hard copy guide.

Similar usage patterns existed for the Code of Sound Orchard Practices. Although 58% of survey participants found it either useful (26%) or very useful (22%), over 85% indicated that they referred to it either rarely or not at all.

In the case of the Pest Facts Guide 64% of survey participants found it either useful (36%) or very useful (28%), however 56% indicated that they referred to it either rarely or not at all.

The video content was by comparison highly utilised and valued by subscribers. Over 94% of respondents found video to be either useful (35%) or very useful (59%) as a medium for accessing relevant information for their business. This was also reflected in results for each of the project's key video topics.

Over 74% of survey participants indicated that videos relating to the original key topic of canopy management had been either useful (43%) or very useful (30%) in providing relevant information to their macadamia business. The evaluation also found that over 90% of survey participants felt that the videos had either well covered (53%) or very well covered (37%) the canopy management topic. Many survey participants also detailed how the macSmart videos contributed to changes in their canopy management practices.

MacSmart site analytics reveal that the videos on tree removal are amongst the most viewed within the canopy management topic. These same figures also reveal that many subscribers have returned to watch these videos years after they were first published. This is contrary to original expectation and indicates that some of these materials, particularly content based on grower experience, may have a longer useful life than first expected. It also highlights the importance of reviewing and in some cases revisiting stories to examine the long term implications of practice change.

Most respondents to the subscriber survey indicated that videos were also useful or very useful in providing relevant information to their macadamia business for each of the later key topics of productivity (86%), research (80%) and innovation (81%). Respondents who believed these topics were either well covered or very well covered accounted for 78% of the total sample for productivity, 77% for research and 70% for innovation.

More than half of all survey respondents offered suggestions for additional topics that they would like to see covered in future videos. Popular topic suggestions included pest & disease management, soil & orchard floor management, nutrition & fertilizer application and machinery & equipment.

Perhaps the most significant outcome from the subscriber survey was that **two thirds of all survey respondents indicated that the videos had directly contributed to practice change on their farms**. This included changes to orchard floor management, canopy management, equipment

modification, increased use of pollinators and modifications to nutrition programs. In some cases it meant timely intervention across a range of orchard management activities. In other cases respondents suggested that the clarity offered by the video format provided the confidence they needed to start implementing new practices on their farms.

Notification was an important strategy for maintaining awareness and uptake of new video content. All registered subscribers were sent e-mails notifying them of each new video release and 97% of survey respondents found these e-mails either useful or very useful. The AMS e-newsletters, news bulletin and word of mouth were also regarded as relevant sources of notification about new content on the macSmart site.

Since commencing the macSmart project, the use of video as a medium for reporting R&D findings has been embraced by several researchers working with the macadamia industry, to the extent that many newer research projects now include development of a macSmart video as part of their extension strategy. To this end the project team produced several videos reporting the key findings from recent industry funded research. The team has also collected footage for ongoing research projects so that similar reports can be produced when longer term results become available.

# Discussion

## Impact

The relatively high popularity of videos compared with other content on the macSmart web site meant that they quickly became the major focus and output from the project. The resulting high rates of practice change reported by survey participants (66%) suggest that video is a very effective medium for conveying and achieving understanding of complex subjects. The macSmart system as an approach to extension has subsequently served as a useful model for other horticultural industries. Content has been developed for more than eight other horticultural industries, covering issues such as training, market access and research reporting.

Comments from survey participants provided further useful insight into why video in particular was well received. This feedback commonly focused on the visual nature of the medium, the relevance of grower based content, accessibility and ease of use. Examples of comments received from the client survey reinforcing the visual nature of video and the relevance of grower based content include:

- *"It is very valuable to learn via visual presentation what other successful growers are doing and how they may deal with common problems faced by growers. Being able to see the trees and farm habit is wonderful. A picture paints a thousand words."*
- *"It is a valuable repository for grower and research information presented in a visually interesting and easy to understand way."*
- *"...Being able to visually see what they are talking about is like being at a field day."*
- *"...It's helpful base information especially the visual aspect of the videos. They (growers) can see if this depicts their orchard situation."*

Additional feedback from the survey relating to accessibility and ease of use include:

- *"...It is also dynamic so that as innovation happens, the site is updated. I also love that I can just be at home on the farm and find out what everyone is doing whether it is in Bundaberg or northern NSW."*
- *"It is much more handy and better tabulated than most books."*
- *"As a remote grower, this type of information is critical and an excellent source."*
- *"I enjoy the videos and find them informative, I take more away from them than I do other literature, keep them up."*

Feedback provided within the survey and also directly to the team throughout the project suggests that practice change is dependent on both knowledge and confidence. It appears that seeing on video what others in similar farm situations have done provides not only valuable insight into viable approaches but, just as importantly, the confidence to try new practices.

By comparison, survey results indicated that usage rates and resulting practice change were lower for other e-book based content published on the macSmart site. Survey response rates relating to e-book content were also lower than those relating to video content. **Reported practice change adjusted for these lower response rates equated to 27% for the *Growing Guide*, 7% for the *Code of Sound Orchard Practices* and 12% for the *Pest Facts* guide.**

Although survey respondents generally suggested that the content in these e-books was useful for their business, many preferred to refer to older hard-copy guides. Others were not aware of, or were yet to find time to look at these electronic guides.

Notification was used extensively throughout the project to inform macSmart subscribers of each new video released. Video releases were staged to ensure new material was produced on a regular basis. In the case of the e-books however, which were developed at the start of the project, there was no ongoing mechanism for notification apart from initial coverage and training at the official launch of the web site. This may also be a factor in their relatively lower ongoing usage.

### **Timeliness and currency**

Another trend observed via site analytics was the re-use of old video content. Almost half of all videos viewed on the macSmart site during 2014 were produced in previous years, some as early as 2011. This indicates that although notification is regarded as critical for maintaining uptake of new content, it seems users also actively seek out earlier content long after it was first published. It also highlights the importance of reviewing old content to ensure its ongoing relevance. Re-use of old content may also relate to the seasonal nature of specific activities on farm, such as canopy management.

### **Coverage**

With over half of the project term dedicated to production of content relating to canopy management, this topic is not surprisingly the most extensively covered on the macSmart web site, with 27 videos in total, which represents 49% of all content. The topics selected by the steering group in the latter half of the project account for the remaining content, including productivity (10 videos, 18% of content), innovation (12 videos, 22% of content) and research (6 videos, 11% of content).

Survey respondents mostly indicated that canopy management had been either well covered or very well covered (91%). These findings were slightly lower for productivity (78%), innovation (70%) and research (76%). In most cases where respondents believed that these subjects had not been adequately covered their feedback suggested that more content was simply required. This included coverage of additional topics, involvement of a more contributors or farms and also following up some stories from earlier in the project.

Some survey respondents also indicated a need in some cases for more detailed information to supplement video stories. Examples listed included fact sheets, reports and blueprints to provide additional details such as products used, application rates and timing, economic information and detailed research data. The project team responded to these requests by incorporating links to detailed information sources such as fact sheets and reports. These links were included in the relevant video descriptions on the macSmart web site wherever suitable publications existed.

Survey respondents also provided 40 suggestions for topics that they would like to see covered in future videos. Themes included pest and disease management, soil management, nutrition and fertiliser application and machinery & equipment.

### **Accessibility**

At the request of the project's industry steering group, access to the macSmart site was restricted to Australian AMS members and levy payers. Subscribers must log into the site by entering their user ID (or e-mail address) and a password. Although this system is very effective for ensuring materials are accessed only by authorised users, it can also limit adoption and uptake among those same users. Several survey respondents expressed frustration at the need to login to the site and the associated need to remember a password. To minimise disruption caused by lost passwords, the macSmart CMS supported self-management of user accounts. This means that users could request a new password via e-mail and change their own passwords from within the macSmart site.

## Recommendations

The macSmart project has demonstrated that video can be a compelling medium for conveying information and sharing experience within a horticultural context. Its accessibility and visual nature aid understanding of complex subjects and can lead to significant uptake. In this macadamia industry context, that uptake has led to significant practice change.

User evaluation has shown strong interest within the macadamia industry in producing additional video content. This includes expansion of some existing topics, revisiting and updating of early stories and expansion to include a range of additional topics such as pest and disease management, soil management, nutrition and fertiliser application and machinery & equipment. A whole-of-industry focus is ideal wherever possible to ensure maximum uptake and impact. The use of an industry steering group is recommended for guiding topic and content priorities.

Close collaboration with experienced growers and other information providers such as industry development officers, processors & consultants is very important for sourcing high quality, relevant material. Well known and respected growers give substantial credibility to the information presented.

Notification is important for connecting users with new content as it becomes available. A strategy is required for managing aging content, including provision for reviewing and updating stories where relevant.

Timeliness of delivery is important for ensuring maximum uptake and impact. It is therefore important that wherever possible content is released to coincide with the stage of the season where corresponding farm management decisions need to be made.

Ongoing evaluation and feedback is important for ensuring relevance and for guiding ongoing content development.

If security and restriction of access is not critical then open access is preferred wherever possible as this removes potential blocks to adoption. The ability of users to manage accounts and passwords needs to be balanced against any need to limit general access to material outside of the intended audience.

Where video is the primary medium for information delivery, inclusion of supplementary materials such as fact sheets and reports can add value and increase usability by providing important additional detail.

# Appendices

**Appendix A:** macSmart evaluation report

**Appendix B:** macSmart site metrics report

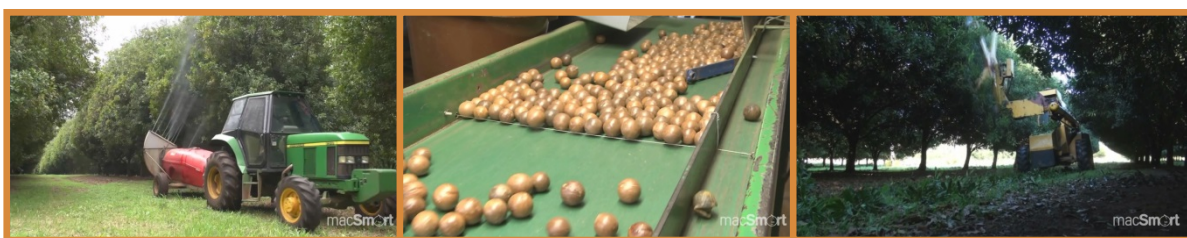
**Appendix C:** macSmart content summary report

## **Appendix A: macSmart evaluation report**





# *Evaluation report*



*Improving the usability of information for the Australian  
macadamia industry through a web-based information  
“bank” (macSmart)*

**Project: MC09002  
September 2014**



## Project team

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The macSmart project team includes:

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- Robbie Commens, Productivity Development Officer,  
Australian Macadamia Society
- Noel Vock (original Project Leader)  
Ex. Department of Agriculture, Fisheries & Forestry, Qld



# Introduction

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The macSmart website was launched in November 2011. It was created as an on-line resource for growers as part of the *Improving the usability of information for the Australian macadamia industry through a web-based information "bank"* project.

Increasing farm productivity is a major initiative of the Australian Macadamia Society. To support this goal, growers need quick access to the latest information and grower experience in a format that is easily used and understood. The macSmart website was developed to provide current, high quality information to macadamia growers, including both the latest research findings and also the experience of leading growers within industry.

Information published on the macSmart website consists predominately of short YouTube style videos. Subscribers can also access electronic books such as the Macadamia Industry Code of Sound Orchard Practices (COSOP), growing guides and pest facts which are also hosted on the website.

Since commencing in November 2011, 347 users have subscribed to the macSmart website. These include growers, consultants, processors, researchers and other industry stakeholders.

The macSmart team has produced in excess of 57 videos on a range of relevant macadamia topics. The original focus on canopy management has been expanded to include case studies of highly productive farms and the management practices that help boost their productivity, examples of grower innovation to improve farm efficiency and results and recommendations from industry funded research.

MacSmart site statistics reveal a total of more than 5,900 individual video views and collectively more than 609 hours of viewing time by subscribers. This equates to an average of 17 video views per subscriber to date, making the videos the most popular content on the macSmart site. Feedback from users has been overwhelming positive with more than 67% of subscribers returning to the site once visited.

Evaluation of the project was conducted in July 2014. A short web based survey was developed to determine how subscribers use the macSmart website and also to seek their feedback on its content. All survey responses were anonymous and took participants no longer than 10 to 15 minutes to complete. A total of 70 respondents completed the on-line survey.

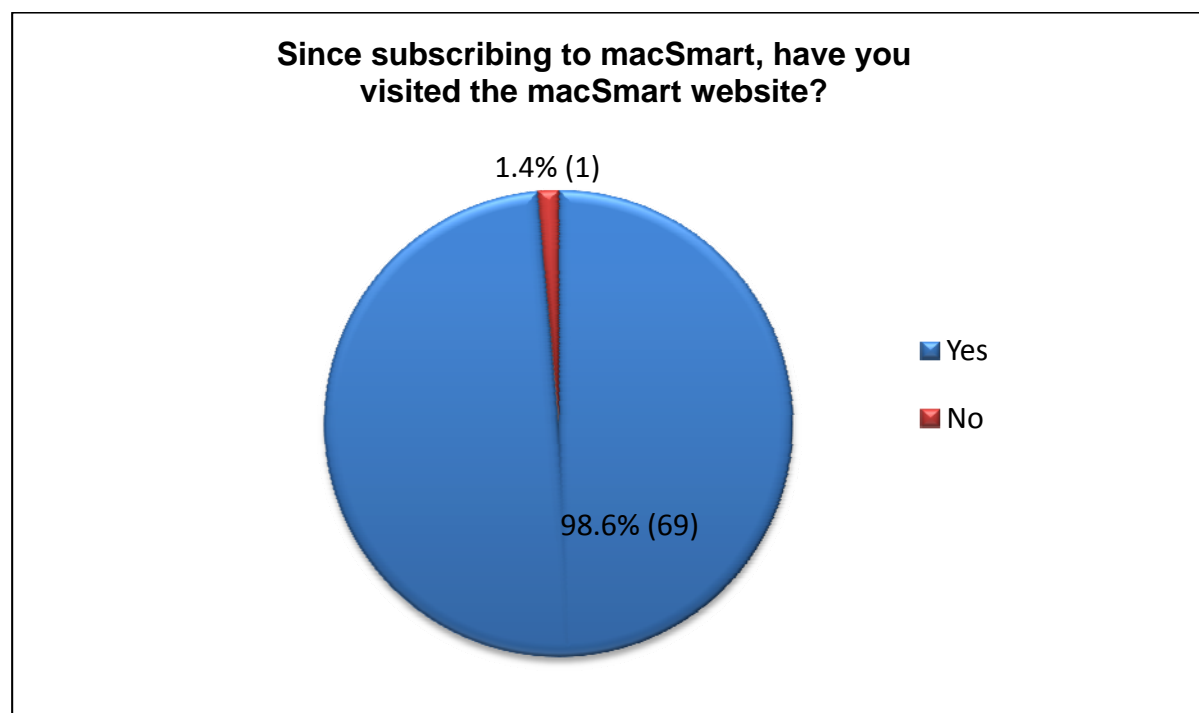
The results have provided objective measures of how well the project has met its original objectives to improve the quality and accessibility of technical information to macadamia growers. It also provides useful insight for potential future project direction. This report provides an overview of the results from the evaluation.

# Results

## Question 1 – macSmart site visits

To determine how many people had actually made use of the macSmart web site since creating their account, subscribers were asked to indicate whether or not they had revisited the site. All but one of the respondents (98%) indicated that they have visited the macSmart website since their initial subscription. Given the Project Steering Group's request to password protect access to the web site, this response provides some confidence that users are able to manage the subscription and site login processes effectively. Site metrics for September 2014 show that more than 20% of all subscribers had accessed their macSmart account within the last 8 weeks, which also supports this assertion.

Since subscribing to macSmart, have you visited the macSmart website?		
Answer Options	Response Percent	Response Count
Yes	98.6%	69
No	1.4%	1
Comments		5
<i>answered question</i>		<b>70</b>
<i>skipped question</i>		<b>0</b>



### Comments from respondents

1. *Great site.*

2. *Check out every video.*

3. *Especially to view the videos.*

4. *It's a great help. Well done!*

5. *I go there to see the latest "video" on various practices in the orchard.*

## Question 2 – Reason for non-return

Those respondents who indicated that they had not returned to the macSmart site since subscribing were asked to nominate a reason why not. The single non-return respondent chose not answer this question.

Which of the following best describes why you have not visited the macSmart website?		
Answer Options	Response Percent	Response Count
Unsure how to access macSmart	0.0%	0
The topics are not of sufficient interest to me	0.0%	0
Other reasons (please provide detail)	0.0%	0
Details:		0
<b><i>answered question</i></b>		<b>0</b>
<b><i>skipped question</i></b>		<b>70</b>

### Question 3 – Frequency of visits

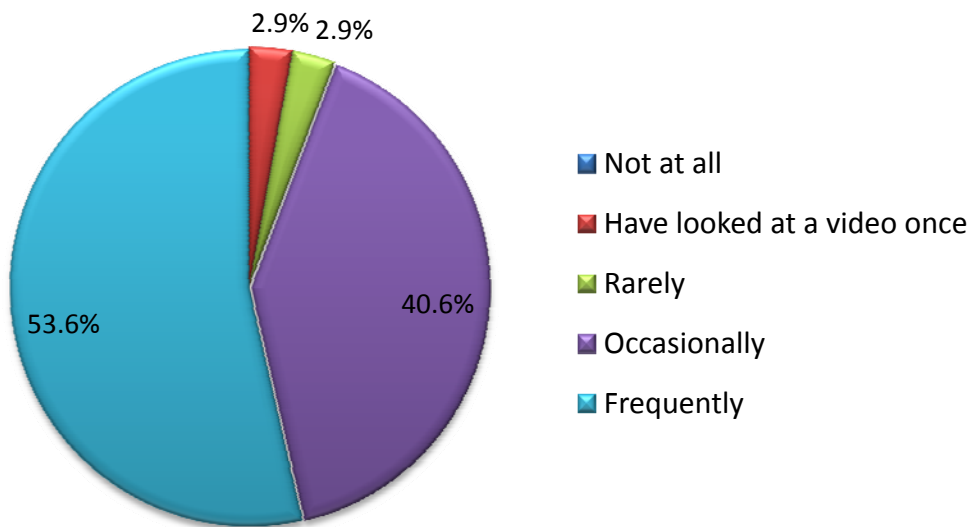
Survey respondents were asked to estimate the frequency with which they visit the macSmart site. This information is useful for providing insight into typical usage patterns and in particular to determine whether usage is in response to formal notification of new content. More than half of the respondents (53%) indicated that they look at videos on the site frequently and a further 40% do so occasionally. The frequency with which subscribers return to the web site suggests that they are finding ongoing value in the information that is published there.

Site analytics reveal periods of peak web site activity following formal notification of new content. Subscribers are for example sent an e-mail each time a new video is released on the macSmart site and site visits typically increase significantly in the days following distribution of these e-mail. The comments provided by respondents in relation to this question also reinforce the importance of formal notification in prompting subscribers to return to the site to view new material.

How often do you look at videos on the macSmart website?		
Answer Options	Response Percent	Response Count
Not at all	0.0%	0
Have looked at a video once	2.9%	2
Rarely	2.9%	2
Occasionally	40.6%	28
Frequently	53.6%	37
Comments		8
<b><i>answered question</i></b>		<b>69</b>
<b><i>skipped question</i></b>		<b>1</b>



### How often do you look at videos on the macSmart website?



### Comments from respondents

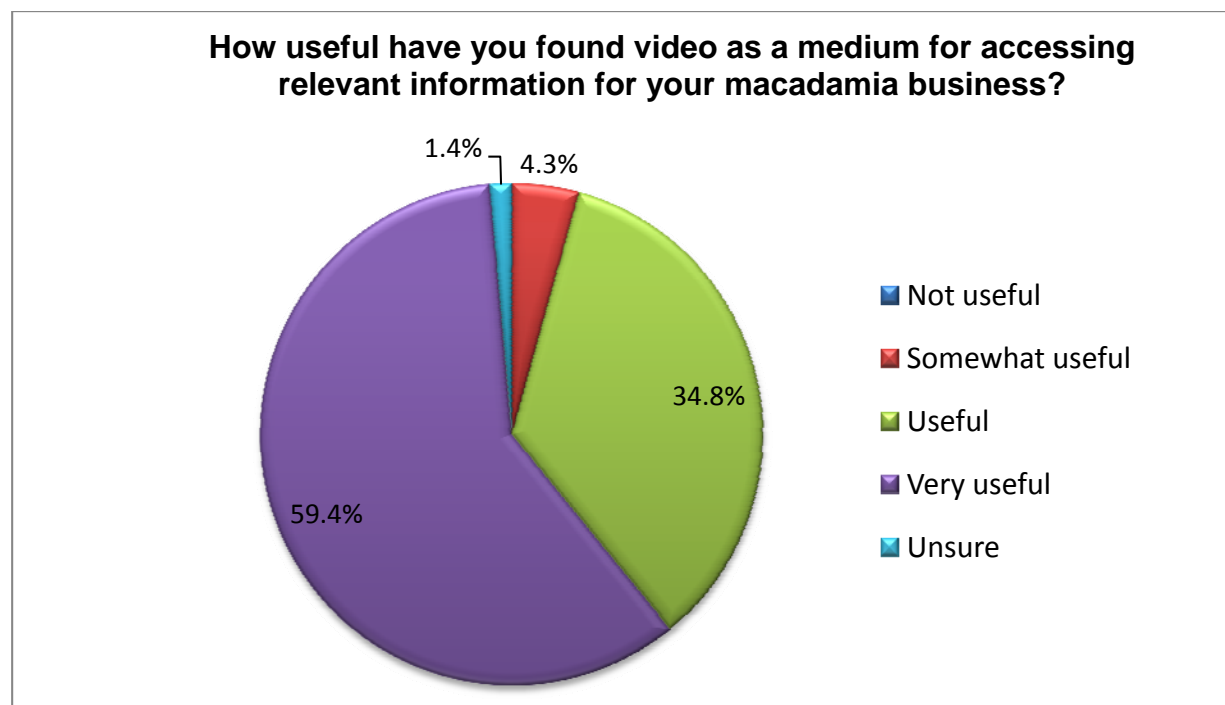
1. *Probably would look more often if prompted. Perhaps it would be a sound idea to send out a list of videos available on a monthly basis.*
2. *I tend to watch each video following notification of availability.*
3. *Very valuable and effective way of communicating information and storing it for future reference.*
4. *very effective method of getting message across.*
5. *Excellent very informative.*
6. *I look at most videos for which I get an email notification.*
7. *And every time we are advised of a new one by email.*
8. *I always look at each new video.*

## Question 4 – Usefulness of video as an information source

With the majority of macSmart content being published in the form of videos, it is important to assess how useful subscribers found video in general as a medium for accessing relevant information pertaining to their business. Over 94% of respondents indicated that they found video *useful to very useful* for accessing relevant information for their farming business.

Site analytics suggest that video is by far the most popular content on the site. 15 of the top 20 pages visited on the macSmart site are video stories.

How useful have you found video as a medium for accessing relevant information for your macadamia business?		
Answer Options	Response Percent	Response Count
Not useful	0.0%	0
Somewhat useful	4.3%	3
Useful	34.8%	24
Very useful	59.4%	41
Unsure	1.4%	1
Comments		5
<i>answered question</i>		<b>69</b>
<i>skipped question</i>		<b>1</b>



## Comments from respondents

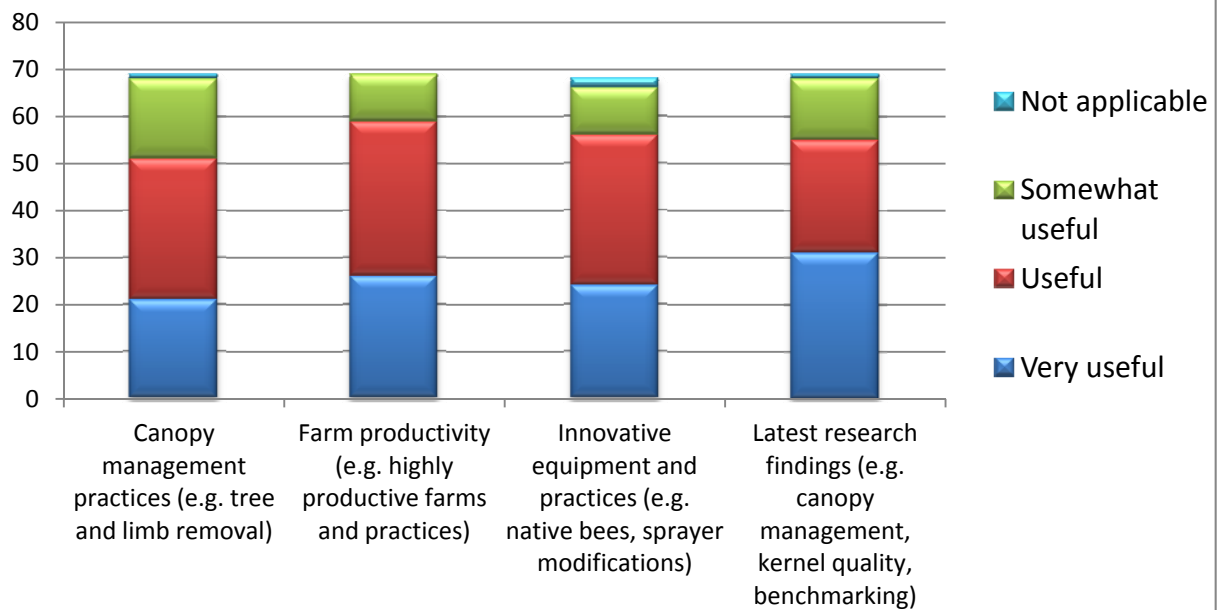
1.	<i>My main focus is drawing the video's to the attention of growers.</i>
2.	<i>It is very valuable to learn via visual presentation what other successful growers are doing and how they may deal with common problems faced by growers. Being able to see the trees and farm habit is wonderful. A picture paints a thousand words.</i>
3.	<i>The videos are my favourite part of the website.</i>
4.	<i>It is much more handy and better tabulated than most books. But why is it necessary to have password security??????</i>
5.	<i>There are some which I look at and if they don't pertain to our orchard practices I never look at that one again.</i>

## Question 5 – Usefulness of video content

The original focus on canopy management during the pilot stage of the project was expanded to include case studies of highly productive farms and management practices, examples of grower innovation and results of industry funded research. This survey question was used to determine how useful the videos within each of these categories were to subscribers. More than 73% of respondents indicated that they found all four of these topics *useful or very useful*.

Below are the current video topics on the macSmart website. How useful have you found the videos within each of these topics in providing relevant information to your macadamia business?						
Answer Options	Not applicable	Not useful	Somewhat useful	Useful	Very useful	Response Count
Canopy management practices (e.g. tree and limb removal)	1	0	17	30	21	69
Farm productivity (e.g. highly productive farms and practices)	0	0	10	33	26	69
Innovative equipment and practices (e.g. native bees, sprayer modifications)	2	1	10	32	24	69
Latest research findings (e.g. canopy management, kernel quality, benchmarking)	1	0	13	24	31	69
Comments						2
<b><i>answered question</i></b>						<b>69</b>
<b><i>skipped question</i></b>						<b>1</b>

**Below are the current video topics on the macSmart website.  
How useful have you found the videos within each of these  
topics in providing relevant information to your macadamia  
business?**



#### Comments from respondents

1. *Farm productivity video didn't have enough detail we need to know fert. rates what they're using etc.*
2. *Helps us to make decisions about our practices.*

## Question 6 –Coverage of topics

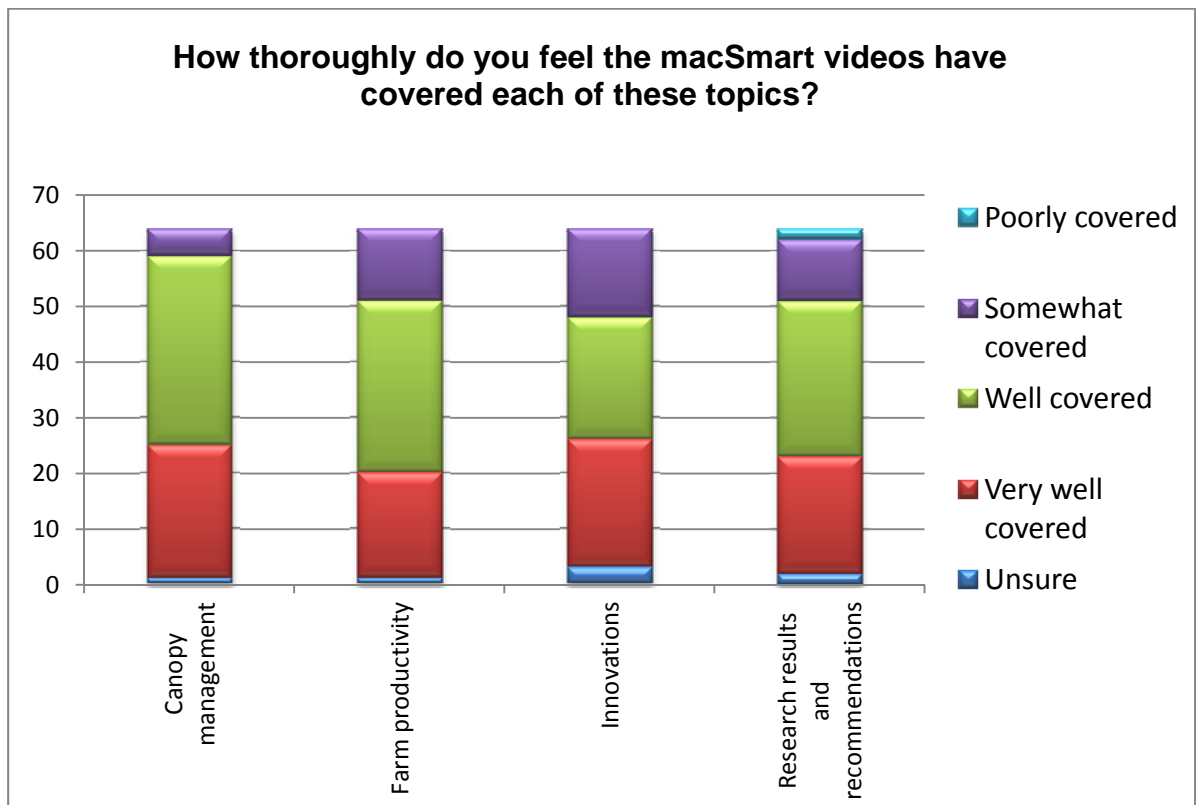
This question sought feedback on how well each of the four main topics had been covered by the video material produced to date. Canopy management was regarded as the most thoroughly covered topic with over 90% of respondents indicating that it was *well covered or very well covered*. As the focus during the pilot stage of the project was exclusively canopy management, this topic has also benefited from more time and resources than the other three topics, which were included in the project during 2013. Accordingly, there is a much larger volume of canopy management material on the macSmart site when compared with the other topics, as shown below.

Topic	Videos produced as at September 2014
<b>Canopy management</b>	32
<b>Productivity</b>	10
<b>Innovation</b>	10
<b>Research reports</b>	5
<b>Total</b>	<b>57</b>

Responses to this question have highlighted a possible need for further coverage of farm productivity, innovation and research. Comments also revealed strong interest in more innovation stories in particular. Some useful suggestions also emerged regarding linkages with supplementary information such as fact sheets and following up existing stories to further explain progress and results.

**How thoroughly do you feel the macSmart videos have covered each of these topics?**

Answer Options	Poorly covered	Somewhat covered	Well covered	Very well covered	Unsure	Response Count
Canopy management	0	5	34	24	1	64
Farm productivity	0	13	31	19	1	64
Innovations	0	16	22	23	3	64
Research results and recommendations	2	11	28	21	2	64
Please provide details about how we could improve coverage of these topics						19
<i>answered question</i>						<b>64</b>
<i>skipped question</i>						<b>6</b>



## Comments from respondents

1.	<i>Provision of more economic information.</i>
2.	<i>How do you find out about innovations? Hard to do.</i>
3.	<i>innovations are always extremely helpful esp. if they are not beyond the scope of on farm DIY</i>
4.	<i>There may be benefit in a follow up to original stories, illustrating changes say 2 years down the track.</i>
5.	<i>An opportunity to ask question and request specific aspects of the topics.</i>
6.	<i>There needs to be some summary videos of research topics, such as a summary of the key findings on storage research, groundcover Research and use, nutrition etc.</i>
7.	<i>More, more, more!!</i>
8.	<i>Just keep doing what you're doing and advise us of anything new in the industry.</i>
9.	<i>would like to see more innovations from individual farmers, as far as pest and diseases would like more information on products to be used, when to be used how often, mixing ratios, would like to see a video of trunk drenching for treating Phytophthora disease.</i>
10.	<i>I think they sometimes need to be augmented with extra info/factsheets. For example with the in-auger dehusker it's not possible to work out how to build one from the video alone, it would be better if there were line drawings showing exactly how to make it - either in the video or as pdf attachment.</i>
11.	<i>Keep doing what you are doing. It's great.</i>
12.	<i>Benchmarking video, interesting and informative, however time to carefully look at the graphs would be good. A written document that compliments the video would be excellent.</i>
13.	<i>Canopy Management - tie the video into a research project with hard facts: report on control groups in comparison to test rows for regrowth length, density and measured crop returns - before, during and after the regrowth periods Farm productivity - present video findings on crop volumes before, during and after nutrient variable applications, e.g. using boron - instead of untested 'blanket statements' that "boron applications may correlate to increases in yields" Innovations - farm videos that show how people have adapted machinery specifically for their farming needs Research results and recommendations: more tabulated data should be released for people to read and draw conclusions/generate ideas from. Current projects may not be generating valuable data sets, but public scrutiny of the results will provide more honest feedback on if these data sets should be continued, expanded upon or scrapped. Discussion generated from results is more valuable than recommendations alone - from the project intentions.</i>
14.	<i>Canopy management has perhaps been over-emphasised. Innovations are always interesting.</i>
15.	<i>Simply by producing more. We are all still learning constantly.</i>
16.	<i>More videos from a wider range of contributors and follow up on existing topics.</i>
17.	<i>More on the above.</i>
18.	<i>Further in the field videos, more detail, perhaps a summary pdf as a supplement to the videos?</i>
19.	<i>I think you need some more detailed information for the more advanced growers. I think getting some of the researchers to comment on some aspects of the stories undertaken by growers.</i>



## Question 7 – Additional topics

There were some excellent suggestions provided by respondents for additional video topics. This included more videos on existing topics, follow-up videos from earlier stories and new suggestions such as pest and disease management, soil management, nutrition & fertiliser application and machinery & equipment.

What additional topics would you most like to see covered in a macSmart video?	
Answer Options	Response Count
	40
<b>answered question</b>	<b>40</b>
<b>skipped question</b>	<b>30</b>

### Responses

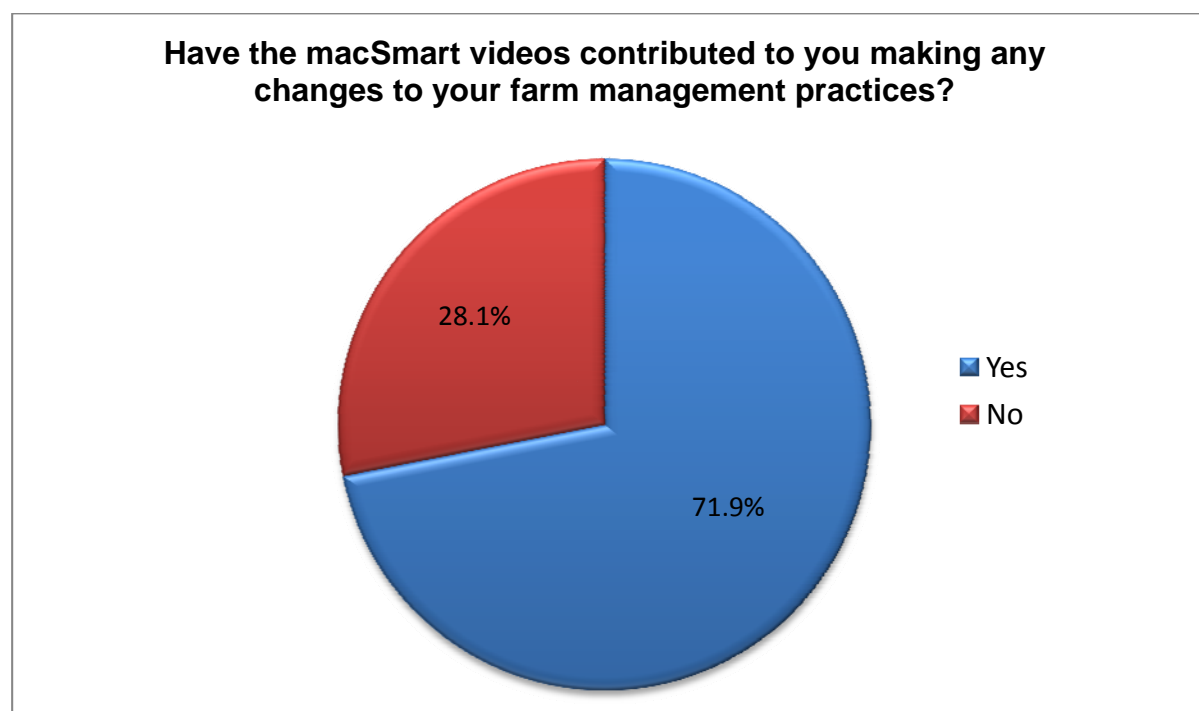
1.	<i>Pest management.</i>
2.	<i>More on innovations.</i>
3.	<i>Foliar spray, Phytophthora control.</i>
4.	<i>Harvesting equipment development - Monchiero versus traditional - plus equipment sharing options. Drainage and water management on the farm plus smother grass application options. Marketing of macadamias - what has been done, where is the industry going, what happens when China wants to saturate the global market thus driving down all prices and killing quality.</i>
5.	<i>Spray effectiveness is a hot topic. The sprayer demo'd at recent MacGroups was impressive and would video well.</i>
6.	<i>Management of old trees and pest recommendations. Information on new varieties.</i>
7.	<i>Machinery - best machines for particular jobs.</i>
8.	<i>Erosion controls for difficult areas.</i>
9.	<i>Nutrients and fertilizing. Lace bug and Sigastus weevil management</i>
10.	<i>Fertiliser amounts on highly productivity farms, also how many tonnes each farm is producing and how the tonnes per hectare rate was worked out.</i>
11.	<i>More information on biological controls, chemicals and fertilisers.</i>
12.	<i>The key aspects of soil management and how it relates to tree health, not just balancing cations. The role of soil health in managing phytophthora. The fertilisation and pollination process - what we need to get a good nut set.</i>
13.	<i>Perhaps a pest inspection topic which could show and discuss critical flower and nut development stages for pest inspection plus research information/visuals to help identify and control pests. Not an additional topic but more orchard floor management videos would be great, particularly as it relates to improving/maintaining soil health.</i>
14.	<i>Monthly vids on what we should be doing this month...a video planner.</i>
15.	<i>Tips for harvesting from grass.</i>
16.	<i>More on productivity improvements and best business practices. Knowing what the highly profitable farmers are doing.</i>
17.	<i>Comparison of different machinery for soil profiling- minimising erosion is a vital issue for productivity and sustainability. While most machines cover roots, good water management may not be achieved. Maybe we should be making more use of graders?</i>

18.	<i>Soil erosion.</i>
19.	<i>Information on Lace Bug and how to get rid of it.</i>
20.	<i>Problems with machinery, every farmer has problems with their machinery, maybe a forum on things we can do to make machinery better, make service machinery easier for the hands on farmer even warning farmers of things that have happened that we should all be aware of.</i>
21.	<i>There are so many topics, but in depth coverage and more sites for each topic.</i>
22.	<i>Biological control for pest problems.</i>
23.	<i>Organic fertilisers vs chemical fertilisers. Charts of content for comparison, then explore application techniques, then show the results over a time frame of short term (3-6 months), medium term (1-2years) then long term residual results (3-5years). It's a long term project for a video - but in an industry like macadamias slow long term projects are more valuable in archive over time...</i>
24.	<i>Any new research findings</i>
25.	<i>Tree varieties and their particular strengths and weaknesses. Current research into pests eg lace bug and FS bug.</i>
26.	<i>Re nutrition, there is a myriad of products out there, especially in the micro-nutrient field. What do the growers that are high bench mark grower's use???</i>
27.	<i>Soil analysis and fertiliser recommendation to suit examples</i>
28.	<i>The Australian average production of 2.2 tonnes NIS per hectare (we understand) is pretty pathetic, when double that figure is easily attainable. Focused specific advice towards producing up to and beyond 4 - 5 tonnes per hectare would be most welcome! Not all farmers are trained in agriculture; some of us are living the dream of sustainable production after living through other professions or general jobs in life. Don't worry about repeating topics which may have been covered before; there are lots of us newbies out here!</i>
29.	<i>More on erosion control.</i>
30.	<i>Lace bug research and control.</i>
31.	<i>I think a case study video on developing an orchard from scratch and the perceived problems and tasks which could be encountered and how to cope with such problems.</i>
32.	<i>Pest monitoring, soil health.</i>
33.	<i>More details on fertiliser programs being specific for different conditions.</i>
34.	<i>Ground cover. Composting.</i>
35.	<i>Results of dwarf tree evaluations.</i>
36.	<i>N/A</i>
37.	<i>Erosion control. Establishing sweet smother grass.</i>
38.	<i>Nutrition, composting, foliar applications, timing-leaf tests.</i>
39.	<i>Pest management, setting up an orchard.</i>
40.	<i>I think more integrated farm productivity videos - essentially what the best growers do. I think a video of the next silver bullet tour and how the participants bring the information together from each farm visited. Use videos to illustrate the point. A video on setting up your own nursery. While I think it should be discouraged lots of people have a go and turn out lots of pretty average trees. If we can't stop them I think we should make some effort to try to get them to grow better trees. The basis of a livestock industry video ( eg SheepSmart - a contradiction in terms) would be on getting your breeding stock right if you want a profitable future.</i>

## Question 8 – Practice change

One of the major goals of the project in providing improved access to high quality and timely information is to increase adoption of successful management practices. This question was important in determining if growers had implemented changes to their farm management practices as a result of watching a macSmart video. A total of 71.9% of respondents indicated that macSmart videos had contributed to them making changes to their farm management practices.

Have the macSmart videos contributed to you making any changes to your farm management practices?		
Answer Options	Response Percent	Response Count
Yes	71.9%	46
No	28.1%	18
If yes, could you please provide details		35
<i>answered question</i>		<b>64</b>
<i>skipped question</i>		<b>6</b>



## Comments from respondents

1.	<i>Orchard floor management, pruning.</i>
2.	<i>Making compost, drainage works for erosion control, limb removal, the right equipment for the job.</i>
3.	<i>Fitted rubbers to auger (Charles Burgess) video selective limb removal; smother grass planting.</i>
4.	<i>Modified equipment and farm practices.</i>
5.	<i>Canopy management and orchard floor optimisation very helpful.</i>
6.	<i>Flow of advice to growers. Cannot be more specific.</i>
7.	<i>Canopy management. Soil removal.</i>
8.	<i>Helping to make decisions over canopy management.</i>
9.	<i>Doing more canopy management.</i>
10.	<i>We have adopted canopy management techniques.</i>
11.	<i>Changes to canopy management systems.</i>
12.	<i>Improved timeliness of management practices.</i>
13.	<i>The canopy management videos have encouraged us to try a range of methods to limit canopy growth and allow more light into the orchard. Also the latest productivity overview has again focused our attention on soil health.</i>
14.	<i>Orchard Floor Management.</i>
15.	<i>Orchard floor practices.</i>
16.	<i>But reinforce decision making.</i>
17.	<i>Charles Burgess auger modifications to small Bill Farrell harvester.</i>
18.	<i>Used canopy management video to proceed with tree removal on my own farm.</i>
19.	<i>Added Boron to my spray, better floor management.</i>
20.	<i>Have taken on board a lot of information in regard to limb removal.</i>
21.	<i>Changing from a blower to a sweeper on my harvester. Adding a dehusker to the harvester. Making quite a few small changes which add up to a big difference.</i>
22.	<i>Introduction of native bees to help with pollination.</i>
23.	<i>Has confirmed that many of our existing practices have been adopted or used across industry. Some practices, while similar, also hinted at ways to adapt/streamline their similar practices and incorporate small features into our own.</i>
24.	<i>Striving towards more mulch (carbon) input and minimising erosion through establishing ground cover.</i>
25.	<i>Learn new approaches to problems. However I find the Mac Group meetings important as they allow questions and teasing out the issues.</i>

- |  |
|--|
| 26. <i>Canopy management mainly, reinforced ideas and practices.</i>   |
| 27. <i>We are a young farm 7yr old trees, however will be implementing practices commencing after this year's harvest.</i>   |
| 28. <i>Nothing major, but the videos have provided plenty of food for thought.</i>   |
| 29. <i>Limb removal and soil care.</i>   |
| 30. <i>I was never a fan of hedging, however, we now use it to keep the skirts up and sun coming into the orchard. In addition we employ selective branch removal.</i> |
| 31. <i>Not applicable.</i>   |
| 32. <i>I will be attempting native bee hive splitting.</i>   |
| 33. <i>Modifying equipment.</i>  |
| 34. <i>Not yet, but I would certainly take them into consideration for any future changes.</i>   |
| 35. <i>Canopy management has been useful as have parts of many of the other videos.</i>  |

## Question 9 – Favourite video

This question was included to determine whether there were strong preferences for any particular videos or video topics. Caution must be used when interpreting these responses as user preferences can be biased according to many factors such as the length of time since publication, length of subscription to the site and familiarity with the breadth of material on the site.

There was a relatively even spread of selected videos nominated by respondents as their most favourite video amongst the three topics of canopy management, productivity and innovation.

Topic	Favourite videos as at September 2014	As percentage of all videos
Canopy management	17	34%
Productivity	13	26%
Innovation	18	36%
Research reports	2	4%
<b>Total</b>	<b>50</b>	<b>100%</b>

By comparison, video popularity can also be measured according to total views as in the table below which lists the proportion of videos within the top 20 for number of views on the site for each of the same four categories. Canopy management is again the dominant topic when expressed as a percentage of the top 20 videos on the site. When expressed as a percentage of the number of videos available within each category however, productivity and innovation emerge as very popular topics.

Topic	Top 20 videos by category as at September 2014	As percentage of top 20	As percentage of video category
Canopy management	8	40%	25%
Productivity	5	25%	50%
Innovation	5	25%	50%
Research reports	2	10%	40%
<b>Total</b>	<b>20</b>		

## What has been your favourite macSmart video so far?

Answer Options	Response Percent	Response Count
Brett Newell's canopy management strategy	0.0%	0
Bruce Lilly's selective limb removal program	0.0%	0
Cincturing to control Abnormal Vertical Growth	2.0%	1
David Harris' canopy management program	0.0%	0
Doug Rowley's selective limb removal strategy	4.0%	2
Drying and handling nuts at Bundy Sort	0.0%	0
Drying system modifications with Peter Squire	0.0%	0
Evolution of a tree training system (Shaun Stead)	2.0%	1
Feral pig control	2.0%	1
Geoff Chivers holistic approach to canopy management	2.0%	1
Getting the most from contract hedging	0.0%	0
Graeme Fleming's canopy management strategy	0.0%	0
Growing macadamias in Emerald	0.0%	0
Growing macadamias in Mackay	2.0%	1
Harvest modifications for in-field dehusking (Charles Burgess)	14.0%	7
Harvester modifications for improved efficiency (Bob Willemse)	0.0%	0
Hedging at Sahara Farms	0.0%	0
Hedging machinery at Gray Plantations	0.0%	0
Hedging research update (Lisa McFadyen)	0.0%	0
Kim Wilson's approach to hedging	0.0%	0
Benchmarking results 2009-2013: Lessons that can be learned from the 2013 season	16.0%	8
Limb removal trials at Knockrow (John Allen)	2.0%	1
Low grafting of macadamia trees at Bundaberg (Chris Searle)	0.0%	0
Making compost with Doug Rowley	6.0%	3
Managing drainage with a rotary digger (Peter Boyle)	4.0%	2
Managing high density canopies in Bundaberg (Ray Norris)	0.0%	0
Native bee pollination (Chris Fuller)	8.0%	4
Orchard rejuvenation in Bundaberg (Scott Allcott)	4.0%	2
Overview of canopy management research (Lisa McFadyen)	2.0%	1
Peter Boyle on selective limb removal in A4 trees	0.0%	0
Preparing an orchard for hedging	0.0%	0
Productivity case study, Merraldan Farm (Canopy and orchard floor management)	2.0%	1
Productivity case study, Merraldan Farm (Harvesting and post harvest handling)	0.0%	0
Productivity case study, Merraldan Farm (Overview)	0.0%	0
Productivity case study, Plantation Lorna	4.0%	2
Productivity case study, Wirrimbi Orchard	0.0%	0
Selection of dwarf trees in the macadamia breeding program	2.0%	1
Shaun Stead's limb removal strategy	6.0%	3
Silo modifications to manage brown centres in macadamia kernels	0.0%	0
Sprayer modifications for better coverage in tall trees and useability on cross slopes (Noah Seccombe)	0.0%	0
Summary of industry on-farm benchmarking results (2009-2012)	0.0%	0
The importance of canopy management (Paul O'Hare)	6.0%	3
The problem of mistletoe in macadamias at Bundaberg (Chris Searle)	0.0%	0
Training systems for young macadamia trees (Scott Norval)	0.0%	0
Tree removal at Benworth farm (Tim Salmon)	0.0%	0
Tree removal at Victoria Park (Warren Elvery)	4.0%	2
Tree removal research update (Lisa McFadyen)	2.0%	1
Tree removal strategy at Tweebrena farm (Greg Jones)	4.0%	2
Comments		19
<b>answered question</b>		<b>50</b>
<b>skipped question</b>		<b>20</b>

## Comments from respondents

1. *Excellent farmer innovation.*
2. *Cheap, easy on farm mod.*
3. *All good stuff. Personal bias on display.*
4. *We had already started to incorporate native bees at our new farm so was good to know we are on the right path.*
5. *Doug Roley story.*
6. *Too hard to pick a favourite! Recently, found the overview of top performing mature orchards very interesting and exciting for the future as our farm approaches full maturity.*
7. *Canopy management.*
8. *Hard to say without going back and more detailed reviewing.*
9. *Easy low cost solution.*
10. *Enjoyed lots of them and found most of them helpful.*
11. *A lot of great videos.*
12. *Farm Productivity video was good too.*
13. *They are all of interest but machinery particularly interests me.*
14. *Robbie's most recent one reporting on high achievement farms. Although broad-brush as was necessary, it whetted the appetite.*
15. *Probably Shaun Stead's on canopy management, but most of them have been interesting, even if you don't always agree with some opinions.*
16. *Enthusiastic presentation.*
17. *Canopy Management.*
18. *Could be the future for the macadamia industry.*
19. *The ones with me in it. No real favourites actually.*

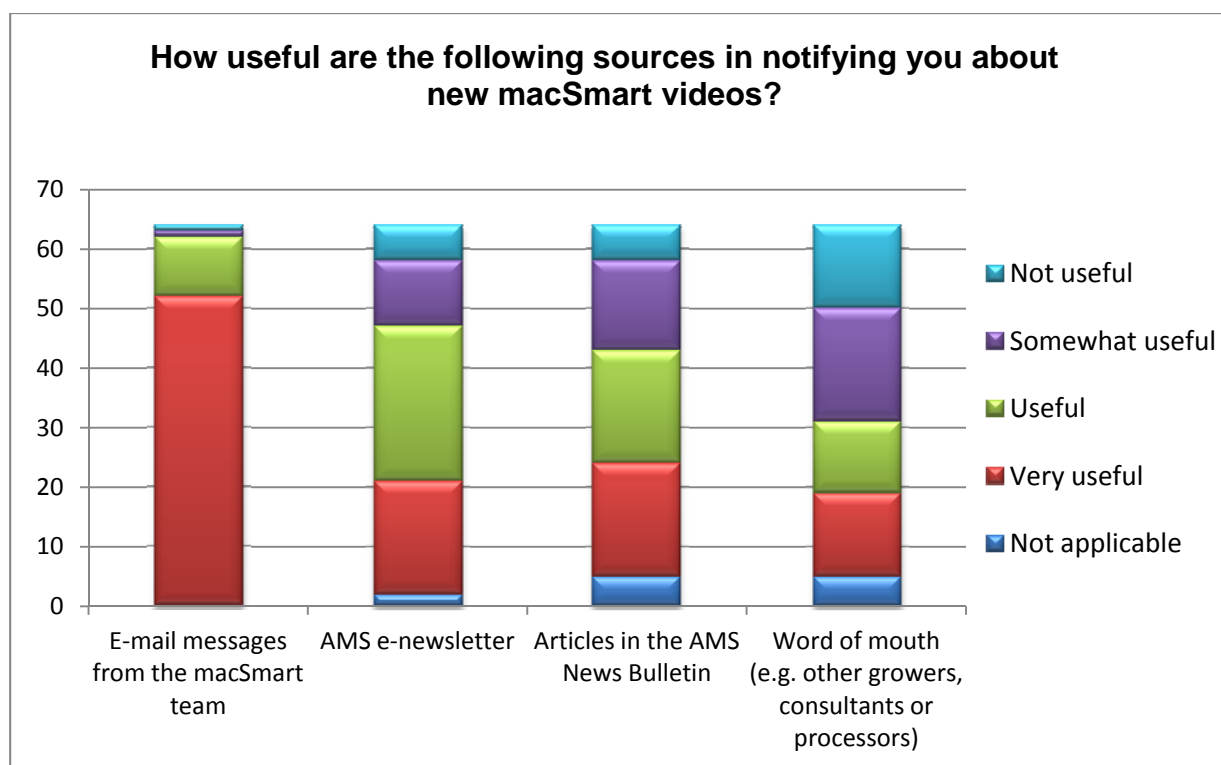


## Question 10 – Notification sources

Email messages alerting subscribers to new videos published on the website represented the most useful source of user notification, with over 96% of respondents indicating that email messages were either *useful* or *very useful*. The AMS e-newsletter was the next most useful source with over 70% of respondents indicating it was either *useful* or *very useful*.

Responses and feedback to other questions in the survey reinforced the importance in general of notification for alerting users to new content.

How useful are the following sources in notifying you about new macSmart videos?						
Answer Options	Not useful	Somewhat useful	Useful	Very useful	Not applicable	Response Count
E-mail messages from the macSmart team	1	1	10	52	0	64
AMS e-newsletter	6	11	26	19	2	64
Articles in the AMS News Bulletin	6	15	19	19	5	64
Word of mouth (e.g. other growers, consultants or processors)	14	19	12	14	5	64
Other sources (please list)						2
<i>answered question</i>						<b>64</b>
<i>skipped question</i>						<b>6</b>



**Other sources:**

- |                               |
|-------------------------------|
| 1. <i>Mac-groups</i>          |
| 2. <i>Email from friends.</i> |

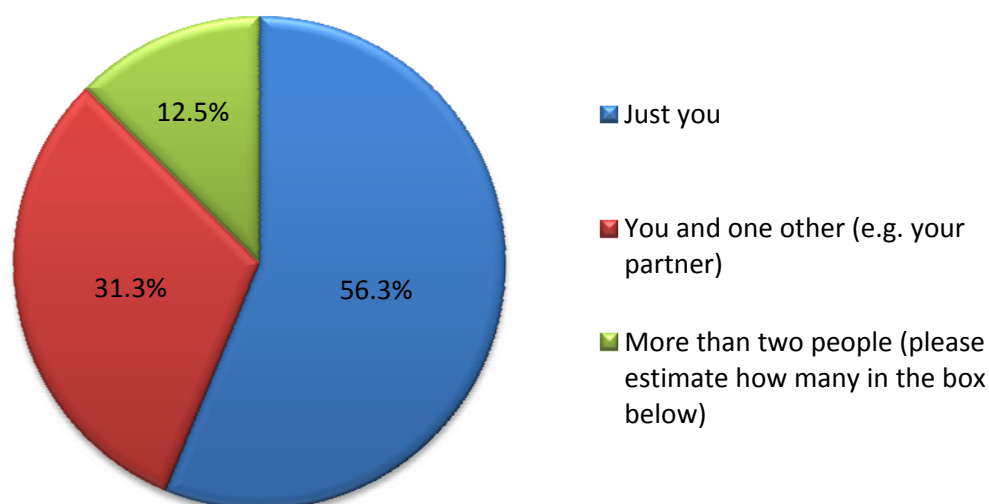
## Question 11 – Number of people watching videos

The macSmart website has 347 subscribers. To establish how many people watch macSmart videos under the one subscription we asked respondents how many people are likely to watch videos with them. This question was important to gauge the extent of macSmart's coverage within the macadamia industry. Nearly half of the respondents indicated that they watch videos with other people with some respondents watching videos with up to five people. Consultants and grower liaison officers for example typically play videos in conjunction with some of their clients. This demonstrates that the video content is likely to be reaching far more viewers than just the 347 subscribers.

**Some people watch macSmart videos for their own purposes while others may view videos with neighbours, family or clients. When you watch a macSmart video, how many people are likely to watch that video with you (e.g. you play the video for others or refer others to that video via your macSmart account).**

Answer Options	Response Percent	Response Count
Just you	56.3%	36
You and one other (e.g. your partner)	31.3%	20
More than two people (please estimate how many in the box below)	12.5%	8
<b><i>answered question</i></b>		<b>64</b>
<b><i>skipped question</i></b>		<b>6</b>

**When you watch a macSmart video, how many people are likely to watch that video with you?**



**Further details:**

1.	4 people
2.	3 people
3.	5 people
4.	4 people
5.	4 people
6.	3 people
7.	3 people
8.	5 people

## Question 12 – Growing Guide – Frequency of use

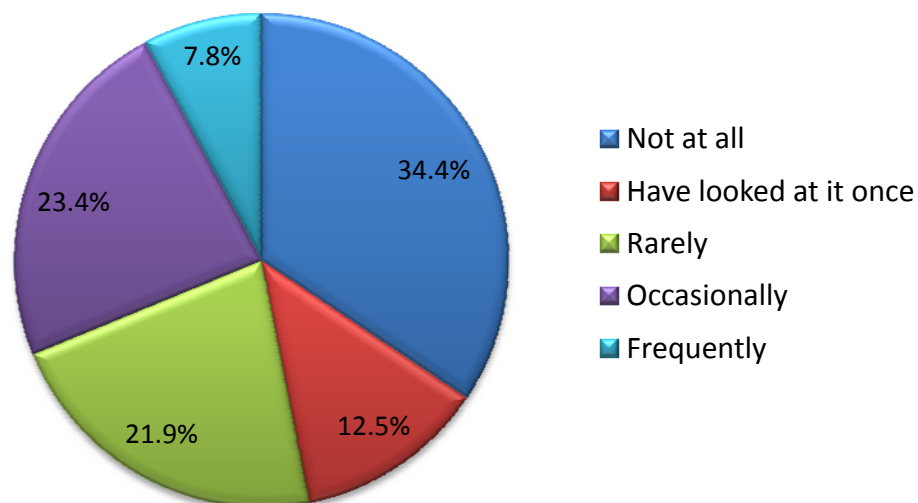
Questions 12 to 20 of the survey involved evaluation of the ‘non-video’ material that is also hosted on the macSmart website. This includes electronic books such as the Macadamia Industry Code of Sound Orchard Practices (COSOP), Macadamia Growing Guide and Pest Facts book.

Survey results indicate that videos are the primary material accessed on the macSmart site. Site metrics confirm that subscribers do also access electronic guides, however they do so far less frequently than the video material on the website.

Of the 64 respondents who answered this question, only five indicated that they frequently referenced the Growing Guide on the macSmart website. Comments from respondents provide some of the reasons why subscribers don’t reference the Growing Guide through the site. This includes users’ preference for hard copy, not knowing the guide was available or in some cases, downloading the information from another source.

How often do you look at the Growing Guide on the macSmart website?		
Answer Options	Response Percent	Response Count
Not at all	34.4%	22
Have looked at it once	12.5%	8
Rarely	21.9%	14
Occasionally	23.4%	15
Frequently	7.8%	5
Comments		8
<i>answered question</i>		<b>64</b>
<i>skipped question</i>		<b>6</b>

### How often do you look at the Growing Guide on the macSmart website?



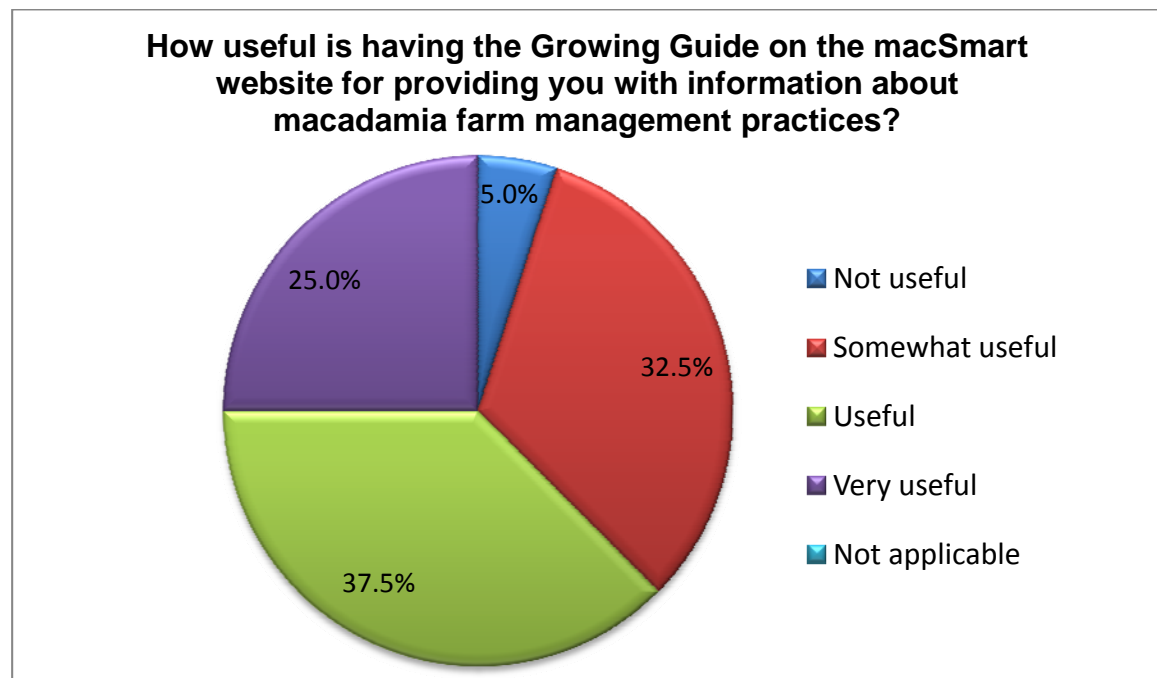
### Comments from respondents

1. *Use hard copy.*
2. *We have been farming for a long time and have quite a few books ourselves on pests etc. Also we use consultants for IPM and annual soil/leaf analysis and fertiliser recommendations.*
3. *On the list!*
4. *I tend to refer to the written document. I do realize it can get out of date.*
5. *Not aware will now look.*
6. *Did not know about them.*
7. *To be honest I haven't had a chance to look at them.*
8. *Does anyone look at COSOP? I always download relevant sections of growing guide directly from deedi website as no password and I can give it directly to new clients.*

## Question 13 – Usefulness of Growing Guide

Of those respondents who referenced the Growing Guide through the macSmart website, over 62% found the information *useful or very useful*.

How useful is having the Growing Guide on the macSmart website for providing you with information about macadamia farm management practices?		
Answer Options	Response Percent	Response Count
Not useful	5.0%	2
Somewhat useful	32.5%	13
Useful	37.5%	15
Very useful	25.0%	10
Not applicable	0.0%	0
Comments		2
<i>answered question</i>		<b>40</b>
<i>skipped question</i>		<b>30</b>



## Comments from respondents

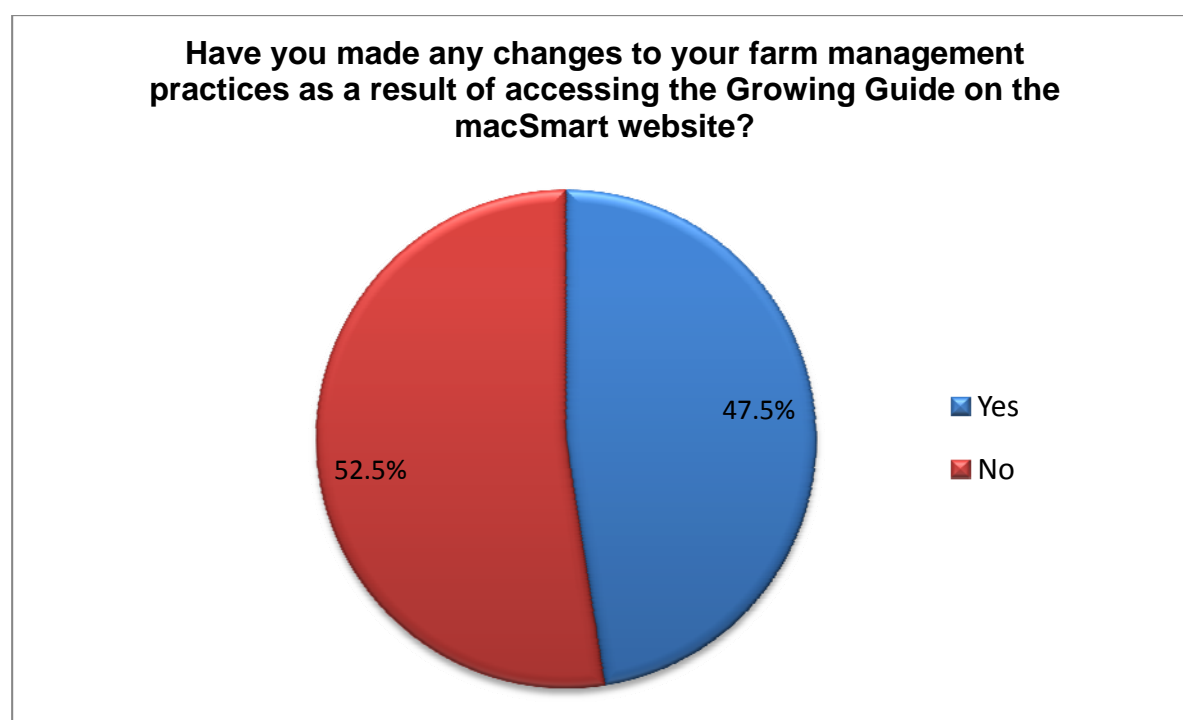
1. *It needs to have a Web and printable version for the page/section you are looking at.*
2. *I think it could do with more detail; there is more in the old Agrilink. It's not easy to find more info when needed*



## Question 14 – Growing Guide – Practice change

A key outcome of hosting the Growing Guide on the macSmart website was that 47.5% of the 40 respondents indicated that they had changed their farm management practices as a result of its use.

Have you made any changes to your farm management practices as a result of accessing the Growing Guide on the macSmart website?		
Answer Options	Response Percent	Response Count
Yes	47.5%	19
No	52.5%	21
Comments		2
<i>answered question</i>		<b>40</b>
<i>skipped question</i>		<b>30</b>



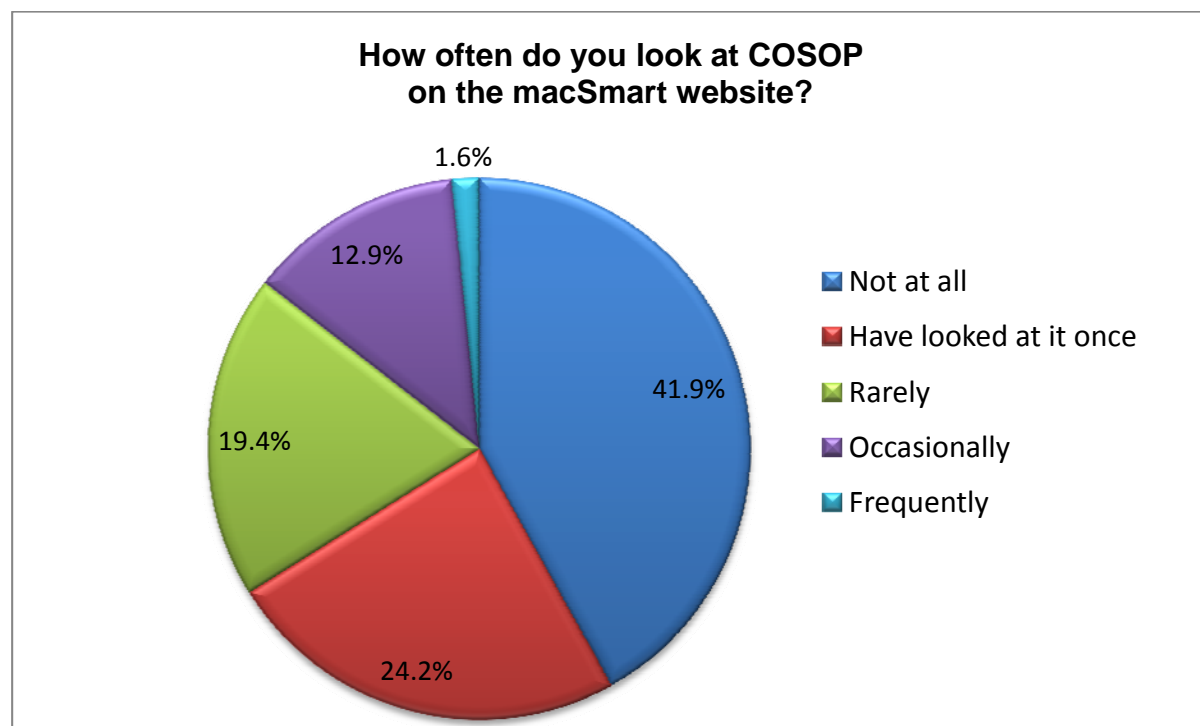
### Comments from respondents

1. *By way of reference to growers.*
2. *Changes normally arise from Mac Group meetings, Best Practice meetings and discussions with Processor, other growers and consultants. Guide may prompt.*

## Question 15 – COSOP - Frequency of use

Only 1 respondent indicated that they *frequently* reference COSOP via the macSmart website. A further 41.9% of respondents indicated that they have never looked at COSOP via the site. Comments from respondents suggest use of hard copies is their preferred format for this information.

How often do you look at COSOP on the macSmart website?		
Answer Options	Response Percent	Response Count
Not at all	41.9%	26
Have looked at it once	24.2%	15
Rarely	19.4%	12
Occasionally	12.9%	8
Frequently	1.6%	1
Comments		9
<i>answered question</i>		<b>62</b>
<i>skipped question</i>		<b>8</b>



## Comments from respondents

1. *I look at my printed copy.*

2. *We have the hard copy and have been macadamia farming for 20 years.*

3. *Usually at the beginning of new season.*

4. *Also on the list of things to do!*

5. *I use the written document.*

6. *I refer to my copy of the manual.*

7. *If a question pops up pertaining to the COSOP, then I'll look at it.*

8. *I have never looked at COSOP since we made the changes.*

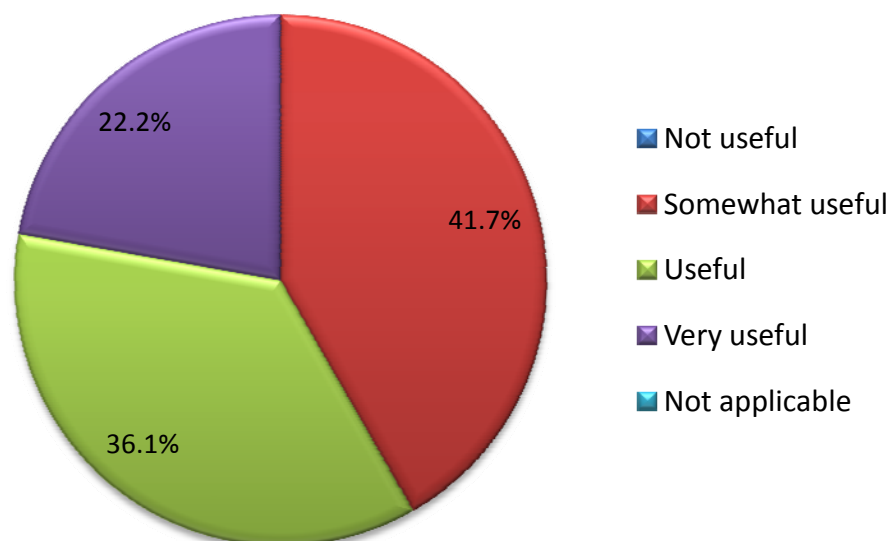
9. *Have my own hard copy.*

## Question 16 – Usefulness of COSOP

Of the 36 respondents who have used COSOP via macSmart, over 58% found it *useful or very useful*.

How useful is having COSOP on the macSmart website for providing you with information about macadamia farm management practices?		
Answer Options	Response Percent	Response Count
Not useful	0.0%	0
Somewhat useful	41.7%	15
Useful	36.1%	13
Very useful	22.2%	8
Not applicable	0.0%	0
Comments		2
<b>answered question</b>		<b>36</b>
<b>skipped question</b>		<b>34</b>

**How useful is having COSOP on the macSmart website for providing you with information about macadamia farm management practices?**



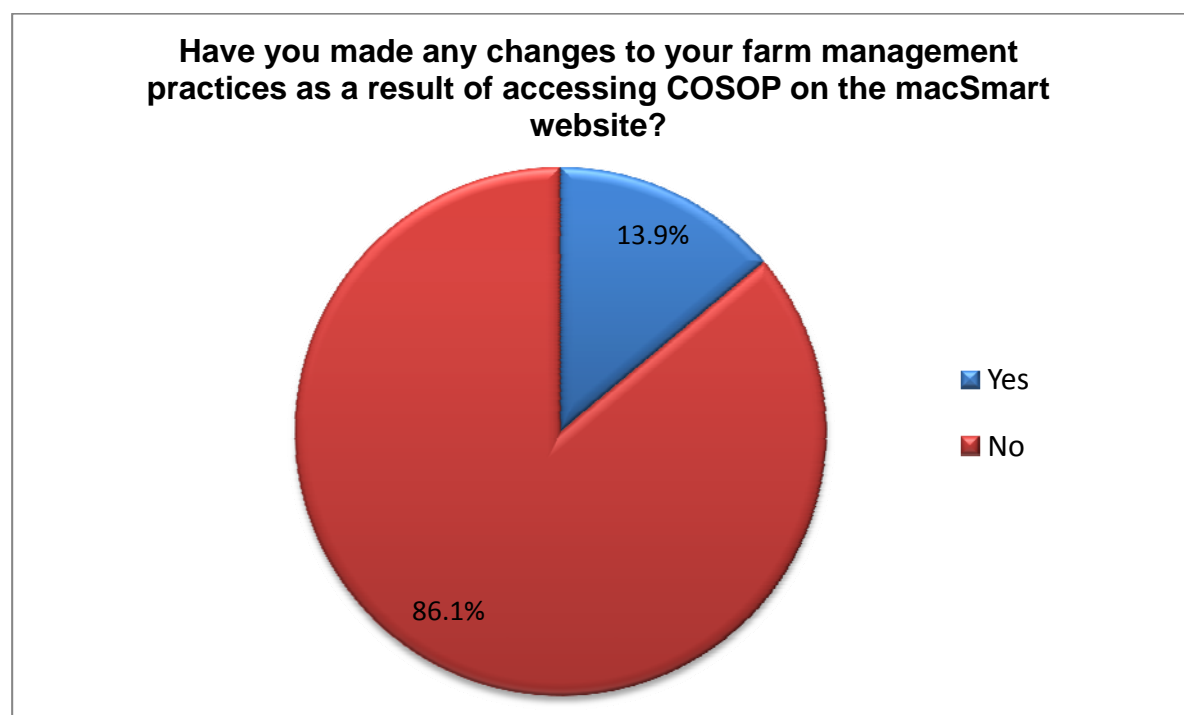
## Comments from respondents

1. *Have a hard copy which I refer to.*
2. *As macSmart is password protected new growers, customers and the general public can't access it - very difficult to use as a reference when it can't be accessed. Also it is not in a print friendly format.*

## Question 17 – COSOP – Practice change

Only 5 of the 36 respondents who answered this question have made changes to their farm management practices as a result of accessing COSOP via the macSmart website.

Have you made any changes to your farm management practices as a result of accessing COSOP on the macSmart website?		
Answer Options	Response Percent	Response Count
Yes	13.9%	5
No	86.1%	31
If yes, could you please briefly provide details about any changes you have made?		1
<i>answered question</i>		<b>36</b>
<i>skipped question</i>		<b>34</b>



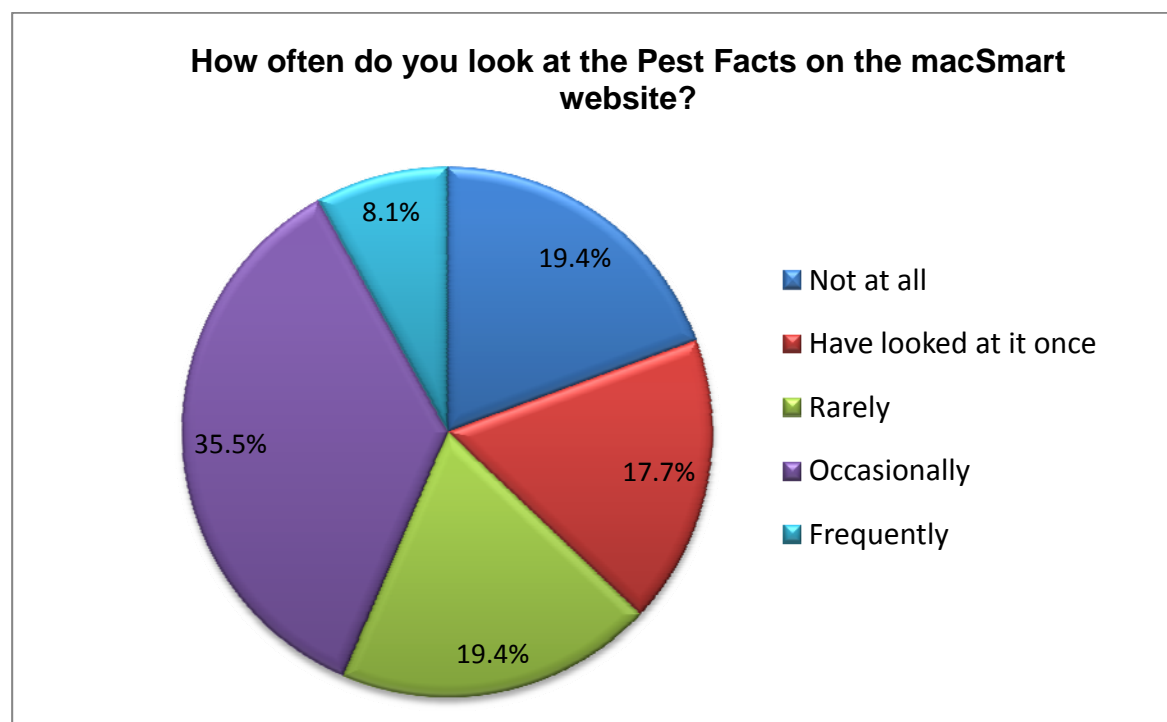
### Further details

1. Referral to growers only

## Question 18 – Pest Facts – Frequency of use

Following the same trend as other electronic books such as COSOP and the Macadamia Growing Guide, only 8.1% of respondents indicated that they frequently look at Pest Facts via the macSmart website.

How often do you look at the Pest Facts on the macSmart website?		
Answer Options	Response Percent	Response Count
Not at all	19.4%	12
Have looked at it once	17.7%	11
Rarely	19.4%	12
Occasionally	35.5%	22
Frequently	8.1%	5
Comments		5
<i>answered question</i>		<b>62</b>
<i>skipped question</i>		<b>8</b>



### Comments from respondents

<i>1. Refer previous comments.</i>
<i>2. Over reliance on pest scout.</i>
<i>3. I use the Pest Guides I have purchased.</i>
<i>4. Only because I haven't stumbled upon this one yet. Sounds promising though.</i>
<i>5. I discuss pests with my monitoring folk.</i>



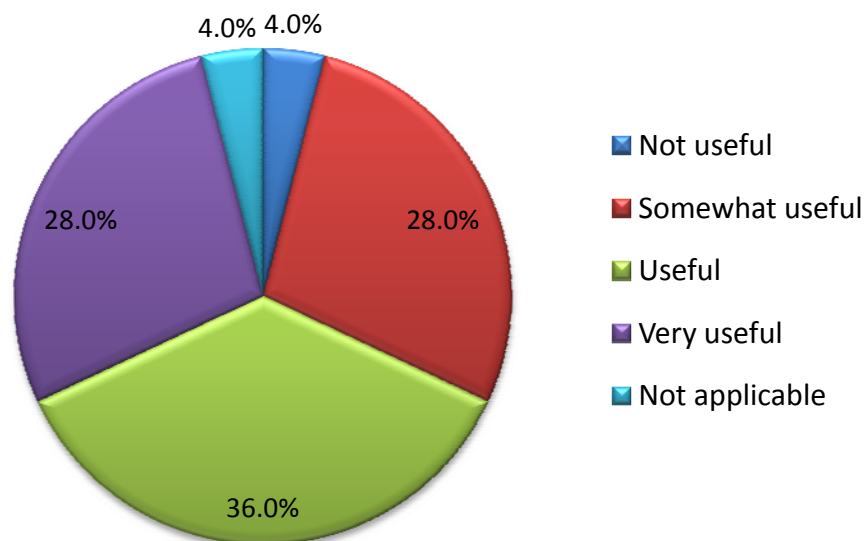
## Question 19 – Usefulness of Pest Facts

Despite its limited usage compared with other macSmart sections, 64% of respondents indicated that they found the Pest Facts section either *useful or very useful*.

**How useful is having the Pest Facts on the macSmart website for providing you with information about macadamia farm management practices?**

Answer Options	Response Percent	Response Count
Not useful	4.0%	2
Somewhat useful	28.0%	14
Useful	36.0%	18
Very useful	28.0%	14
Not applicable	4.0%	2
Comments		6
<b>answered question</b>		<b>50</b>
<b>skipped question</b>		<b>20</b>

**How useful is having the Pest Facts on the macSmart website for providing you with information about macadamia farm management practices?**



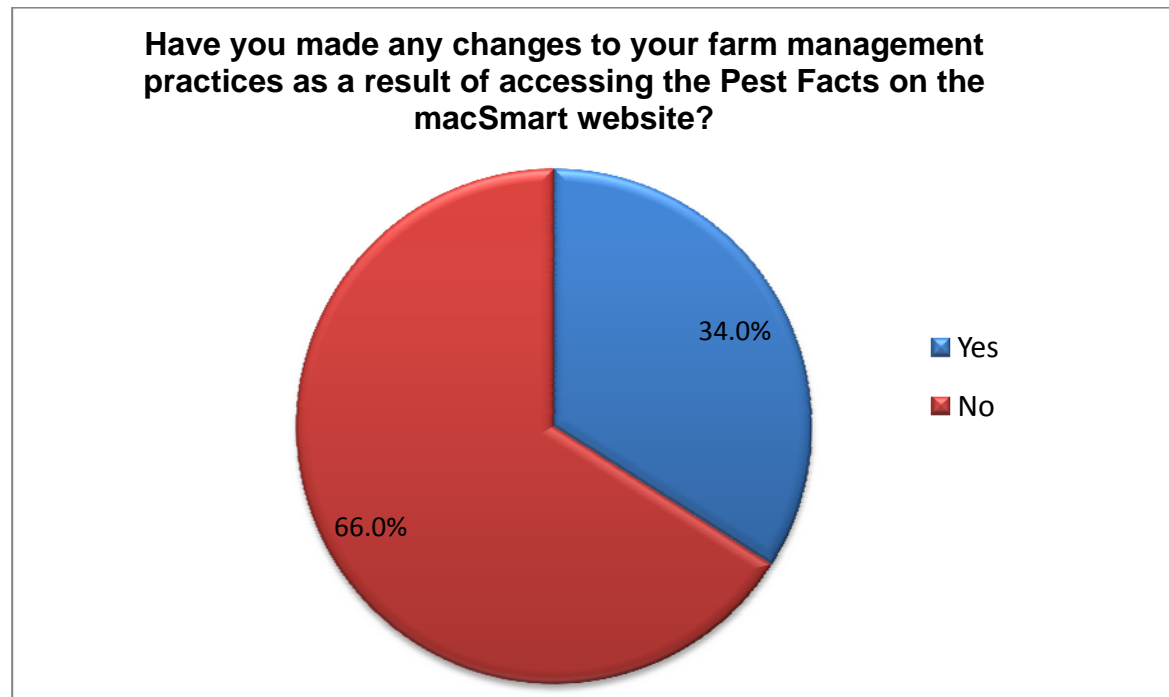
## Comments from respondents

1. *Again, need to be reminded that it is there.*
2. *Needs some more up to date info on new pests like lace bug and Sigastus weevil and their management.*
3. *Little booklet (QDPI?) is comprehensive.*
4. *I rely on my pest scout for pest control programs.*
5. *Need to keep farmers up to date with what chemicals are registered for particular pests and diseases, application rates, when applied etc.*
6. *Haven't looked yet.*

## Question 20 – Pest Facts – Practice change

Only 17 of the total 50 respondents to this question indicated that they have made changes to their farm management practices as a result of accessing the Pest Facts guide via the macSmart website.

Have you made any changes to your farm management practices as a result of accessing the Pest Facts on the macSmart website?		
Answer Options	Response Percent	Response Count
Yes	34.0%	17
No	66.0%	33
If yes, could you please briefly provide details about any changes you have made?		11
<i>answered question</i>		50
<i>skipped question</i>		20



## Further details

1.	<i>Obligatory pest assessments now.</i>
2.	<i>Referral to growers only.</i>
3.	<i>Monitoring and treatment of Lace Bug.</i>
4.	<i>Spray regime.</i>
5.	<i>Better understanding of urgency of lace bug control.</i>
6.	<i>Checking more often.</i>
7.	<i>Helped us identify the lace bug and fruit spotting bug but really needed more information in regard to treatment.</i>
8.	<i>Observe trees frequently, and more aware of pest presence and numbers.</i>
9.	<i>I use the book.</i>
10.	<i>We employed the services of an IPM consultant.</i>
11.	<i>Not applicable.</i>

## Question 21- General feedback

This final question provided an opportunity for survey respondents to make general comments about the macSmart web site and any of its content. A total of 29 respondents provided feedback.

Are there any other comments you would like to make about macSmart?	
Answer Options	Response Count
	29
<b>answered question</b>	<b>29</b>
<b>skipped question</b>	<b>41</b>

### Comments from respondents

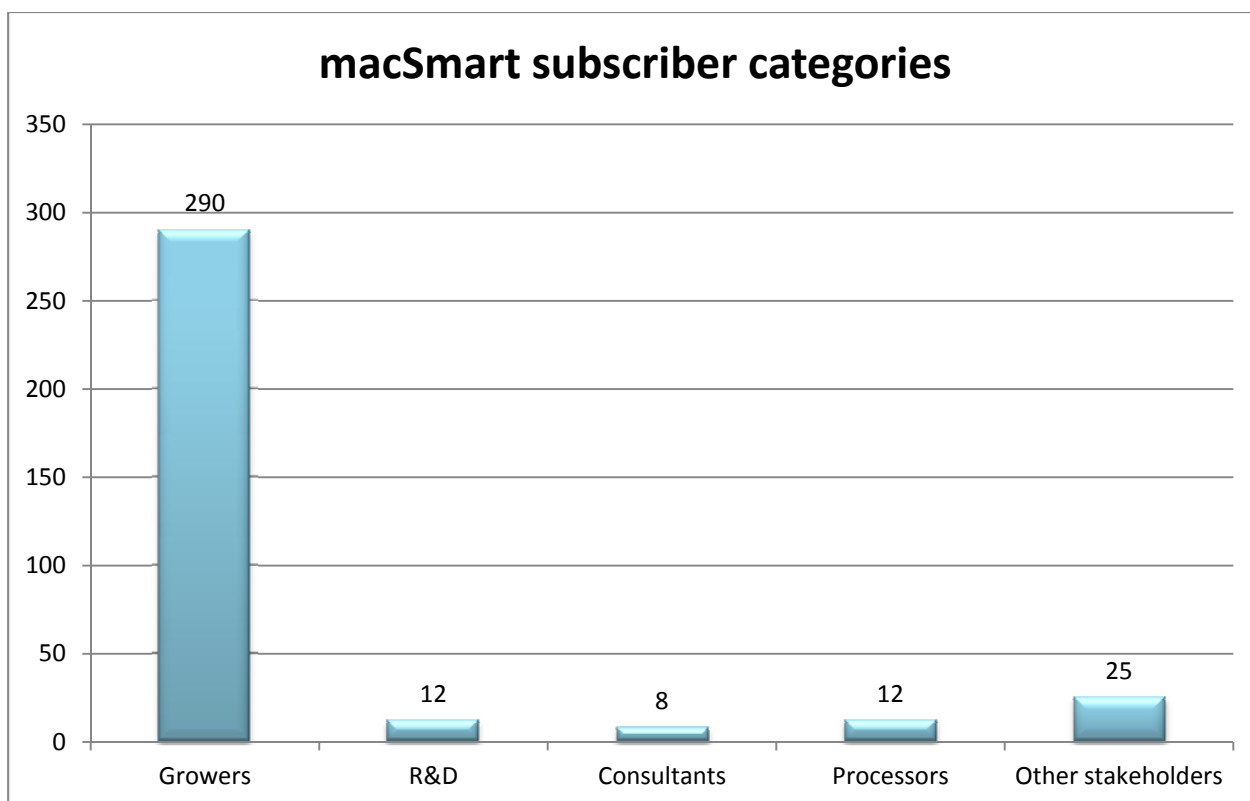
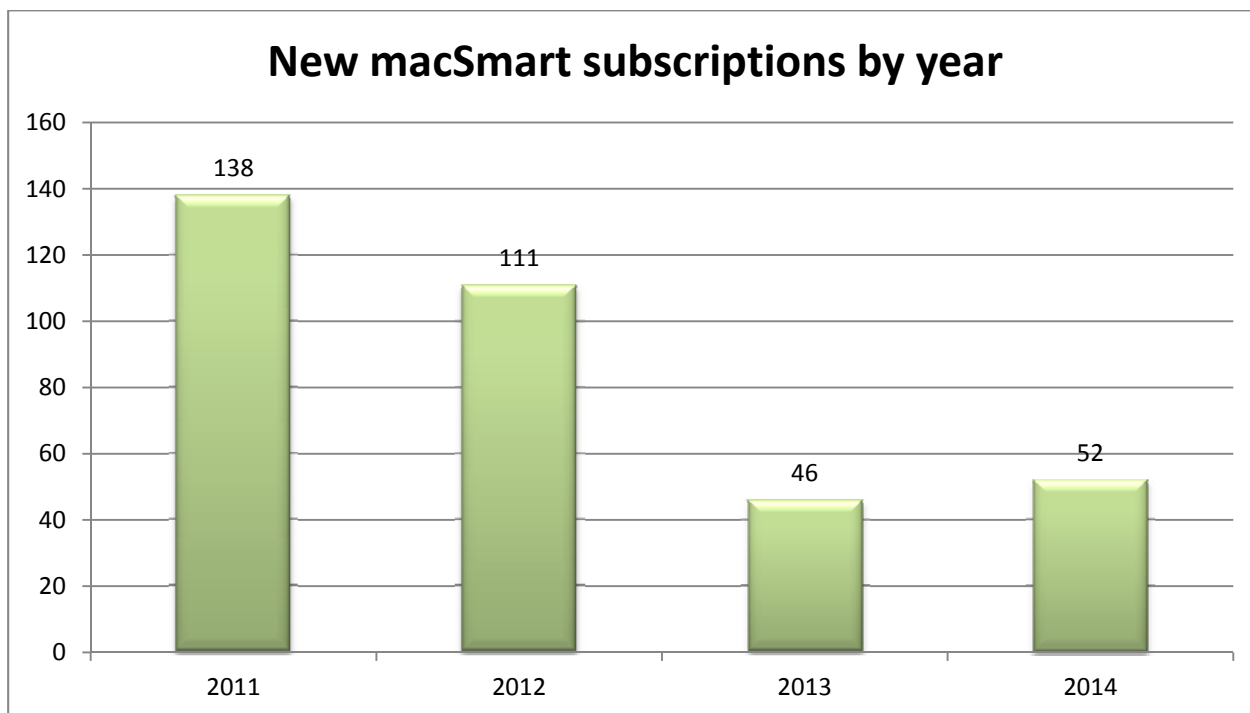
1. <i>Keep up the excellent work.</i>
2. <i>Being able to see what the best growers are doing.</i>
3. <i>The best source of information .I wish we had this when we started out (it is the next best thing to a traditional field day....(actually in many regards it is better). I believe that macSmart along with Mac-groups and benchmarking have transformed the macca industry for the better.</i>
4. <i>It's a great program. Keep it going please.</i>
5. <i>Good, but perhaps a little long, some questions almost doubling up.</i>
6. <i>We find macSmart a friendly tool which helps with our farming practices.</i>
7. <i>This is a great resource but being locked away means many growers don't use it as they forget their password and then say "I'll come back later to look at it" but never do it.</i>
8. <i>Excellent tool - please maintain!</i>
9. <i>MacSmart if a fantastic initiative which I would love to see continue and expand. It it a valuable repository for grower and research information presented in a visually interesting and easy to understand way. It is also dynamic so that as innovation happens, the site is updated. I also love that I can just be at home on the farm and find out what everyone is doing whether it is in Bundaberg or northern NSW. It is also of benefit when you may be feeling a bit disappointed with your season because you can be inspired by what others have achieved. Congratulations to the macSmart team and a big thank you!</i>
10. <i>Keep up the great work.</i>
11. <i>The recent video review of high producing mature farms is very good and will influence my decision making.</i>
12. <i>A very informative site for reference.</i>

13. <i>Would like to see an APP for smartphones, would be very handy as mentioned would like to see more information about phytophthora as this is a huge problem would like to see more information regard pest management, e.g. registered chemicals, application rates, withholding periods etc. (all this can be accessed from a smartphone and easily read and followed rather than looking up MSDS sheets filed away, or labels etc.).</i>
14. <i>Excellent work!</i>
15. <i>When the product is distributed – push it!!! Could do with more advertising - or even screen ALL videos in rotation at each Macgroup meeting - 1 video screened per Macgroup - they are short, and keeps them in people's heads as a resource worth considering...otherwise they just sit out there in the net ether....and don't get utilised!!!</i>
16. <i>I was not aware of the other sections of the MacSmart website but I will start to use them.</i>
17. <i>As a remote grower, this type of information is critical and an excellent source. Being able to visually see what they are talking about is like being at a field day.</i>
18. <i>I think macSmart is very valuable, but sometimes wonder if it could be a bit more pointed. An interesting topic: comparison between owning/leasing equipment (harvesters for example) against utilising contractors. Why is the security necessary???? Are we paranoid about someone else growing better maccas, or something? I personally find too much security to be oppressive, a bit like the proliferation of distracting signs on the highway. Makes you wonder why??? Who benefits?</i>
19. <i>I really value the resource which is an important part of the overall armory that every grower needs. Thank you.</i>
20. <i>Reason for the last 2 answers we do not use insecticide or glyphosate sprays.</i>
21. <i>Growers should be alerted to any new information that is uploaded to the macSmart site.</i>
22. <i>Really appreciate your efforts in creating an ongoing source of information and inspiration. Well done.</i>
23. <i>Keep the videos coming .case studies of farms is always very informative. Thanks.</i>
24. <i>Please never shut it down.</i>
25. <i>No.</i>
26. <i>I enjoy the videos and find them informative, I take more away from them than I do other literature, keep them up.</i>
27. <i>Great work and very informative</i>
28. <i>The main presenter is getting a bit long in the tooth and should be retired to radio.</i>
29. <i>MacSmart is a great tool for growers to update on subjects of interest and for new growers with all the questions it's helpful base information especially the visual aspect of the videos. They can see if this depicts their orchard situation.</i>

## **Appendix B: macSmart site metrics report**

## Subscriptions

Total subscribers: 347





Total videos by category	
Canopy management (27)	27
Productivity (10)	10
Innovation (12)	12
Research (6)	6
<b>Total</b>	<b>55</b>

Video and website views	
Total video views	6,159
Total page views (excluding landing)	35,752

## Top macSmart web pages

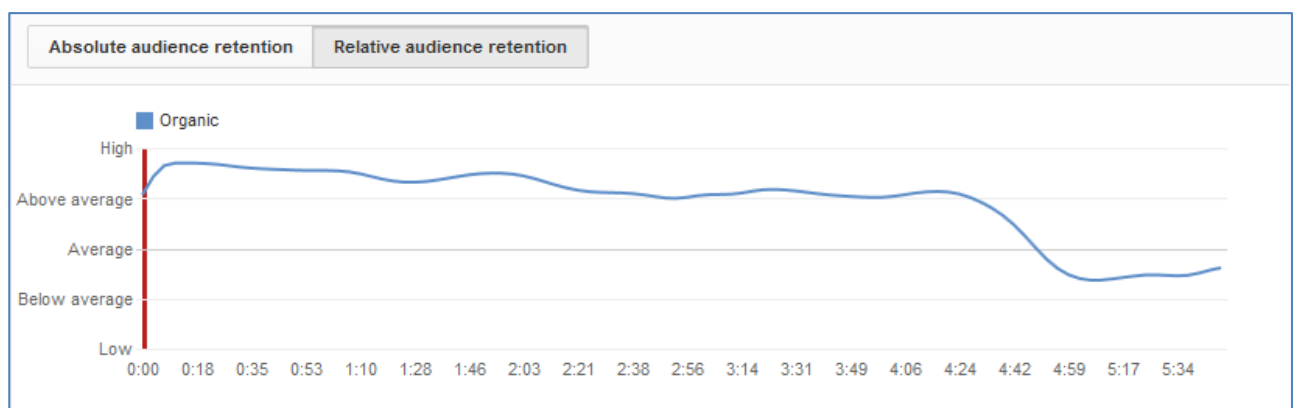
Rank	Page	Pageviews
1.	Home page	7,031
2.	<b>Videos:</b> Canopy management/limb removal	943
3.	<b>Videos:</b> Canopy management	870
4.	<b>Videos:</b> Canopy management/hedging-topping	866
5.	<b>Videos:</b> Innovation	735
6.	<b>Videos:</b> Orchard floor management	682
7.	<b>Videos:</b> Canopy management/tree removal	593
8.	<b>Videos:</b> Productivity/top performing farms	551
9.	<b>Videos:</b> Canopy management/overviews-research	402
10.	<b>Videos:</b> Canopy management/other methods	391
11.	<b>Videos:</b> Canopy management/young trees	279
12.	<b>Videos:</b> Productivity/improvements	245
13.	<b>Videos:</b> Productivity/benchmarking	243
14.	<b>Videos:</b> Research	243
15.	<b>Videos:</b> Productivity	238
16.	<b>Manual:</b> Insect pests	217
17.	Contact us page	193
18.	<b>Manual:</b> Growing guide	161
19.	<b>Videos:</b> Tree removal at Victoria Park	161
20.	<b>Manual:</b> COSOP	152
21.	<b>Manual:</b> Pest facts	149

## Top 20 videos by number of views

Rank	Title	Views	Publication date
1.	Native bee pollination	310	September 2013
2.	Tree removal at Tweebrena farm	179	January 2012
3.	Productivity case study – Merraldan Farm (Overview)	178	March 2013
4.	Harvester modifications for improved efficiency	175	September 2013
5.	Orchard rejuvenation in Bundaberg	172	August 2012
6.	Hedging research update	170	July 2012
7.	Lace bug in macadamia	168	August 2014
8.	Tree removal at Victoria Park	161	November 2011
9.	Limb removal trails at Knockrow	161	May 2012
10.	Graeme Fleming's canopy management strategy	161	January 2014
11.	Harvester modifications for in-field dehusking	161	March 2014
12.	Making compost with Doug Rowley	146	September 2012
13.	Productivity case study, Wirrimbi Orchard	145	April 2014
14.	Productivity case study, Plantation Lorna	144	October 2013
15.	Shaun Stead evolution of tree training strategy	143	November 2011
16.	Managing drainage with a rotary digger	141	January 2014
17.	Productivity study of mature macadamia orchards	138	July 2014
18.	Selection of dwarf trees in the macadamia breeding program	129	August 2012
19.	A holistic approach to canopy management	127	November 2011
20.	Productivity case study – Merraldan Farm (Canopy and orchard floor management)	120	March 2013

## Audience retention

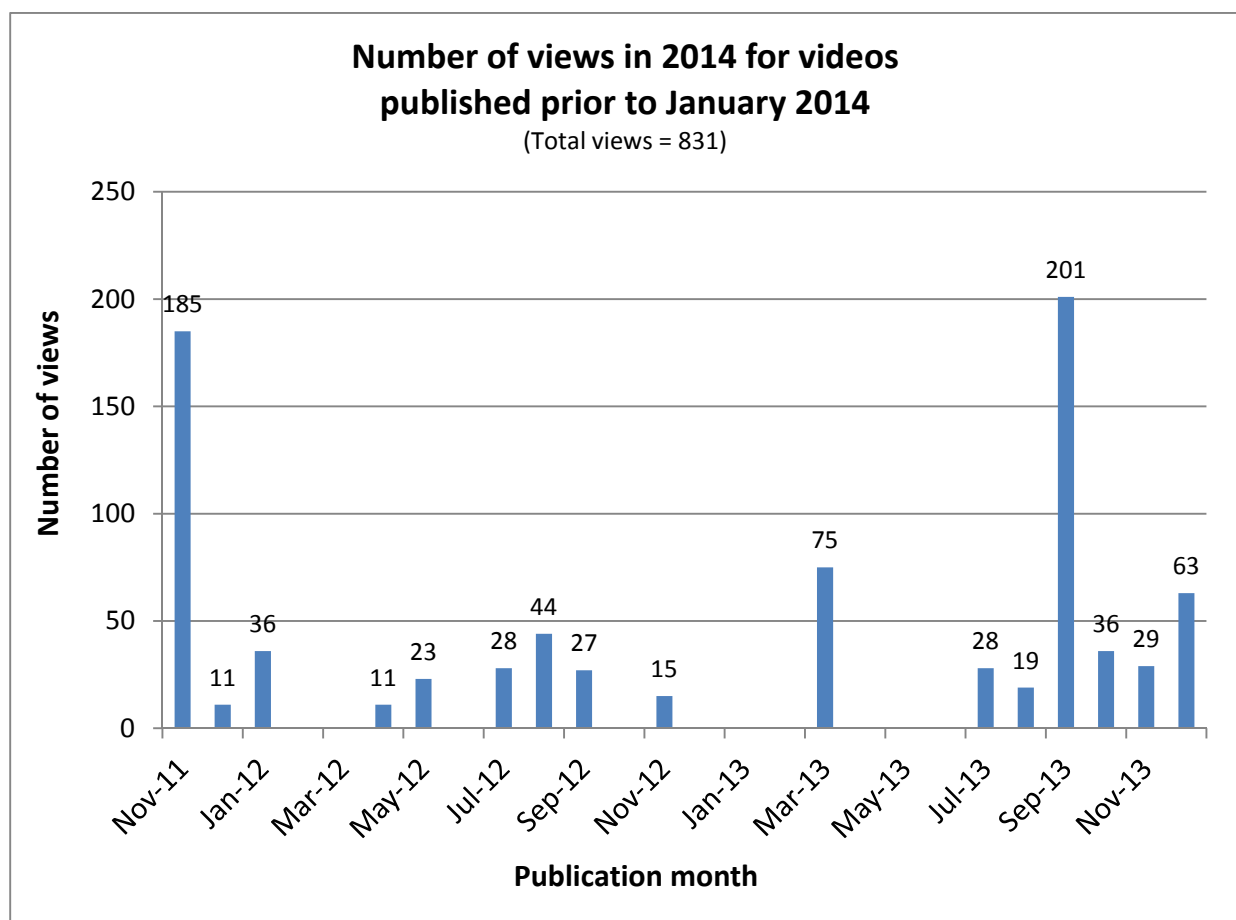
Relative audience retention shows a video's ability to retain viewers during playback in comparison to all YouTube videos of similar length. The higher the graph at any given moment, the proportionately more viewers kept watching the video over the preceding seconds of playback versus other videos at that same moment in their playbacks.



The above example is typical of most macSmart videos which demonstrated above average retention rates for nearly the full length of each video. Retention only declined at the end of each video during display of credits.

## Currency of videos

This is a measure of ongoing usage of older macSmart content. The chart below shows the number of times during 2014 that videos published prior to 2014 were viewed. These views are grouped by month of publication. This chart confirms that old content continued to be accessed on the macSmart site long after it was published.



## **Appendix C: macSmart content summary report**

## Content summary – Canopy management

Title	Date published	Views
Hedging at Sahara Farms	November 2011	87
Doug Rowley's selective limb removal strategy	November 2011	110
David Harris's canopy management program	November 2011	70
Kim Wilson's approach to hedging	November 2011	85
Brett Newell's canopy management strategy	November 2011	46
The problem of mistletoe in macadamias at Bundaberg	November 2011	43
Peter Boyle on selective limb removal in A4 trees	November 2011	69
Low grafting of macadamia trees at Bundaberg	November 2011	60
Bruce Lilly's selective limb removal	November 2011	54
The importance of canopy management	November 2011	45
Hedging machinery at Gray Plantations	November 2011	54
Shaun Stead's limb removal strategy	November 2011	119
A holistic approach to canopy management	November 2011	127
Tree removal at Victoria Park	November 2011	161
Preparing an orchard for hedging	November 2011	78
Getting the most from contract hedging services	November 2011	59
Shaun Stead evolution of tree training strategy	November 2011	143
Tim Salmon's tree removal strategy at the Benworth farm	December 2011	119
Canopy management strategy at Alloway Macadamia	January 2012	117
Tree removal at Tweebrena farm	January 2012	179
Training systems for young macadamia trees	January 2012	110
Cincturing in AVG trees	April 2012	104
Limb removal trials at Knockrow	May 2012	161
Hedging research update	July 2012	170
Tree removal research update	September 2012	115
Graeme Fleming's canopy management strategy	January 2014	161
Tree row removal case study	December 2014	71
<b>Total</b>		<b>2,717</b>

## Content summary – Productivity

Title	Date published	Views
Orchard rejuvenation in Bundabarg	August 2012	172
Productivity case study - Merraldan Farm (Harvesting and post-	March 2013	106
Productivity case study - Merraldan Farm (Canopy and orchard	March 2013	120
Productivity case study - Merraldan Farm (Overview)	March 2013	178
Macadamia industry benchmarking results (2009-2012)	August 2013	88
Productivity case study, Plantation Lorna	October 2013	144
Macadamia on-farm benchmarking for the 2013 season	December 2013	111
Productivity case study, Wirrimbi Orchard	April 2014	145
Lessons that can be learned from the difficult 2013 season	June 2014	119
Productivity study of mature macadamia orchards	July 2014	138
<b>Total</b>		<b>1,321</b>

## Content summary – Innovation

Title	Date published	Views
Drying system modifications with Peter Squire	August 2012	101
Making compost with Doug Rowley	September 2012	146
Drying and handling nuts at Bundy Sort	November 2012	94
Growing macadamias in Emerald	July 2013	94
Growing macadamias in Mackay	July 2013	51
Native bee pollination	September 2013	310
Harvester modifications for improved efficiency	September 2013	175
Feral pig control, Grower case studies from south east	November 2013	76
Managing drainage with a rotary digger	January 2014	141
Harvester modifications for in-field dehusking	March 2014	161
Sprayer modifications at Tallowood orchard	April 2014	110
Improving spray coverage in your orchard	December 2014	66
<b>Total</b>		<b>1,525</b>



## Content summary – all categories

Title	Date	Views
Canopy management research overview	November 2011	118
Selection of dwarf trees in the macadamia breeding program	August 2012	129
Tree training advances in the apple industry	November 2012	94
Silo modifications to manage brown centres in macadamia kernels	August 2013	88
Lace bug in macadamia: identification, monitoring and control	August 2014	167
Key findings from the China study tour 2013	Due January 2015	
<b>Total</b>		<b>596</b>