Hort Innovation

Final Report

Nursery Industry Statistics and Research

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Delivery partner:

Nursery & Garden Industry Australia

Project code:

NY16004

Project:

Nursery Industry Statistics and Research NY16004

Disclaimer:

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Summary

NY16004 Nursery Industry Statistics & Research was a strategic levy investment project designed to capture critical, timely and accurate data for the Australian nursery and garden industry.

The Nursery Industry has been concerned for some time that existing data sets do not represent the true value of the nursery industry and it is broadly undervalued. Although this point has been understood for some time, the industry has continued to face challenges and difficulties to collecting data, including:

- the diversity of the industry in:
    - the expansive variation in species type;
    - the varying value of a plant at different lifecycle stages, across all species; and
    - the different production methods required at each stage of growth mean specialist businesses are engaged at different stages of plant development;
- the management of double counting - production processes that involve plants being sold a number of times before the end user receives it;
- it is unlike the homogeneity of production horticulture;
- a general reluctance of industry stakeholders to participate – attributed to a fear of data sharing and confidentiality; and
- capacity of industry stakeholders to supply the data having regard to their business acumen and actual capture of information.

A number of approaches to obtain nursery industry data have been attempted and all have encountered the range of that have been impacted by the above considerations, and subsequently have failed to achieve the intended outcomes. However, using the knowledge of these barriers to participation this project has sought to overcome past challenges through an innovative approach using a multi-disciplined project team and having three stages with Stop/Go decision points at the end of each stage.

The approach combined a top-down, bottom-up methodology that concurrently provided the data for an industry snapshot and has prepared the industry to harness the benefits of having this data. The three project stages were:

Stage 1 - Data Audit & End User/Data Contributor Consultation

Stage 2 – Data Collection: plan, design, execution, analysis

Stage 3 – Data tool development

Project Stop/Go decisions were made by the Project Steering Committee through a review of the milestone reports at the end of each stage. Each review assessed the goals of the previous stage to determine whether progress of the project to the next stage was viable.

The project team consisted of the Nursery and Garden Industry Australia (NGIA), Down to Earth Research (DTER) and ACIL Allen Consulting (AAC).

The primary objectives of the project were:

- To complete an assessment of nursery industry data users and contributors during Stage 1 and by April 2017 to identify attitudes towards data sharing; capability to provide information required; and industry data needs and their priority for accurate design of data collection methodology and instruments for delivery in Stage 2.
- To complete a desk audit of nursery industry research to identify enduring, periodical, opportunistic data and data gaps during Stage 1.
- To complete 300 Computer Assisted Telephone Interviews (CATI) of a random sample of businesses to obtain a primary data set.
- To deliver accurate and verified industry statistics including but not limited to: Number of businesses; Volume of products sold; Farm gate value of greenlife; and Production area.
- To provide an evaluation of industry and past performance including key trends and issues; an insight into industry sentiment; and commentary on future development and growth opportunities using primary and secondary data sources within Stage 2.
- To deliver a data tool/s for data users based on their needs and priorities.

Using the three stage methodology and engaging with a dedicated Steering Committee this project has achieved the intended outcomes and can report key statistics for the 2015-2016 financial year.

During the course of the project a number of opportunities were identified for future nursery industry statistics and research project and the primary recommendations are outlined below. The full list of recommendations is available on page 18 of this report.

1. Hort Innovation and the Nursery Industry SIAP continue to support the continuation of a nursery industry statistics and research project.
2. Future project investments should give consideration to a multi-year projects to enable continuity and validation of data.
3. Consider engagement activities with the nursery and garden industry regional network to continue to educate nursery contributions on the benefits of data collections.
4. Future projects incorporate an in-depth analysis that focuses on current data priorities and new priorities as they change from time to time; and information trends and useful breakdowns for data tool design.
5. Incorporate supply chain validation of survey data results into future projects.
6. Develop a mock worksheet which demonstrates the process of managing empty cells in the survey responses. This is intended to make the process more transparent and to facilitate input into empty cell management.

For the first time, the Nursery Industry has credible information and key industry figures to use in informing; industry decision making, resource prioritisation, investment evaluation, strategic planning activities, market trends and tracking industry performance over time.

Keywords

Nursery industry research and statistics; nursery data tool; benchmarking; farm gate production value; 2015/16; nursery growers

Introduction

An objective of the Nursery Strategic Investment Plan of 2017-2021 is to *increase marketing effectiveness and efficiency and better decision-making based on increased industry knowledge*.[1] The Strategic Industry Advisory Panel for Nursery, via Hort Innovation has sought to address this objective through the delivery of NY16004 Nursery Industry Statistics & Research.

Initial levy-funded nursery industry data collection commenced in 2001, delivering two market updates each year. Following industry concern over the level of information and detail in the reports, the collection of this data ceased in 2010. In 2011 Horticulture Australia Limited (HAL) contracted NY11004 Industry Market Data with the intent to fill the research gap with a monthly data collection from industry capturing data including farm gate production value, full time equivalent (FTE) and volume of production. Despite extensive awareness of the project the collection failed to launch due to low initial participation. A point in time survey was adopted in place of this approach. The participation and engagement was higher. However as proper sampling technique was not used in this collection only raw, anonymous data was supplied to industry without interpretation or analysis. While this collection did inform industry as its accuracy could not be supported by recognised methodology and analysis it was not publically reported.

The challenges and learnings experienced through the delivery of NY1104 were given careful consideration when designing the approach to delivery of NY16004. With these in mind, a three-stage strategy was proposed to as follows:

Stage 1 - Data Audit & End User/Data Contributor Consultation

Stage 2 – Data Collection: plan, design, execution, analysis

Stage 3 – Data tool development

To assist in overcoming the barriers and challenges identified, the project was delivered through the collaboration of skills and experience of three professional organisations being NGIA, DTER and AAC whose representatives formed the project team. The roles of each organisation are broadly detailed below:

- NGIA formed the conduit between the industry and the project team, provided advice on industry specific needs, managed engagement activities and facilitated the administration and coordination of the project.
- DTER managed in-depth interviews, developed interview and survey instruments, briefed and managed the interviewing team at Market Metrics (supporting DTER), and analysed and reported on the findings.
- AAC had responsibility for oversight and quality assurance to the project and industry advice, management of the data audit and analysis, provision of findings, methodological and evaluation frameworks and data tool design and trailing.

The project team was supported by a Steering Committee which included three nursery levy paying greenlife production representatives being Hamish Mitchell, David Jakobs and Brett Sargeant as well as the Hort Innovation project manager Adam Briggs.

[1] Nursery Strategic Investment Plan 2017-2021 (p4), http://horticulture.com.au/wp-content/uploads/2017/06/HortInnovation-SIP-Nursery.pdf

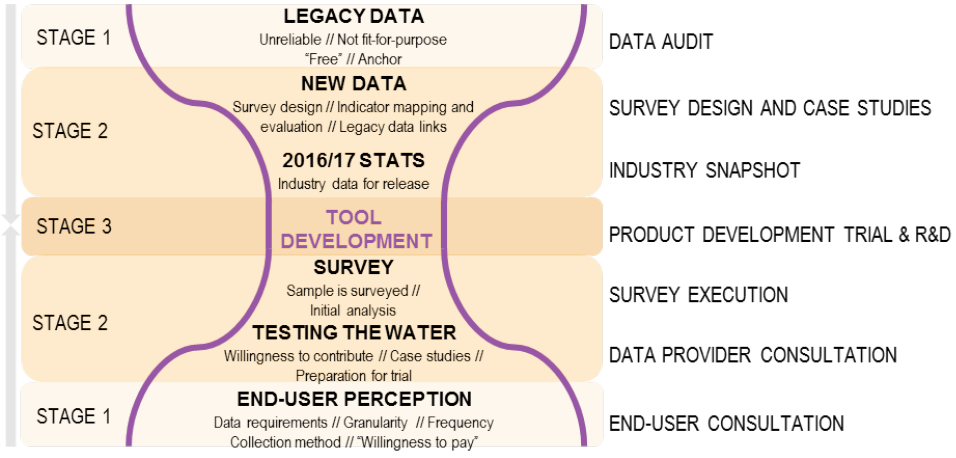
Methodology

The Project Team considered the past attempts at data collection, previous industry reporting and existing collections such as ABS data, to identify a better way for capturing industry data.

It was intended that the design of the data collection effort should not be limited to a once-off snapshot of the industry but should be flexible enough to facilitate a dedicated industry research and data collection framework if required.

The Project Team sought to engage nursery data stakeholders such as ABS, Government Ministers, and large retailers to obtain relevant and timely data that would ultimately support strategic industry and business decision making.They also recognised that a fundamental requirement supporting the success of the program is to keep participation rates high. To do this, the Project Team sought to combine a useful attractive end product while minimising data provision efforts.

The methodology combined a top-down, bottom-up approach that concurrently delivered the data for informative key statistics on the nursery and prepared the industry stakeholders to harness the benefits of having this data. This was done with the understanding that a high adoption by end-users is the most effective way to establish a dedicated data collection program that can actually benefit the industry.



To avoid repeating the same mistakes of past projects and to ensure the best investment of the levy, project stop/go decisions were incorporated into the methodology. At the conclusion of each stage, the Project Steering Committee assessed the success of stage outcomes to determine whether progress of the project to the next stage was justified and that success was achievable.

It was intended that the data provided through project would be flexible enough to aid future product development by the industry, as well as being able to allow user interface with other potential R&D programs that the industry might undertake (for example, trade modelling, economic contribution, marketing strategies, biosecurity interventions, etc.). To achieve this, the team aimed to collect data on economic, financial, spatial and biological levels.

The three project stages and underlying methodologies are described as follows:

Stage 1 - Data Audit & End User/Data Contributor Consultation

During this stage the Project Steering Committee was formed. AAC undertook a desk audit of all existing and available sources of data for nursery industry research to identify enduring, periodical and

opportunistic data gathering activities and to data identify gaps. Simultaneously, DTER identified nursery data users and their data needs and motivations and prioritised them accordingly. DTER undertook an assessment of the attitudes toward sharing and capability to provide requested data as well as testing preferred styles of data tools. Our abilities to capture data information were subsequently informed by the results of this stage.

Stage 2 – Data Collection: plan, design, execution, analysis

Using the information collected during stage one, a collection plan was identified and reviewed by the Steering Committee. The group identified the need to capture farm gate value of the greenlife production. The greenlife production business contact database was then identified and uploaded to CATI (Computer Assisted Telephone Interviewing), a random sampling[2] program set up by Market Metrics whose interviewers executed the collection. DTER collated the new 'primary' data and evaluated it with regard to robustness, accuracy, flexibility and timeliness. AAC then reviewed the new data against existing 'secondary' data.

Stage 3 – Data tool development

Using the results of the in-depth interviews conducted during stage one, the analysis of primary and secondary data and considering the variety of data tools which could facilitate ongoing research, the dashboard for the data tool was designed. The design of the tool allows it to be updated periodically; supports nursery industry decision making, resource prioritisation, investment evaluation and strategic planning activities; and is easily scalable as industry adoption increases. This tool was trialled with a number of the contributing businesses and subsequently modified before it was released. The announcements of results from the data collection were provided to industry via a media release, concurrently with the availability of the data tool. The data tool was emailed to contributors (with anonymity retained) and remains available by request to levy payers via a URL on the Hort Innovation website.

[2] Random sample research is a widely used and accepted method of researching a population. For more information visit http://www.abs.gov.au/websitedbs/a3121120.nsf/home/statistical+language+-+census+and+sample

Outputs

The outputs of the project were detailed below and are outlined in the table of activities, outcomes and responsibilities provided at *Appendix A*

Stage 1 - Data Audit & End User / Data Contributor Consultation

- Steering Committee formed. 1st consultation meeting held.
- Data desk audit completed. Stage 1 interim analysis report of secondary data provided.
- Stakeholders identified and contributor interview format developed. 30 in depth interviews conducted with a selection of representatives from production and retail organisations as well as supplier organisations (e.g. media suppliers, pot suppliers, etc.)
- Stakeholders identified and user interview format developed. 10 in depth interviews conducted with people likely to use data collected from the industry, industry bodies, government, etc.
- Stage 1 Interim report of user/contributor analysis provided.
- 2nd Steering Committee meeting held. Recommendations for Stage 2 identified.
- Milestone submitted.

Data desk audit

The data desk audit was completed. The stage 1 interim analysis report of secondary data is provided at ***Appendix B*.**

In-depth interviews

39 attitude assessment interviews were conducted including:

- 17 end users (including 8 providers) including government, Australian Bureau of Statistics (ABS), industry bodies, greenlife producers and consultants
- 22 data contributors (greenlife producers)
- a data user/contributor
- Only two organisations had refused to participate in the in-depth interview process.

The Stage 1 Interim report of user/contributor analysis provided is provided at *Appendix C*.

Steering Committee meetings

The following meetings of the Project Team and Steering Committee were held during Stage 1:

- 17 January 2017 Project Team
- 8 February 2017 Steering Committee
- 23 May 2017 Steering Committee

Stage 2 - Data Collection: plan, design, execution, analysis

- Collection plan developed and circulated to Steering Committee.
- Communications strategy for industry engagement finalised.
- Industry engagement activities delivered (to be specified following strategy development)
- Stakeholder database qualified and approached.
- Collection instruments identified, developed and tested.
- Primary data collection executed and collated.
- Primary data collection analysed. Interim report on primary data delivered.
- Stage 2 analysis of primary and secondary data delivered.

- 3rd Steering Committee meeting held. Recommendations for Stage 3 identified.
- Milestone submitted.

Collection Plan

During the Steering Committee Meeting of 23 May and across the month of June, the group discussed how the collection would be conducted. The collection plan is describes as follows:

The contact database developed was fed into the Computer Assisted Telephone Interviewing (CATI) program set up by Market Metrics. All interviewers used for the project have considerable experience working on DTER's projects in the agriculture sector. Prior to commencement, interviewers were briefed by DTER.

Initial contact interviews and appointment setting commenced on 23rd June 2017 and concluded on 1st August 2017. Confidentiality Statements and the list of data requirements were forwarded to potential respondents the day after contact.

Full details of the data collection methodology and a copy of the confidentiality agreement are detailed in the Primary Data Collection report at ***Appendix D***.

Communications Strategy and Engagement Activities

A communication strategy for the project was finalised and implementation commenced. A copy of the strategy is provided at ***Appendix E***

Engagement Activities completed include:

- NGIA – National Nursery News CEO Update February 2017
- Nursery Paper https://www.ngia.com.au/Attachment?Action=Download&Attachment_id=1997
- Case Study https://www.ngia.com.au/Story?Action=View&Story_id=2345
- Case Study video: https://www.youtube.com/watch?v=qoDazK-NZAk&feature=youtu.be
- 4 x Facebook posts
- One LinkedIn post
- 3 x Twitter posts

Examples of the engagement activities are provided in the links above or in ***Appendix F***

Stakeholder database

NGIA provided DTER the industry communications database of approximately 1600 businesses for use during the project. DTER sourced additional businesses details from Yellow and White Pages online CDs, True Local online, the Flower Association and Google searches. In total, 2,374 unique organisations were identified.

A nursery database of levy paying businesses is not available for public review or comparison of businesses. If this was available for comparison in relation to business numbers, any such comparison would need to account for the many *assumed* non-horticultural levy payers who would be included in this list.

Collection instruments

In the first week of June 2017, DTER provided the committee with the first draft of the survey questionnaire. Over the course of the month, the survey was refined to include the critical outputs identified by the Committee while remaining with a time guideline of approximately 20 minutes per survey.

A copy of the final survey is included in the Primary Data Collection report at ***Appendix D***.

Primary Data Collection

Following of the data collection methodology and plan, 221 interviews were completed.

During the survey it became increasing apparent that converting initial calls into completed interviews was a significant challenge that had not been experienced previously or indicated in the in-depth interviews. DTER kept the committee informed of the challenges during the collection period which commenced on 23 June. The survey period was extended for three weeks because of the challenge in securing completed interviews.

The project team had originally hoped to complete 300 interviews however the nursery industry proved challenging, demonstrated by appointments with greenlife producers being rescheduled up to 7 times.

Achieving 221 completed interviews provides a margin for error (at the 95% confidence level) of ±5.7% on national results.

In the Steering Committee meeting of 23 August, the results of the primary collection were discussed including the best way to categorise and to which level the data should be reported. This included lengthy discussions on the key data points and an understanding of the implications for reporting state breakdowns where insufficient sample sizes had been captured.

Industry representatives on the Committee considered the data to reliable. ACC identified a comparison point for validation with the Queensland Department of Agriculture and Fisheries (QDAF) reports showing consistency with Queensland results in the primary collection.

DTER have completed the final report for the Primary Data Collection and a copy of this report is attached at ***Appendix D***.

Analysis of Primary & Secondary Data

AAC completed an evaluation of industry and past performance including key trends and issues; an insight into industry sentiment; and commentary on future development and growth opportunities using primary and secondary data sources. This report is attached at ***Appendix G***.

Steering Committee meetings

The following meetings of the Project Team and Steering Committee were held:

- 30 May 2017 Debrief of Steering Committee Members
- 23 August 2017 Project Team
- 5 September 2017 Steering Committee

Stage 3 - Data Tool/s development

- Recommendations provided to Steering Committee for data tool development. Steering Committee approval received.
- Data Tool/s designed and trialled and adapted if required.
- Data Tool/s launched to industry.
- Prepare Nursery Paper on the data and nursery industry Data Tool (an output of NY15006)
- 4th Steering Committee meeting held. Recommendations for the future collection of nursery data identified.
- Final report submitted including a summary of key findings, performance trends and issues; and an edited data set for analysis. Raw anonymised data will be supplied with the modelling applied.

Nursery Industry Data Tool development

During the in-depth interviews conducted in Stage 1, it was identified that a simple excel dashboard was the preference of most data users and contributors. Following approval from the Steering Committee to continue with tool development, AAC used the data collected in stage two as the basis to build the Nursery Industry Data Tool.

The tool is designed to help benchmark core aspects of greenlife production businesses against the results of the data collected through the industry survey. It is an Excel based dashboard that allows nursery greenlife businesses to input data to make comparisons with broader industry performance. The Tool has a user friendly interface and can be used to compare business performance across a different market segment and/or product mix.

The tool was trialled with the Steering Committee and an anonymous group of data contributors. Feedback from all areas was incorporated into the final version.

A hard copy version of the data tool is attached at ***Appendix H***.

Industry Engagement

Media Release

A media release announcing the findings from the data project was drafted by Cox Inall Communications (CIC) under the Nursery Communications project NY15006. This release was approved by NGIA and Hort Innovation and circulated to a media network and nursery industry stakeholders on 14 December 2017. A copy of the media release is attached at ***Appendix I.***

Tool distribution

During survey period, each data contributor was advised that the final version of the data tool would be emailed to them by DTER. DTER undertook to perform this role to ensure that all contributors would remain anonymous. A copy of the covering email which accompanied the data tool is attached at ***Appendix J***

Ongoing tool access

Following comprehensive discussions among Steering Committee members is was agreed that the data tool would be made available for nursery levy payer access via the Hort Innovation website. A digital version is available to levy payers by request via this link. http://horticulture.com.au/resource/nursery-industry-data-tool/. A copy of the covering email is attached at ***Appendix K***

Anticipating that there will be questions and feedback surrounding the tool the following process has been identified in conjunction with Hort Innovation to manage such enquiries:

- Any queries/feedback to be passed to Adam Briggs of Hort Innovation in first instance.
- Questions will be actioned by Adam in first instance, if follow up is required, Adam to action with appropriate project team contact.
- Questions and responses will be collated and tracked anonymously.
- Feedback to be acknowledged and collated by Hort Innovation for future improvements of data tool in any future investment

Ongoing engagement activities in 2018

As part of the engagement plan to communicate availability of the Nursery Industry Data Tool; success of the project; and to encourage greater participation in future collections, a conference session and Nursery Paper are scheduled for February and March of 2018.

NGIA has scheduled a session within the 2018 Nursery & Garden Industry National Conference program. The Conference which is held from 19-21 February will feature Jan Paul van Moort of AAC on Wednesday 21 February. A copy of the Conference Program is attached at ***Appendix L***.

Additionally, a Nursery Paper communicating the tool and the key figures will seek to educate the industry on the needs of data, the benefits of the tool and encourage participation in future collections. This Nursery Paper is scheduled for distribution under NY15006 for March 2018.

Steering Committee Meetings

The final Steering Committee Meeting for the NY16004 project was held on 20 November 2017.

Outcomes

Stage 1 Outcomes as detailed in the project plan were achieved as follows:

1. *To complete an assessment of nursery industry data users and contributors during Stage 1 and by April 2017 to identify attitudes towards data sharing; capability to provide information required; and industry data needs and their priority for accurate design of data collection methodology and instruments for delivery in Stage 2.*

   Contributors - the results gave the project team a greater understanding of the capacity of contributors and their likelihood to participate in an industry survey. The in-depth interviews helped to identify:

   - the information industry would be prepared to share which provides opportunity to manage industry expectations with respect to the results obtained.
   - concerns around privacy. As a result the project team included a confidentiality agreement in the survey process for contributors.
   - time availability for survey participants. Interviewers developed a process of setting appointments and pre-providing survey questions to participants in an effort to make interviews more efficient.

   Data users – the results assisted in the prioritisation of information desired by data users. It also provided an insight into how the data users would like to receive the research. As a result:

   - the research identified a need to educate data users on the reliability of statistical samples. This will be undertaken during the course of the project and in engagement activities scheduled for 2018.
   - the prioritisation of data needs helped inform the questions for the collection survey.
   - recognition that data users don't require complex tools for data interpretation but hard/soft copy excel documents is sufficient.

   The intent of this outcome was to identify and understand the difficulties of past collection projects to overcome challenges and barriers to participation, and provide an insight into the accuracy of nursery industry data. The Project Team were successful in obtaining this information which informed the outputs for Stage 2.

2. *To complete a desk audit of nursery industry research to identify enduring, periodical, opportunistic data and data gaps during Stage 1 and by April 2017.*

   The desk audit of available primary, secondary and tertiary data sources was completed with the intent to understand the reliability of available collections including their timeliness, robustness, defining variations and accuracy; and provide early indicators on performance and opportunities.

   The key issues identified and the SWOT analysis of available data reconfirmed for the Steering Committee, that nursery industry data has major gaps and that industry is concerned about their reliability. Through this process the Steering Committee identified the opportunity to establish a clean set of foundational data.

3. *The Project Steering Committee will provide the oversight and governance to the project to ensure it on track to achieve the milestones and to make decisions at the Stop/Go points.*

   Three meetings were held during Stage 1 including the Project Team (once) and the Steering Committee (twice) between January and May 2017. An additional debrief teleconference was conducted on 30 May with Steering Committee members who were unable to attend the meeting to

ensure levy payers were involved in the project deliberations.

During the meeting on 23 May 2017, the Steering Committee discussed the results of the Stage 1 research and found there was no fundamental barrier that would prevent the success of the project, particularly noting contributor's willingness to participate. As a result, Hamish Mitchell (Steering Committee, SIAP, levy payer) made a recommendation on behalf of the Steering Committee to continue to Stage 2 of the project. This recommendation was unanimously accepted by the Steering Committee and the decision to progress to Stage 2 was made.

Stage 2 Outcomes as detailed in the project plan were achieved as follows:

1. *To complete 300 Computer Assisted Telephone Interviews (CATI) of a random sample of businesses to obtain a primary data set.*

   As discussed above, achieving 300 completed interviews proved very challenging for the DTER/Market Metrics collection team. 221 completed interviews provide a margin for error (at the 95% confidence level) of ±5.7% on national results.

   The challenges encountered are discussed in detail in the Primary Data Collection report at ***Appendix D.***

2. *To deliver accurate and verified industry statistics for the 2016/17 financial year including but not limited to: Number of businesses; Volume of products sold; Farm gate value of greenlife; and Production area.*

   Given the timing of the survey, the industry representatives on the Steering Committee felt that businesses would not be able to provide information for the 16/17 financial year and so it was decided that collection should be questioned for the 15/16 financial year.

   The primary data collection conducted for this project has provided the nursery industry with a foundation set of data which is credible and verified. This is a great achievement for the Industry as the information it contains will support the industry both with advocacy efforts and with individual businesses accessing benchmarking opportunities.

   Figures including number of businesses; volume of products sold; farm gate value of greenlife; production area; and employee measures were all delivered in the primary collection with a margin for error (at the 95% confidence level) of ±5.7% on national results.

   Key reportable figures (nationally) for the 2015/2016 year are:

Number of businesses:	1,777
Volume of products sold:	1.618 billion plants sold
Total greenlife sales:	$2.29 billion
Production Area:	Outdoor 6,229 (Ha); Indoor 1,273 (Ha)
Employees:	27,000 (19,000 FTE)

   Other information captured includes products sold into channels by category; operating costs, size of businesses, wages, resale mark ups and industry sentiment.

   These results are supported by the Steering Committee and have shown to be consistent with QDAF reports for Queensland, which demonstrates a credible methodology under this project.

3. *To provide an evaluation of industry and past performance including key trends and issues; an insight into industry sentiment; and commentary on future development and growth opportunities using primary and secondary data sources within Stage 2.*

The ACIL Allen Consulting analysis of primary and secondary data is provided at ***Appendix G***

4. *The Project Steering Committee will provide the oversight and governance to the project to ensure it remains on track to achieve the milestones and to make decisions at the Stop/Go points.*

   Three meetings were held during Stage 2 including a debrief of Steering Committee Members, the Project Team (once) and the Steering Committee (once) between May and September 2017.

   During the meeting on 5 September, the Steering Committee discussed the results of the Stage 2 primary data collection and the benchmarking parameters and found there was no fundamental barrier that would prevent the success of the project and Stage 3 tool development, particularly noting the level of information collected.

   As result On behalf of the Steering Committee, Hamish Mitchell made the recommendation to continue to Stage 3 of the project. David Jakobs seconded the motion. The recommendation was unanimously accepted by the committee and the decision to progress to Stage 3 was made.

Stage 3 Outcomes as detailed in the project plan were achieved as follows:

1. *To deliver a data tool/s for data users based on their needs and priorities.*

   Nursery greenlife businesses now have access to a data tool which is interactive allowing input of data to make comparisons with broader industry performance. The Tool has a user friendly interface and can be used to compare business performance across a different market segments and/or product mix.

   When considering the original intent to combine a useful attractive end product which also minimized data provision efforts by contributors, this outcome has been achieved.

Evaluation and Discussion

Overall the project was successful as it:

- delivered a new estimated value of farm gate production which has been validated.
- produced measures on volume of production in different sectors .
- captured supply chain data .
- delivered robust business performance data including, for example wages as a percentage of sales. While it did not achieve every metric that was identified during Stage 1 in-depth interviews, due to response rates, it has achieved more than was previously available. We anticipate that with further education and project continuation, industry will be more able and willing to provide this information.
- established a program where additional data requirements can be built upon.
- developed a data tool to benchmark business performance and engage industry levy payers.

Project Successes

- **The method**

  The top down bottom up methodology took the guess work out of the data collection. This method was instrumental in preparing the project for success. It allowed a measured approach which incorporated realistic expectations of what information could be captured, the best way to capture it and how best to utilise it.

- **The expertise and advice**

  Essential to the success of this project was the variation of skills and expertise brought to the project. The project team was able to capitalise on individual strengths of industry understanding, collection, reporting and analysis to achieve a good result and a foundation data set for industry.

  The Steering Committee members provided valuable insight into the real-life for greenlife growers, record keeping and understanding of benchmarking data; assisted with validation and communication of the project. The inclusion of a Hort Innovation representative was also valuable, particularly when considering the stop/go milestones, and in understanding the expectations of the project.

- **Management of empty cells**

  'Empty cells' were identified as an issue during this project. It is now understood that empty cells would be an issue for any organisation undertaking nursery collections. A process for managing the empty cells was subsequently identified.

  Empty cells occur when a data contributor cannot answer all questions within the survey due to either not recording or not being able to extract the required data from their systems. To enable reasonably accurate extrapolation of collected data to represent the entire industry, it is important to estimate a value for each individual cell. This was achieved by considering other data that was provided such as number of nursery staff members (Full Time Equivalent) and plant categories grown as well as any financial data given. Identifying, understanding and implementing a process to manage the empty cells was a critical part of this project.

This is the first time any consideration has been formally given to empty cells in nursery data collections. The Steering Committee and the Project Team concurred with DTER's handling of the empty cells and acknowledge the level of analysis that had been conducted by DTER.

Project challenges

- **Survey Completion.**

  The Project Team had sought to complete 300 interviews. During the survey period 2,374 calls were made. Of the 221 completed surveys, some responders rescheduled their interview up to 7 times. The in-depth interviews did not indicate that completed surveys would be so difficult to obtain. The impact of the response rate meant that information could only be reported nationally as the sample sizes at a State level are not all statistically sound.

  While the Steering Committee considered options around combining results for States in order to report them, it was felt there would be a risk of creating confusion around the data and that the better option was to ensure a greater response rate in future surveys. The Committee felt there were better prospects for this in futures surveys with the adoption of the data tool.

- **Management of empty cells**

  During the analysis of the primary data set, it became apparent that a system of managing the empty cells (cells where information was not able to be provided) needed to be identified. DTER invested much time and consideration into how best to manage this process and it is outlined in the Primary Data Collection Report attached at ***Appendix D.*** Key points to note are:

  - Managing empty cells would be an issue for every organisation undertaking data collection on the nursery industry including the Australian Bureau of Statistics. It would be valuable to discuss with them how they manage this process for the nursery industry.
  - In assessing how empty cells would be managed, DTER considered the diversity of the nursery industry including business types, business turnover and product mix. With this knowledge and understanding of the industry, it was very apparent that applying 'averages' was not an accurate or appropriate way to address the gaps in this industry.

- **Acceptance of the results**

  It has been generally acknowledged that this collection is first of its kind.

  The survey ensured that statistically relevant samples were captured across primary product lines nationally. The data provides a margin for error (at the 95% confidence level) of ±5.7% on national results.

  In discussing the results (pre-release) additional time was invested to demonstrate the validity of the results to interested third-parties.

  The data has been validated by a Steering Committee which includes nursery production growers. It is further validated through a comprehensive desk audit of exiting research which has been conducted by AAC. The Project Team are fully supportive of the results and the data tool.

Issues, Risks, Areas for improvement

- **Industry sentiment towards data collection and management of expectations on the results.**

  This issue has underpinned the challenges faced in nursery industry data collection to date This

project has been successful in capturing statistically relevant results nationally, but fell short of the required response rate for State breakdowns. In some instances this is because there just are not the numbers within a State in order to obtain a statistical sample, but more commonly is it linked to fears around data sharing and confidentiality. Further issues linked to sentiment and expectations around the collection include the volume of information that was requested in the survey and the time taken to complete it; and whether the businesses are actually collecting all the information being requested in the first instance.

This project was able to identify and manage some of those challenges by implementing the staged approach; specifically, undertaking the in-depth interviews in Stage 1. This project has gone a long way to building confidence in the process and alleviating many of those concerns. Nevertheless, it will be some time before the industry has *full* confidence regarding data collection and so future challenges of this nature cannot be discounted.

Industry sentiment and expectations should be managed through future engagement strategies and improved collection processes and support (see recommendations).

- **Privacy and confidentiality of de-identified data**

  The confidentiality of de-identified data remains a crucial concern where grower data that is collected could be considered to be commercially sensitive. Despite the anonymity of the data collected the possibility to identify individual contributors via interpretable information in the raw data files was possible during DTER's analysis and reporting.

  The in-depth interviews identified concerns regarding confidentially of information as a barrier to participation, particularly when NGIA and Hort Innovation are involved. This is a crucial issue requiring vigilance to ensure the success of future nursery industry data collections.

  To be clear, only two individuals on the Steering Committee had access to the de-identified data. This was DTER for the purposes of analysis and reporting of the results; and AAC in order to program the data tool. Both organisations will destroy the data files within the three months following the conclusion of this project.

  The project team recognised that if the current restrictions imposed by the project's own confidentiality standards is not acceptable, then future projects partners delivering nursery industry data collection and analysis will need to be fully aware of the implications of privacy/confidentiality and the impact on participation in future collections.

  This project adhered to the standards of the *Australian Market and Social Research Society* and the Privacy Act. It is good professional practice to accept these standards and future projects should continue to do so.

- **Survey questions**

  The wording of some survey questions will require clarification/specification to assist in the inclusion or exclusion of information in totals in future questionnaires. This will need to be achieved by future project teams to ensure understanding of exactly what information has been provided. For example

  - On wage/salary questions be specific about the inclusion or exclusion of super; or alternatively seek data on the total remuneration.
  - detail the acronyms within the report – eg FTE be more specific eg 37.5hrs per week
  - Inclusions in total turnover – resale?

- Industry adoption

- **Management of empty cells**

  As discussed in the 'Project Successes' section of this report (page 16), empty cells impact the extrapolation of survey data.

  During the process of analysing the empty cells it was established that it is not appropriate or accurate to apply an 'average' to an empty cell due to the considerable variations evident in business size and categories of plants grown and sold. The Steering Committee and the Project Team concurred with DTER's handling of the empty cells.

  It is necessary for future projects to consider the management of such information in significant detail. Further, future projects will either need to adopt the same process or notate an alternative process in the results.

Recommendations

At the final Steering Committee Meeting on 20 November the group made the following recommendations:

1. That Hort Innovation and the Nursery Industry SIAP continue to support the continuation of a nursery industry statistics and research project.
2. Future project investments should give consideration to a multi-year projects to enable continuity and validation of data.
3. Consider engagement activities with the nursery and garden industry regional network to continue to educate nursery contributions on the benefits of data collections and allocate budget accordingly. Such activities could include face to face regional outreach on the project, workshops on Data Tool use and extension of that information into business practice.
4. Ensure a Stage 1 of a future project incorporates an in-depth analysis that focuses on current data priorities (see **Appendix C**, Stage 1 Interim Report – In depth Interviews) and new priorities as they change from time to time; and information trends and useful breakdowns for data tool design.
5. Build in to a future project supply chain validation of survey data results and budget accordingly.

Other subsequent recommendations include:

- Development of a self-completion template. For example, incorporating template to assist with survey completion. Such template would be provided to a contributor following a random selection process. When templates are returned an interviewer will follow up with a call to clarify the data provided.
- Consider an engagement tool for contributors to demonstrate the frequency with which the project would like to capture information. For example provide a template which includes columns up to 2021, being the end of the Nursery Strategic Investment Plan (or for the term of the next project). This supports awareness and education for data collections to build the confidence of the industry.
- Consider adopting a more strategic collection of data that aligns with the availability of financial year data. The 16/17 year data could be collected in April 2018 (as a catch-up year), followed by an additional collection in October 2018 that captures 17/18 data. Subsequent data collection initiatives would commence in October to more efficiently align with availability of financial year data.
- Develop a mock worksheet which demonstrates the process of managing empty cells in the survey responses. This is intended to make the process more transparent and to facilitate input into empty cell management.

Scientific Refereed Publications

None to report

Intellectual Property/Commercialisation

No commercial IP generated

Acknowledgements

Firstly, we gratefully acknowledge the businesses which contributed information to this project. Considerable time was provided by them to provide the information and the great results of this project could not have been achieved without their support.

NGIA also acknowledges the strong support of the Industry Steering Committee and particularly, the nursery industry representatives of Hamish Mitchell (VIC), David Jakobs (NSW) and Brett Sargeant (NSW) who informed the project and provided a real world view of the greenlife production businesses in relation to data collection.

Further, NGIA thanks project partners Down to Earth Research and ACIL Allen Consulting for providing their expertise and advice which were instrumental in overcoming the challenges of past projects of this nature.

Finally, NGIA would like to acknowledge the persistence of the Strategic Investment Advisory Panel and Hort Innovation in working to rectify the gaps in nursery industry data and recognise their support and input into this project.

Appendices

A. Table of activities, outcomes and responsibilities

B. Stage 1 Interim Report - Data audit

C. Stage 1 Interim Report – In-depth Interviews

D. Final interim report on the primary data collection (Down to Earth Research)

E. Communication and Engagement Strategy

F. Examples of engagement activity

G. Final report the analysis of primary and secondary data (ACIL Allen Consulting)

H. Nursery Industry Data Tool

I. Media Release dated 14 December 2017.

J. Covering email to contributors attaching the data tool

K. Covering email for tool requests from Hort Innovation

L. Conference Program

Appendix A

Table of activities, outcomes and responsibilities

NY16007 Action Checklist

as at 19 December 2017

Task		Activity	Output	Owner*	Due Date	Status
		Stage 1 - Data Audit & End User/Data Contributor Consultation				
Task	1	Formation of project steering committee	Steering Committee formed. 1st consultation meeting held.	NGIA	8-Feb-17	COMPLETED
Task	2	Analyse all available existing data sources for nursery industry research including identifying enduring, periodical, opportunistic data and data gaps.	Data desk audit completed. Stage 1 interim analysis report of secondary data provided.	AAC	Apr-17	COMPLETED
Task	3	Undertake an assessment of the attitudes of towards sharing data.	Stakeholders identified and contributor interview format developed. 30 in depth contributor interviews conducted.	DTER	Apr-17	COMPLETED
Task	4	Identify the data users, their data needs and prioritise accordingly.	Stakeholders identified and user interview format developed. 10 in depth user interviews conducted.	DTER	Apr-17	COMPLETED
Task	5	Research the likely data research tools data users would engage with	Stakeholders identified and user interview format developed. 10 in depth user interviews conducted.	DTER	Apr-17	COMPLETED
Task	6	Collate industry assessment of users and contributors	Stage 1 Interim report of user/contributor analysis provided.	DTER	May-17	COMPLETED
Task	7	Review of Stage 1 by Steering Committee	2nd Steering Committee meeting held. Recommendations for Stage 2 identified.	NGIA/SC	May-17	COMPLETED
Task	8	Report to HIA recommendations of Steering Committee	Milestone submitted	NGIA	May-17	COMPLETED
Task	9					
		Stage 2 - Data Collection: plan, design, execution, analysis				
Task	10	Develop data collection plan including design methodology	Collection plan developed and circulated to Steering Committee.	NGIA/SC	Apr-17	COMPLETED
Task	11	Communications strategy for industry engagement finalised based on Stage 1 industry assessment	Communications strategy for industry engagement finalised.	NGIA	Apr-17	COMPLETED
Task	12	Roll out industry engagement activities (actual activities will be determined following assessment of research from Stage 1 industry assessment, could including workshop or invitation letter)	Industry engagement activities delivered (activities to be finalised following strategy development)	NGIA^	May-17	ONGOING
Task	13	Stakeholders identified	Stakeholder database qualified and approached.	NGIA	May-17	COMPLETED
Task	14	Identify collection instruments	Collection instruments identified, developed and tested.	DTER	May-17	COMPLETED
Task	15	Undertake primary data collection	Primary data collection executed and collated.	DTER	Jul-17	COMPLETED
Task	16	Analysis of data of new data (primary data).	Primary data collection analysed. Interim report on primary data delivered.	DTER	Jul-17	COMPLETED
Task	17	Collation and analysis of primary and secondary data.	Stage 2 analysis of primary and secondary data delivered.	DTER/AAC	Aug-17	COMPLETED
Task	18	Review of Stage 3 by Steering Committee	3rd Steering Committee meeting held. Recommendations for Stage 3 identified.	NGIA/SC	Aug-17	COMPLETED
Task	19	Report to HIA recommendations of Steering Committee	Milestone submitted	NGIA	Aug-17	COMPLETED
Task	20					
		Stage 3 - Data tool development				
Task	21	Consider Stage 1 industry assessment on data tool; Consider analysis of primary and secondary data.	Recommendations provided to Steering Committee for data tool development. Steering Committee approval received.	NGIA/DTER/AAC	Sep-17	COMPLETED
Task	22	Develop data tool for users	Data tool designed and trialed and improved if required.	AAC	Oct-17	COMPLETED
	23	Trial Data Tool	Data tool trial with industry	AAC	Nov-17	COMPLETED
Task	24	Finalise develoment of data tool.	Data tool launched to industry.	AAC	Nov-17	COMPLETED
Task	25	Review of Stage 3 by Steering Committee	4th Steering Committee meeting held. Recommendations for the future collection of nursery data identified.	NGIA/SC	Nov-17	COMPLETED
Task	26	Communicate data tool availability to industry	Prepare Nursery Paper on data and nursery industry data tool.	NGIA^	Nov-17	ONGOING
	27	Draft Report to HIA reccomendations of Steering Committee	Draft report submitted	NGIA	Nov-17	COMPLETED
Task	28	Report to HIA recommendations of Steering Committee	Final Report submitted.	NGIA	Dec-17	COMPLETED

* indicates primary responsibility. All parties in the project team will contribute to all activities.

^ Cox Inall Communications will be consulted with regards to previously contracted activities under NY15006. Other activites will be developed and delivered by NGIA.

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix B

Stage 1 Interim Report – Data audit

1

DATA AUDIT APPENDIX

The nursery industry has long been and challenged in its recognition by official data sources industry when it comes to official statistics. For instance, the recently published 2017 ABARES Agricultural Commodities outlook only mentions the industry once.

There is an increasing concern among industry stakeholders that the existing statistics for the nursery industry are insufficient to meet industry development requirements. Whilst some particular data sets may be of high value, almost no data set is regular, granular or is perceived to be accurate enough to depict a trustworthy indication of the characteristics and performance of the sector.

The data audit that follows is a stepping stone in the process of improving the industry's position to undertake better planning and business development. This audit intends to uncover the gaps in data at both the industry and firm level. This data audit was undertaken with the main potential data users as a guiding point to select appropriate datasets for evaluation, these users are:

- the nursery industry
- individual nurseries

Whereas price and quantity data are the foremost important data for both potential users, there are other types of data that can be of great value to meet the requirement of all relevant stakeholders. The types of data that will be primarily considered for this audit are:

- volume data
  - volume of product
  - area of production
  - productivity indicators
  - seasonality and quality of production
- price data
- value data (i.e. volume * price)
- capital costs
  - cost of land
  - PP&E costs
  - R&D&E costs
- operating costs (fixed costs)
  - fixed labour costs
  - other fixed expenses
- cost of goods sold (variable costs)
  - cost of goods sold
  - other variable expenses
- other data
  - constraints to production

- regulatory landscape
- consumer preferences
- management and/or operational processes skill base

This audit will describe all identified datasets (across several points along the value chain) that collate industry or firm-level data that refer to one of the categories described above. In addition, it will succinctly present the strengths and weaknesses of these sets.

This audit organises the datasets by reporting agency with a focus on primary data sources. Summary tables are provided to the end of the chapter.

1.1.1 Commonwealth Government datasets

The Australian Bureau of Statistics provides national datasets at an ASGS level for the industry. Notes on these datasets follow.

Australian Bureau of Statistics

The Australian Bureau of Statistics is the main source of broad-based primary agricultural data. Three key data sets relevant to the nursery industry are released by this agency:

— The quinquennial Agricultural Census
— The annual Rural Environment and Agricultural Commodity Survey (REACS)
— The annual Value of Agricultural Commodities Produced (VACP)

The Agricultural Census has evolved since its inception to reflect changes in Australian agriculture, in particular with relation to the size of surveyed businesses. Indeed, as economies of scale and capital intensity have intensified across the industry the minimum threshold to be included in the census has increased. In particular, for the 2015-16 edition of the Census (unpublished) the minimum estimated value of agricultural operations (EVAO) to be eligible for the census rose eightfold to $ 40,000 from $ 5,000 in previous editions. This can be particularly relevant for the nursery sector as the distribution of value across the population of businesses is presumably negatively skewed (i.e. there is a long 'left tail' of small businesses). If this were the case, then the establishment and employment numbers for the sector could be underestimated by the ABS. Historically, nursery stakeholders have expressed certain concerns regarding the representativeness and adequacy of ABS estimates of the sector. In this sense, this new edition of the Agricultural Census constitutes both an opportunity and a threat to the nursery industry. On the one hand, it is an opportunity to improve data quality through a better tailoring of the survey questions to the particularities of the sector[1]. On the other hand, as soon as the Census questions are finalised the scope for a new review in the short-term are greatly reduced and discomfort with data quality may prolong itself in time.

The REACS survey and VACP are sub products of the Census and both the threshold EVAO and surveyed business units are defined by the latter. Hence, all commentary pertinent to the Census is valid for these intercensal surveys.

Strengths of ABS datasets

The key advantage of ABS datasets are its periodicity and coverage. Production estimates are available over a long time period with a fairly consistent methodological approach. In addition, coverage is national and comparisons can be drawn to other agricultural activities as the final aim of the survey is to measure the value of production (i.e. dollars).

In addition, these datasets are very cheap for industry as their marginal cost for industry is zero. Finally, the unusually low variance exhibited by these datasets make them desirable to obtain statically robust forecasts, although, as will be discussed there are critical concerns over the representativeness of the data.

[1] As a contributor to the National Agricultural Statistics Review (NASR), a predecessor to the Census reformulation in which different industry stakeholders expressed their views on the quality of collected data, the nursery industry (through NGIA) had the opportunity to provide input into the new Census.

Weaknesses of ABS datasets[2]

Relative standard error of results from using a sample.

Any survey always exhibits some degree of error by using the average attributes of the sample to infer the characteristics of the population. Previous ABS agricultural surveys have exhibited low standard errors at the national level but these increase markedly at the state and regional level. In the case of nurseries, gross value of production data has exhibited relatively low standard errors compared to other commodities.

Non-representative sample

This is potentially one of the most critical issues for the nursery industry. Sampling is performed with regard to agricultural commodities as an aggregate rather than individual industries. Hence, many industries may be under-represented in the sample. Given its relative size, the nursery industry is likely one of them.

Lack of longitudinal data

As the sample changes every year, firms that contribute data in one given year are (potentially) not contributing data in the following year. This hampers the possibility to track changes across individual entities and reduces the usefulness of the data for strategic planning.

Business categorisation

Based on the ABR register, each reporting entity is classified to a single industry class, regardless of how many activities it undertakes. This may create underreporting regarding those entities where nursery production is not the main source of income.

Decoupling between quantity and price data collection

The REACS survey (and previous agricultural surveys) covers production area, yields and volume. An average price is then used to estimate the gross value of production. This mechanism is significantly flawed as it does not take into consideration the timing and nature of transactions. In agricultural industries this is very relevant as seasonal patterns are strong and volume discounts significant.

Lag between data collection and release

The 2015-16 Agricultural Census data was not released at the closing of the report (i.e. x months since the initial works). This is an indication of significant lag between collection of data and release of survey results.

Inaccurate or incomplete reporting

Widespread anecdotal evidence suggests that Census (and REACS) figures present inaccuracies due to misreporting by some producers. This may be due (among other factors) to:

- Unwillingness to disclose commercial information
- Misunderstanding (or underestimation) of the importance of national statistics
- Dislike of the survey format
- Time constraints

Summary of ABS Census based datasets

Table 1.1 shows the estimates of the Gross Value of Production of the Nurseries industries as estimated with data from the Value of Agricultural Commodities Produced dataset.

[2] This section draws from findings previously reported in AH06005: Horticulture Data Audit: Review of Sources and Strategy, but further commentary is provided.

TABLE 1.1 GROSS VALUE OF PRODUCTION OF THE NURSERY INDUSTRY (NURSERIES + CUT FLOWERS) IN AUSTRALIA

Jurisdiction	FY2010-11	FY2011-12	FY2012-13	FY2013-14	FY2014-15
Australia	**$ 1,023.6**	**$ 1,052.9**	**$ 1,045.7**	**$ 1,023.9**	**$ 1,034.3**
New South Wales	$ 229.9	$ 211.5	$ 238.5	$ 194.3	$ 203.3
Victoria	$ 386.2	$ 445.4	$ 412.8	$ 462.2	$ 432.4
Queensland	$ 204.2	$ 224.0	$ 232.2	$ 221.4	$ 225.5
South Australia	na	$ 48.4	$ 38.7	na	na
Western Australia	$ 98.7	$ 86.1	$ 86.3	$ 74.7	$ 90.4
Tasmania	na	na	$ 7.5	na	$ 1.7
Northern Territory	$ 7.0	na	na	na	$ 5.2

Note: Totals may not sum due to rounding. A breakdown for the Australian Capital Territory is not shown for any of the considered years.

SOURCE: AUSTRALIAN BUREAU OF STATISTICS

Australian Customs Services

The Australian Customs Services provides records of all imports and exports to and from Australia for all nursery products at an eight-digit Harmonised Export Commodity Classification code. This data can be obtained for a fee from the ABS. Customs data is very complete and is collected regularly as customs dockets are mandatory. However, due to the low weight of international trade, this data is of less relevance to the nursery industry.

Australian trade data is also compiled and reported by the Department of Foreign Affairs and Trade and Austrade. The same commentary applies.

Australian Bureau of Agriculture and Resource Economics

The Australian Bureau of Agriculture and Resource Economics (ABARES) shows value of production statistics and forecasts for the nurseries, cut flowers and cultivated turf sectors as a group (see Table 1.2 for the latest release). ABARES uses ABS data to forecast production values. Hence, all caveats regarding ABS data also apply here. Regarding the latest forecasts for the industry, the ABARES expects industry production to lose momentum with gross value of production reducing by an average 0.3 per cent per year for the following five years.

TABLE 1.2 NURSERY, CUT FLOWERS AND TURF GROSS VALUE OF PRODUCTION ($ BILLIONS)

	Nominal ($m)	Real ($m)
FY2014-15	$ 1.252	$ 1.287
FY2015-16	$ 1.264	$ 1.282
FY2016-17	$ 1.276	$ 1.276
FY2017-18	$ 1.289	$ 1.265
FY2018-19	$ 1.301	$ 1.246
FY2019-20	$ 1.339	$ 1.251
FY2020-21	$ 1.377	$ 1.255
FY2021-22	$ 1.415	$ 1.258

SOURCE: AUSTRALIAN BUREAU OF AGRICULTURE AND RESOURCE ECONOMICS

In addition to production figures, the ABARES publishes land use and management data that classifies land by the potential degree of modification and the impact on a putative 'natural state' (ABARES, 2016). Production nurseries are classified according to their use of irrigation and the intensiveness of the production.

Department of Agriculture and Water Resources (excl. ABARES)

Besides publications from ABARES, the Department of Agriculture and Water Resources comprises the Levy and Revenue Services agency which is in charge of collecting agricultural levies on behalf of the nursery (and other agricultural) industry(ies).

In the case of the nursery industry, the levy corresponds to the 5 per cent on the wholesale value of all containers (i.e. pots, plastic bags, root control bags, degradable pots and punnets) in which plants are grown for resale or used in the production of other goods. The levy spend is broken into R&D (2.75 per cent), Marketing (2 per cent) and HIA Recovery (0.25 per cent).

1.1.2 State Government

Besides reporting on ABS data some State Governments have undertaken additional primary data collection regarding the nursery industry.

Queensland Department of Agriculture and Fisheries

In September 2008, the Queensland Department of Agriculture and Fisheries (QDAF) commissioned a comprehensive, state-wide telephone survey to determine the economic value of the 'lifestyle horticulture industry'. This includes nurseries, cut flowers and turf. The QDAF uses this approach to measure the value of production of the sector. A key consideration regarding QDAF's has calculated the value of production on a gross-turnover basis instead of a value-added basis. Thus, the figures will exhibit 'double counting'. Table 1.3 and Figure 1.1, overleaf compares QDAF figures to ABS figures for the same period.

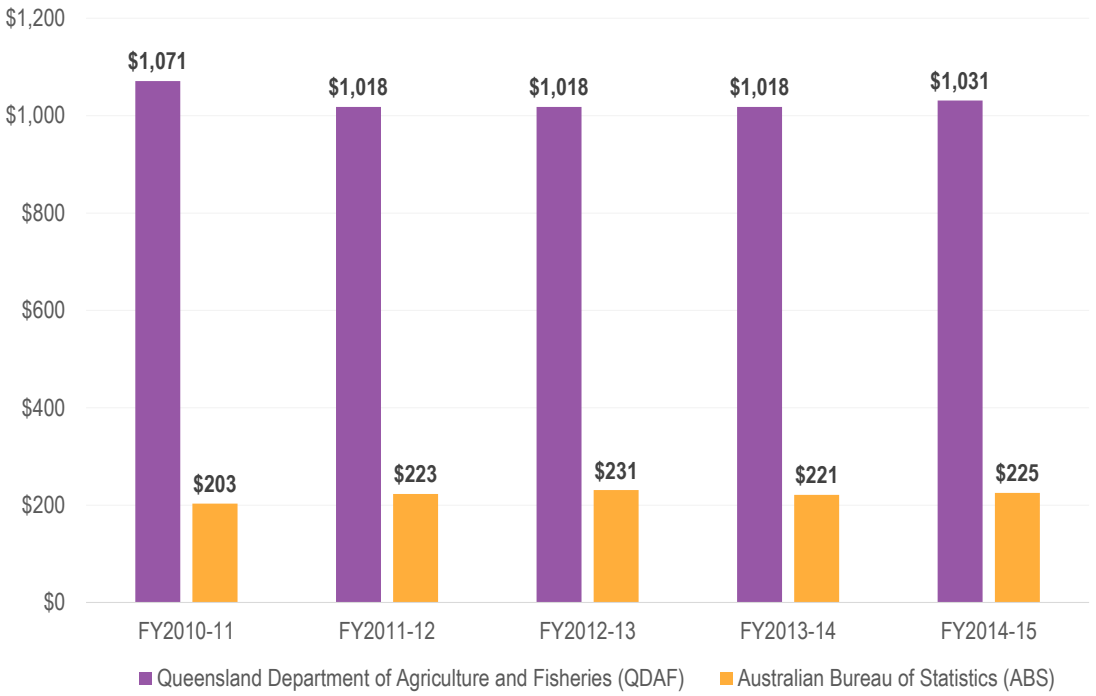
TABLE 1.3 GROSS VALUE OF PRODUCTION OF THE NURSERY INDUSTRY (NURSERIES + CUT FLOWERS) IN QUEENSLAND

	FY2010-11	FY2011-12	FY2012-13	FY2013-14	FY2014-15	FY2015-16 (e)	FY2016-17 (f)
Queensland Department of Agriculture and Fisheries							
Nurseries	$ 912	$ 867	$ 867	$ 867	$ 880	$ 898	$ 898
Cut Flowers	$ 159	$ 151	$ 151	$ 151	$ 151	$ 151	$ 156
Total Industry	$ 1,071	$ 1,018	$ 1,018	$ 1,018	$ 1,031	$ 1,049	$ 1,054
Australian Bureau of Statistics							
Nurseries	$ 167	$ 168	$ 202	$ 194	$ 201	na	na
Cut Flowers	$ 36	$ 55	$ 29	$ 27	$ 24	na	na
Total Industry	$ 203	$ 223	$ 231	$ 221	$ 225	na	na

[a] excludes cut turf

SOURCE: QUEENSLAND DEPARTMENT OF AGRICULTURAL AND FISHERIES AND AUSTRALIAN BUREAUS OF STATISTICS

FIGURE 1.1 VALUE OF PRODUCTION OF THE NURSERIES + CUT FLOWER INDUSTRIES (IN $M)



SOURCE: PROJECT TEAM

These datasets exemplify two of the key inadequacies of current whole-of-industry datasets:

— very high discrepancy between datasets

— unusually low variance within datasets

It is clear from Table 1.3 that there is a very large discrepancy between QDAF and ABS estimates. As mentioned above, part of this discrepancy owes to the fact that QDAF is 'double-counting' sales. A further explanation for the discrepancy lies on the fact that the agencies are using different surveys (with presumably large differences in scope and breadth). However, it is not possible to determine how much of the discrepancy owes to these or other factors. Hence, both datasets lose pertinence to gauge the size and performance of the sector in Queensland.

In turn, the data shows very low dispersion within datasets especially when compared to other primary products also surveyed by the Agricultural Census. The low dispersion is particularly strong in the QDAF data. Whereas low dispersion reflects consistency in the data and is desirable for forecasting, the fact that it is so low (especially relative to other horticultural industries) casts certain doubts on the reliability of the estimates. Indeed, anecdotal evidence for the sector and international evidence show that the value of production in agricultural industries shows a much larger variance than the one exhibited by this data (see Table 1.4).

TABLE 1.4 DISPERSION OF QUEENSLAND NURSERY GROSS VALUE OF PRODUCTION DATA FY2010-11 TO FY 2014-15

	Coefficient of Variation
Queensland Department of Agriculture and Fisheries	
Nurseries	2.2 per cent
Cut Flowers	2.3 per cent
Total Industry	2.2 per cent
Australian Bureau of Statistics	
Nurseries	9.4 per cent

	Coefficient of Variation
Cut Flowers	36.4 per cent
Total Industry	4.8 per cent

SOURCE: ACIL ALLEN BASED ON QUEENSLAND DEPARTMENT OF AGRICULTURAL AND FISHERIES AND AUSTRALIAN BUREAUS OF STATISTICS

1.1.3 Other State Departments of Agriculture and Primary Industries

Virtually all State Departments of Agriculture collate and present secondary data on the nursery industry as part of industry snapshots or of broader agricultural industry profiles. However, this data usually stems from replicating ABS datasets and as such present the same strengths and weaknesses discussed before.

1.1.4 Horticulture Innovation Australia

HIA commissioned a report on all horticulture industries to Fresh Logic. The resulting Horticulture Statistics Handbook 2014/2015 (the Handbook) shows data for the nursery industry based on the ABS Household Expenditure Survey complemented with some inclusions suggested by NGIA to account for landscape and commercial channels.

Results from the latest published edition of the Handbook estimate the value of production of the nursery industry at $ 1.130 billion for 2015, a similar figure to the estimates for the previous two years. The wholesale value of production was estimated at $ 1.220 billion, suggesting an aggregate wholesale margin of $ 90 million. Table 1.5 presents the value of production by State based on the breakdown estimated in the Handbook.

TABLE 1.5 GROSS VALUE OF PRODUCTION OF THE NURSERY INDUSTRY BY STATE ($M)

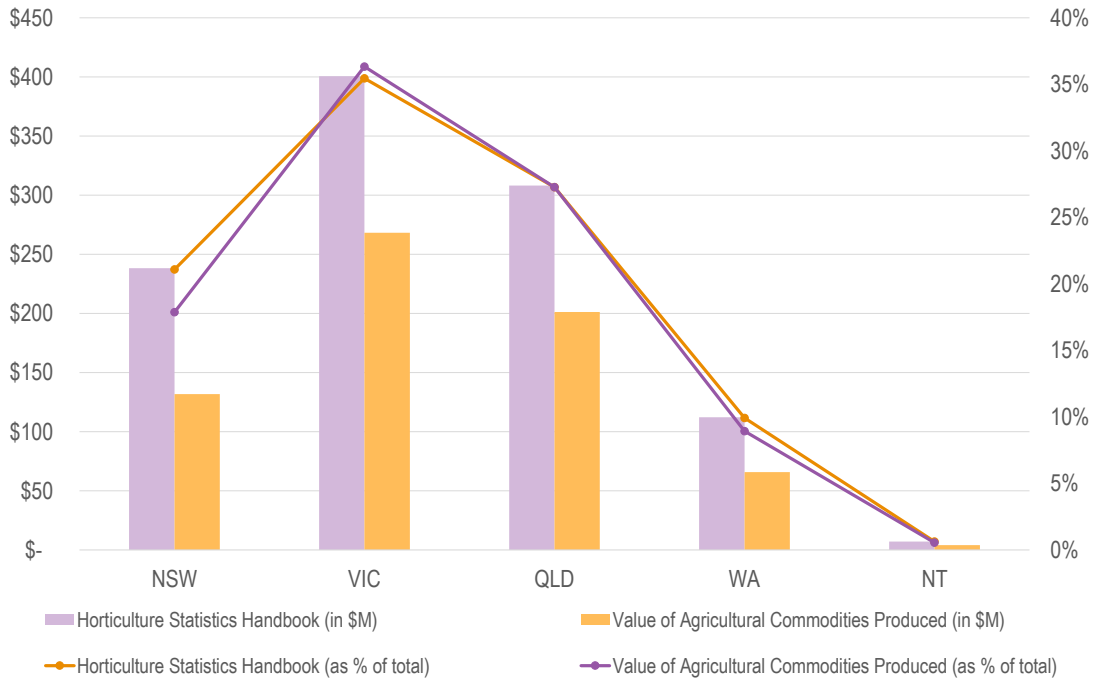
State	2013	2014	2015
New South Wales	$ 239.2	$ 236.9	$ 238.3
Victoria	$ 402.2	$ 398.2	$ 400.6
Queensland	$ 309.4	$ 306.3	$ 308.1
Western Australia	$ 112.7	$ 111.5	$ 112.2
South Australia	$ 59.1	$ 58.6	$ 58.9
Tasmania	$ 4.7	$ 4.7	$ 4.7
Northern Territory	$ 7.1	$ 7.1	$ 7.2
Total	**$ 1,134.5**	**$ 1,123.2**	**$ 1,129.9**

Note: The State breakdown for 2013 and 2014 was estimated assuming the 2015 State share was unchanged in the previous years. .

SOURCE: HORTICULTURE STATISTICS HANDBOOK – HORTICULTURE INNOVATION AUSTRALIA (SEE NOTE)

A brief analysis of the data shows that the Handbook estimates a higher value of production than the ABS. In particular, the Handbook suggests that nursery production in Australia is 53 per cent higher that what ABS figures imply. Nevertheless, it must be noted that the State breakdown of value presented in the Handbook mirror to a great extent the ABS State shares (see Figure 1.2, overleaf).

FIGURE 1.2 GROSS VALUE OF PRODUCTION OF THE NURSERY INDUSTRY BY STATE IN $M (LEFT) AND AS A PERCENTAGE OF TOTAL (RIGHT)



SOURCE: HORTICULTURE INNOVATION AUSTRALIA AND AUSTRALIAN BUREAU OF STATISTICS

1.1.5 Peak Industry Bodies

NGIA funded a biannual report on the industry, the Garden Market Monitor, initially prepared by RetailWorks and then Fresh Logic. The reports focussed on statistics related to:

- Production
- Value
- Distribution, and
- General market drivers:
  - consumer trends
  - housing development
  - water supply
  - weather
  - media and marketing
  - price signals, etc.

Whereas RetailWorks used a combination of primary data and conventional secondary sources such as ABS, Fresh Logic used the ABS house hold expenditure surveys to prepare its report. The report was decommissioned in 2009 when the industry expressed concern about the detail contained in the report. After that the industry intended to complete a through survey of a large sample of businesses. However, due to operational issues and potentially due to the very extensive scope of the required data the project did not materialise as thought and an anonymised data survey was conducted in 2011, 2012 and 2013.

State based Nursery and Garden Industry Associations have conducted business performance member surveys:

- Nursery & Garden Industry NSW & ACT – Member Survey conducted in late 2015
- Nursery & Garden Industry SA - Member Survey conducted in mid-2016
- Nursery & Garden Industry VIC - Member Survey conducted in early 2017

1.1.6 Private data providers and other sources

The key private data providers are the nursery businesses themselves. This is the key untapped data resources for the industry. Private datasets also exist in allied businesses such as growing media suppliers and controlled release fertiliser suppliers that can help understand and quantify the input link of the supply chain.

In addition studies of the landscape industry and the tree canopy may help shed some light on geographical indicators for the industry. Two reports stand out:

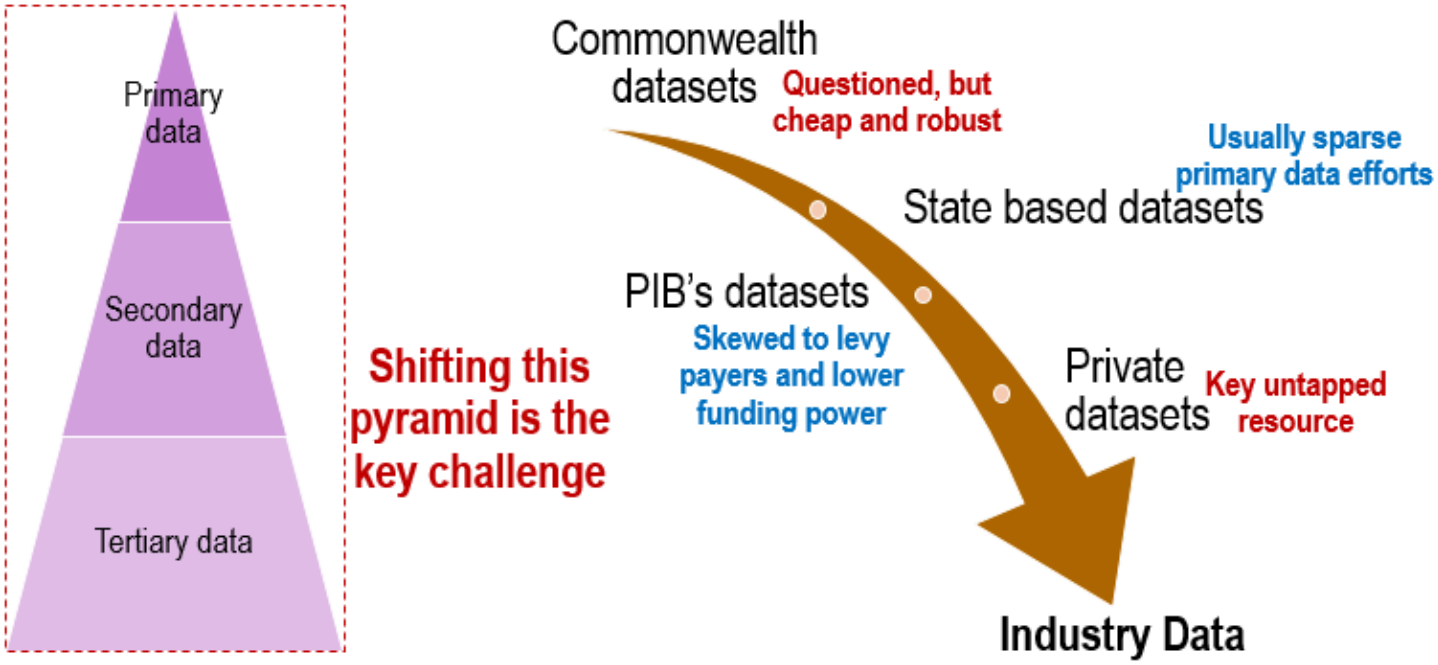
— National analysis of the Australian Landscape Industry – Landscaping Australia Inc.

— Benchmarking Australia's Urban Tree Canopy – Institute for Sustainable Futures (UTS)

1.2 Data Audit – key findings

Figure 1.3 presents a schematic of the key findings of this data audit. The schematic shows that there is a much higher proportion of secondary and tertiary data than primary data. Primary data is collected at the original source (the business unit) and is the focus of this project. In addition, the main source of primary data which are ABS datasets have been coming into increasing scrutiny by industry. Some other efforts of collecting primary data as those undertaken by State agencies are sparser and do not show the desirable frequency. In turn, industry association member surveys have also been undertaken as one-off projects and may be skewed to larger firms and, naturally, will only reflect performance from association members – this creates a problem for statistical inference due to self-selection.

FIGURE 1.3 SCHEMATIC OF DATA AUDIT



SOURCE: PROJECT TEAM

The key issues identified in this data audit are:

— There are large discrepancies in estimates of value and business counts between existing primary data

— Datasets for the industry exhibit unusually low variance
  – consistency is good for forecasting
  – casts some doubts on reliability

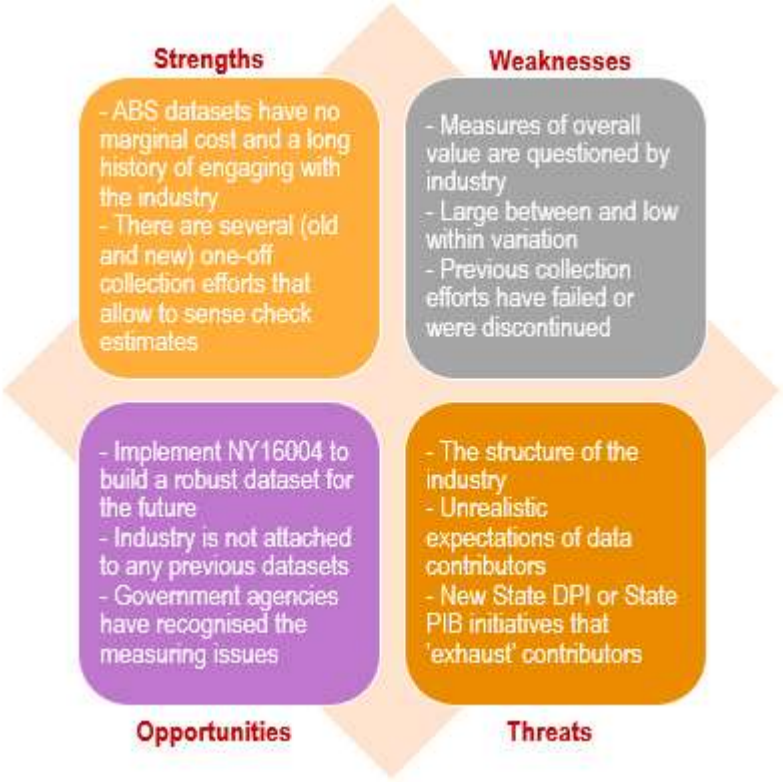
— There are many one-off efforts to quantify different pieces of data

— Inconsistency in methodologies

— Lack of (meaningful) business performance data

Figure 1.4 shows a high-level SWOT analysis on the datasets and is the base to discuss a way forward.

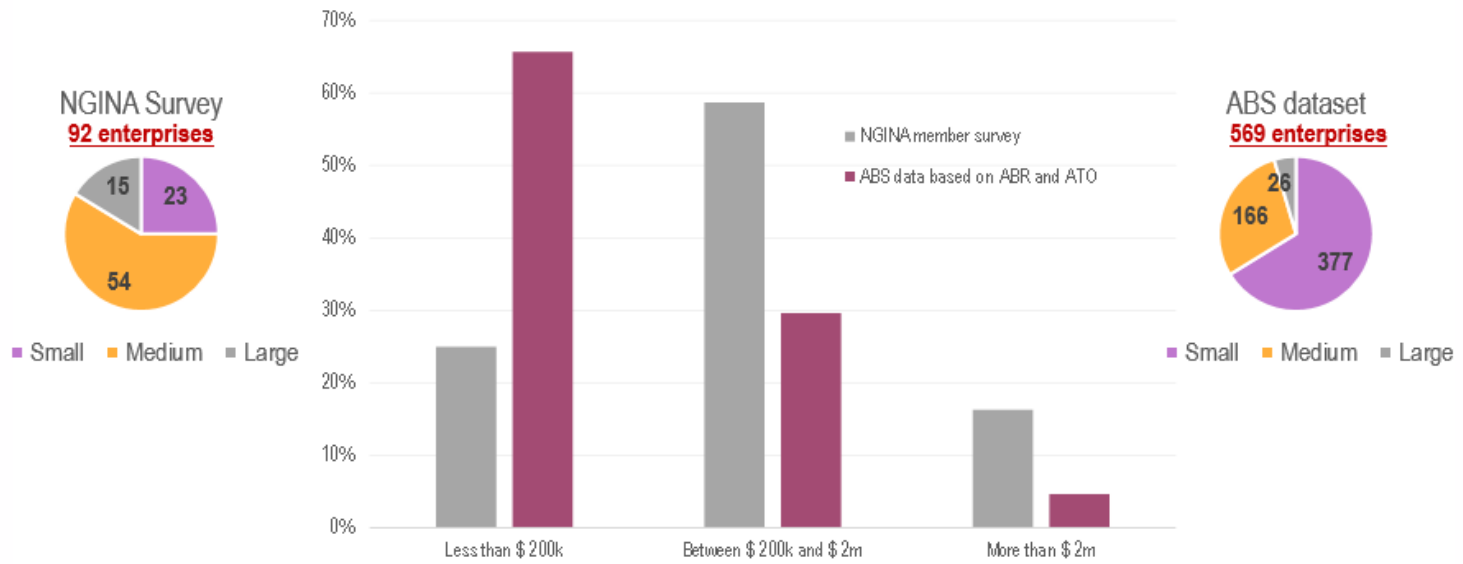
FIGURE 1.4 HIGH-LEVEL SWOT OF INDUSTRY DATASETS



SOURCE: PROJECT TEAM

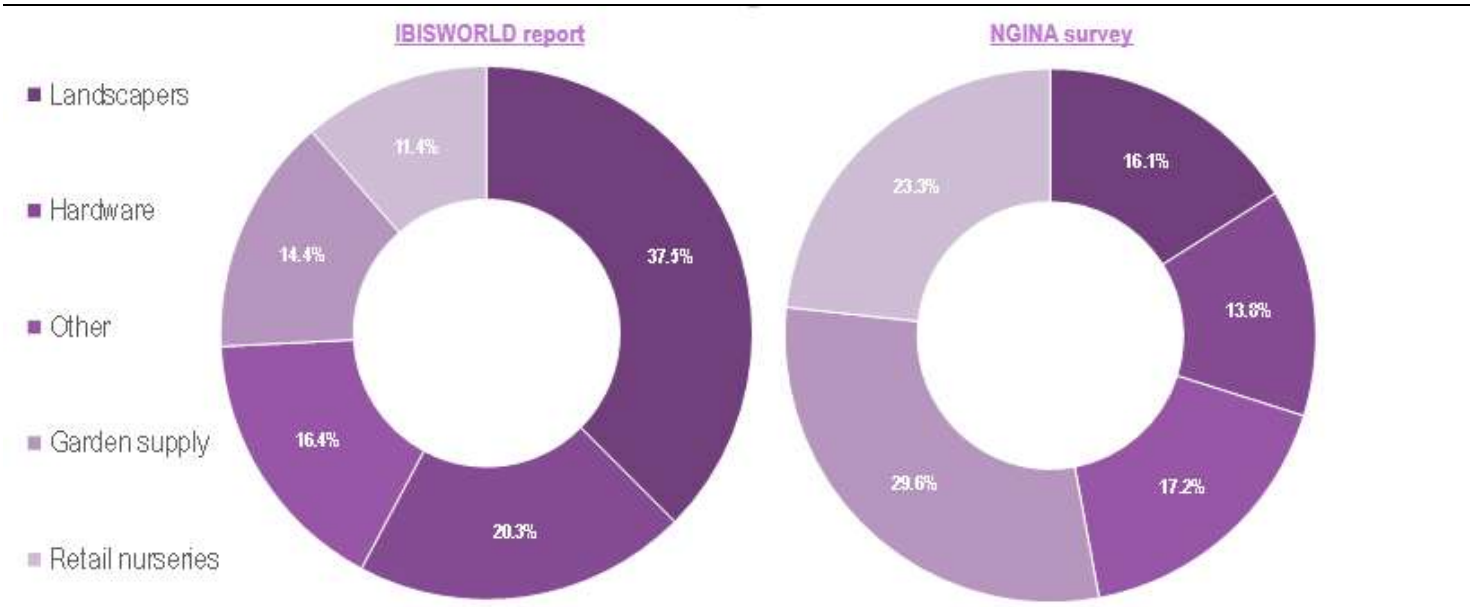
Relevant differences remain between datasets. As mentioned in the previous section the estimates of the value of production between the ABS and QDAF are very large. In the same vein, estimates on the size of the businesses between the NSW member survey and ABS data show a very large discrepancy (see Figure 1.5). In turn, an estimate of market segmentation drawn from this survey compares very differently to the one reported by IBISWORLD (see Figure 1.6).

FIGURE 1.5 SHARE (AND COUNT) OF NURSERIES BY TURNOVER IN NSW & ACT



SOURCE: PROJECT TEAM

FIGURE 1.6 INDUSTRY DEMAND SEGMENTATION (AS A % OF SALES)



SOURCE: PROJECT TEAM

1.3 Recommendations

The three main recommendations from this data audit are:

- NGIA and other Industry representatives should continue to work to perfect ABS (and other Commonwealth datasets) by continuing to engage with the relevant agencies
- Manage Industry expectations to avoid repeating the mistakes of previous data collection and collation efforts
- Decide on the Stop-Go milestone

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix C

Stage 1 Interim Report – In depth interviews

NY16004
Nursery Industry Data
Collection and Statistics 16/17

Stage 1: DTER depth interview outcomes

What have we achieved?

- Total of 39 interviews; 17 end users (including 8 providers), 22 data providers.
- End users include govt., suppliers, ABS, industry bodies, greenlife producers, consultants
- 2 outright refusals to be interviewed, others contacted, appointments set but not kept by potential respondents.

The interesting outcomes from providers …

- Interviews indicate response rate should be reasonable, but some very large greenlife producers and supply orgs won't participate. Nor will very small orgs believing they have nothing of interest to contribute.
- Key factors to encourage response: confidentiality agreement; completely independent 3rd party will collect data and only de-identified data provided to DTER; amalgamated data to HIA.
- Will need to provide mini summary regarding validity of random sampling and overlaying other industry data to overcome perception that survey needs to be a census.
- Will need to make initial contact call and allow respondents some time to extract data (gives us opportunity to forward confidentiality statement and mini summary.

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3

The interesting outcomes from end users …

- Most greenlife respondents interested in benchmarking (some with O/S), not all interested in data (small or those believing they know industry).
- Following statement made by government employee may help 'sell' value of collecting industry data (not to be represented as government view however, only personal observation):

  "If an industry comes to government and says 'we have no idea about our industry, even just getting a levy up can be a difficult process, let alone a 5 year plan. So the industries that come to government with good data, it's like picking winners, even though no one likes that term. If it's an industry that is organised, it's big, it's robust, they have their numbers, they've got a levy, the government is going to back them."

- Variety of metrics suggested for collection, but common demand for at least high level data.

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4

Key data required - critical

- Turnover ($s where possible, bands if not, indication of small, medium or large otherwise)
- Cost of production (where known; interesting metric also how many dk)
- Staff numbers, including admin, transport, etc.
- Product types sold, total volume sold, total value of industry
- Supply chain (ensure no double counting)
- Trend data (longitudinal when obtained)
- Profitability
- Totals (of course)
- Crunched: staff/labour costs x turnover; input costs x turnover; market share of each category

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Key data required – very nice to have

- Social metrics (but not everyone understands them yet):
  - Confidence in future of industry/own business
  - Business phase (expanding, steady, contracting)
  - Profitability (asked subtly; comparison with average of past 5 years)
  - Future plans (5 years ahead) – likelihood of operating/succession or sell plans
- Growing space (indoor versus outdoor as a measure of innovation/ technology adoption). Note: not negotiable measure for ABS
- Marketing spend
- Levy paid; by whom/when

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6

Key data required – nice to have

- R&D spend
- Training levels and type
- Biosecurity issues
- Area of farm under conservation
- … and many others

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7

What do people want in return?

- Copy of findings. Happy with hard copy. Interest in dash board polarised, but typically muted (concerns about anonymity; lack of benchmarking appreciation). May need to provide info on mechanics, why use, how to use
- Question mark over whether findings should attract a charge – some yes, most no
- No one talked about receiving financial compensation – good thing
- User confidence in results (will come from perceptions of industry to a degree – need to have at least one measure that really resonates)

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8

What does it mean for the next step?

- Won't get 100% response rate but DTER confident rate will be acceptable. CATI method and confidentiality will boost response rate.
- Several considerations if project goes ahead:
  - Will have to make initial call to set appointment giving respondents sufficient time to gather data required. Confidentiality statement will be sent as soon as appointment set
  - Will need to prepare info on random sampling, matching/verifying with secondary data
- Need to decide on questionnaire structure and content; value of collecting at least business size from those not willing to participate
- Need to decide on reporting content; style; costing (if any); who gets what

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9

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix D

Final report on the primary data collection

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Hort Innovation

Nursery & Garden Industry Statistics NY16004

Data capture project report 2017

FINAL

Key Hort Innovation contact:	DTER report authors:
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Contents

NGIA, DTER and AAC would like to thank all survey respondents for providing data and information for this study.

We appreciate the time and effort taken to provide a considerable amount of data and information.

DISCLAIMER

Data and insights provided in this report are based on information provided by survey respondents and subsequent assumptions made.

Readers should note there is a margin for error on all data provided and the report authors cannot guarantee the accuracy of information provided or assumptions made.

Summary

Background

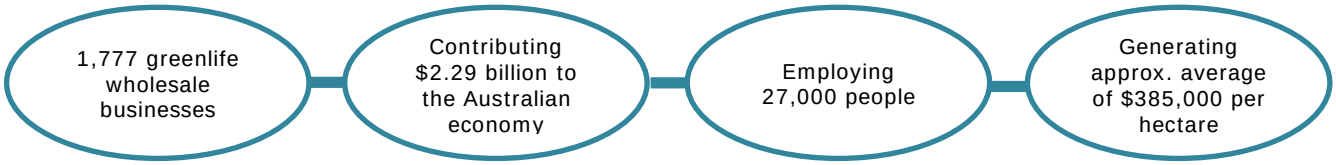
Statistical data relating to the greenlife production sector of the Nursery and Garden Industry has been collected by various organisations in the past using a variety of methodologies. For a variety of reason, studies conducted have been challenged by a lack of business engagement as well as the diverse nature of the industry. There has been some suggestion by knowledgeable people within the industry that data collected by these studies and the Australian Bureau of Statistics have underestimated the size and value of the greenlife production sector and consequently, Hort Innovation commissioned this project (NY16004) to initially evaluate the type of statistical information required by businesses and industry stakeholders and then devise a methodology to best capture that information.

Methodology

The graphic above outlines the methodology employed for the project which is explained in full in section 1 of this report.

Some difficulties arose at interviewing stage due to respondents rescheduling their interview times or not being available at the time and date they originally set. While this typically occurs to some degree in all CATI projects, the number of times interviews were rescheduled was unprecedented, with some people requiring up to 7 calls before completing the questionnaire. Additionally, due to some businesses already preparing for the busy spring period, there were instances of up to 20 attempts made before any contact was made. This resulted in the project going over time and budget and a total of 221 interviews achieved rather than the 300 originally planned for.

The industry in a 'nutshell' ...



Industry profile

More than half of all greenlife production businesses are micro (57%), turning over $500,000 or less in a year. A further 27% report sales of between $500,001 and $2 million while the remaining 17% sell more than $2 million of plants. This latter group accounts for 74% of total national turnover.

Number and value of plants sold

An estimated 1.6 billion plants are sold by greenlife production businesses at a total value of $2.89 billion. Some of these plants are sold to other productio business either for immediate resale at a marked up price or for growing on and selling later. When the value of these plants is considered, the total value to the Australian economy is approximately $2.29 billion.

Employment

Greenlife production businesses employ approximately 27,000 people, mostly directly relating to growing and caring for plants, but also in administration and other roles in the business. Approximately half these people work full time while others are part time or casual, equating to 19,000 Full Time Equivalent (FTE).

The 'average' business estimates that 32% of the income derived from sales is spent on wages. It should be noted however, that not all the 221 businesses participating in the survey keep accurate records and the proportion may be slightly different in actuality.

Confidence

Confidence in the future is widespread due to belief demand for product will continue. As a result, future intentions are typically to grow the business or at least remain steady, with only 6% intending to exit without selling to another greenlife entity. Those expecting to exit are more likely to be micro businesses than larger operations.

Conclusions and recommendations

The process:

- While the methodology of gathering statistical data from the industry has been proven as sound, in future it will be important to communicate how the 2017 data has been utilised and the benefits of future participation. It will also be worthwhile to communicate to the industry how well confidentiality of information was protected.

- The level of data sought has proven challenging to provide for some people in the industry and consequently, a simplified data set should be considered for the future, particularly in terms of plant and client categories.

The results:

- Data collected confirms that the industry contributes substantially more to the Australian economy and employment market than ABS figures suggest. When the turnover for Queensland is considered, it matches a recent comprehensive study conducted by the Queensland Government – a result that increases the credibility of the Hort Innovation survey data.

- Confidence in the future is widespread among greenlife production businesses and this is reflected in the proportion either currently in an expansion phase or planning to do so over the next 5 years. Business investment in infrastructure and to a lesser degree, technology is widespread.

- Survey results overall present a snapshot of a diverse industry that ranges from some large 'blue chip' enterprises that generate the vast majority of sales, to micro 'mum and dad' or hobby type businesses. This diversity presents some challenges for the industry overall and future support and services should probably include components that cater for the needs of opposite ends of the scale.

Main report

1. Background and methodology

Background

The Nursery & Garden Industry Statistics project was commissioned due to a critical need for accurate and timely data on the size and value of the industry to inform industry decision making, resource prioritisation, investment evaluation and strategic planning activities.

In the past, difficulties in collecting accurate and credible statistical data from the industry has proven challenging due to the diversity of the industry as well as a lack of engagement with methodologies implemented. Consequently, a different methodology was implemented for this project with the aim to overcome challenges faced in the past, with several 'stop-go' points where progress was monitored and measured, resulting in decisions to either continue to project or go no further.

The project focuses on greenlife production businesses, but in this instance, does not include retail and/or landscape entities.

Data collection methodology

Data collection was undertaken in the following stages to allow for appropriate monitoring of progress and to maximise participation:

Stage 1: In-depth telephone interviews with industry stakeholders to determine types of data required and level of interest in providing information and receiving a benchmarking tool among greenlife production businesses.

Stage 2: Collation of a comprehensive contact database of greenlife production organisations.

Stage 3: Computer Assisted Telephone Interviews (CATI) with greenlife production businesses to collect the statistical data required.

Stage 1: In-depth interviews

The first stage of data collection included identifying data users, their needs and priorities. Where end users were also proudction nurseries, level of interest in participating in the project and receiving benchmarking data was also explored.

A series of 40 in-depth telephone interviews were conducted with industry stakeholders from a variety of backgrounds including greenlife production nureries and industry suppliers as well as representatives from government, ABS, consultants, industry associations and Research & Development Corporations.

All in-depth interviews were conducted by senior DTER consultants between March and May 2017 using semi-structured topic guidelines (see report Appendices). Interview length varied considerably from 10 minutes to 30 minutes, depending on the amount of information respondents provided.

Outcomes:

The in-depth interviews revealed a keen demand for statistical and benchmarking information among most, but not all stakeholders. Greenlife production nurseries interviewed highlighted the importance of ensuring confidentiality of data provided as well as presenting data in a format that ensures individual organisations are unable to be identified. It was also clear from interviews that not all greenlife production nurseries would be prepared to provide financial data, but this outcome was expected due to difficulties experienced in collecting data in the past.

It was decided to continue to the next stage of the project after including the following steps:

- Additional promotion of the statistics project by NGIA
- Forwarding a Confidentiality Statement and list of data required to all greenlife production organisations agreeing to assist with the project.

Stage 2: Collation of greenlife production business contact database

While the Nursery & Garden Industry Australia provided a contact database of 'engaged' businesses for the project, it was important to also collect data from those not engaged, not only to ensure a representative sample, but to assist in defining the industry. Consequently, DTER sourced additional contact details from Yellow and While Pages online CDs, True Local online, the Flower Association and Google searches. In total, 2,374 unique organisations were identified, split as follows:

- NGIA: 1,679 organisations
- Yellow and white pages: 570 additional non NGIA member organisations
- True Local: 65 additional organisations
- Google: 54 additional organisations
- Flower Association: 6 additional organisations

DTER realised that some contact details sourced would be from organisations no longer operating or not greenlife *production* businesses, but this would be clarified at Stage 3 of the project.

Outcomes:

A comprehensive database was developed for use in the project. It included businesses that are not members of industry associations and consequently provides a sample with less skew.

Stage 3: Data collection

The contact database developed was fed into the Computer Assisted Telephone Interviewing (CATI) program set up by Market Metrics (accredited market research call centre used for the project based in Frankston, Victoria). All interviewers used for the project have considerable experience working on DTER's projects in the agriculture sector. Prior to commencement, interviewers were thoroughly briefed on all aspects of the project by Pamela Watson, senior consultant at DTER.

Initial contact interviews and appointment setting commenced on 23rd June 2017 and concluded on 1st August 2017. Confidentiality Statements and the list of data requirements was forwarded to potential respondents the day after contact.

Completing interviews proved challenging due many respondents rescheduling appointments up to 7 times. Additionally, several respondents who initially agreed to provide information subsequently refused to participate once they had received the list of data requirements.

The following provides outcomes from calling 2,374 numbers included in the database:

- 221 completed interviews
- 251 refusals at initial call (but 75 of this group provided some information on size of their business and others confirmed being greenlife production business)
- 157 refusals after receiving the Confidentiality Statement and list of data requirements
- 56 appointments not honoured before project close
- 259 businesses not greenlife production (retail, landscape, garden supplies)
- 87 manager/accountant away during project
- 662 disconnected number/fax machine/engaged/constant voicemail (up to 20 attempts made with no contact)
- 681 no contact made (up to 20 attempts made)

While it was originally hoped to achieve 300 completed interviews, this was not achievable despite extending the timeframe for interviewing and attempting more contacts than originally budgeted for. The high rate of refusal to provide sensitive financial data was expected, but not the large proportion of numbers where no contact was made.

Achieving 221 completed interviews provides a margin for error (at the 95% confidence level) of ±5.7% on national results.

Reasons given for non-participation in the project included the following:

- Sensitive nature of the data required
- Time of year (too close to Spring)
- Data required not captured (including overall sales value in some cases)
- Dissatisfaction with Hort Innovation

Outcomes:

Call analysis provides a definition of the industry in terms of number of greenlife production businesses in each State and nationally.

Data weighting and handling of 'empty cells'

Due to the comprehensive number of calls made for the project, it was possible to make assumptions on the number of businesses in each State and subsequently determine weighting figures that could be applied to the interviews achieved so that statistics provided represent the entire greenlife production industry, not only the sub-set of organisations participating in the study.

The data set includes a number of 'empty cells' due to respondents saying 'don't know' or unable to extract data according to the categories and supply chain options asked for. To reliably weight and extrapolate data to represent the entire industry means these 'empty cells' need to be accounted for.

Due to the considerable range in businesses sizes included in the sample, it was deemed inappropriate to apply an overall average to each empty cell. Consequently, based on information that was provided (for example number of employees and total turnover), an 'average' was applied to metrics related to product type and supply chain that appeared to be the most logical. For example, an organisation with 20 employees and available data on total turnover sells plants in the 'perennial, trees & shrubs' and 'bedding and potted colour' categories to retailers and landscapers but could not provide data on the number and value of plants sold in each category. In this scenario, averages for similar organisations (similar size, same clients and products) was used to populate empty cells.

While it is acknowledged that a margin for error exists in the data provided in this report due to sampling, assumptions made and data provided by respondents, the report authors are reasonably confident it provides useful insights into the size of the greenlife production industry as well as attitudinal data.

It should be noted that at the time of analysing data for the project, DTER could not determine how other data collection agencies such as the Bureau of Statistics have dealt with 'empty' cells in the past. Therefore the most logical averages have been applied, but DTER acknowledges this method may be a contributing factor in discrepancies between data collected for this project and historical data collection efforts.

2. Report notes

Due to very small sample sizes in South Australia, Western Australia, Tasmania, Northern Territory and Australian Capital Territory, it was decided to present data nationally and by business size rather than by State and Territory.

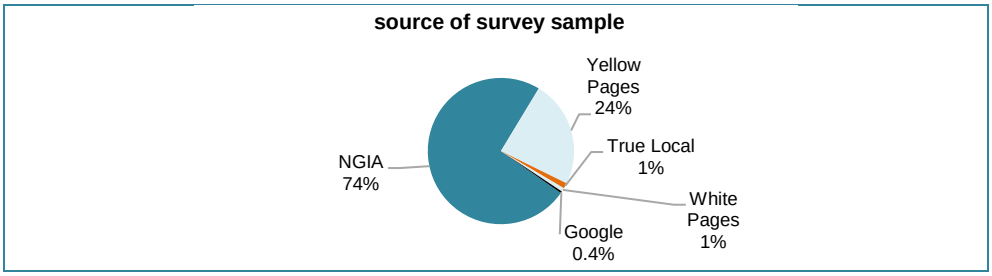
While the Australian Bureau of Statistics splits greenlife production businesses into 3 classes ($200,000 turnover or less; $200,001 to $2 million and more than $2 million), DTER believes a 'micro' business is more appropriately defined as having turnover of $500,000 or less. Consequently, business sizes included in this report vary from those presented by ABS in the past.

Data collected for the project is based on the 2015-16 financial year to ensure all nurseries had data available. This decision was made following the conduct of in-depth interviews with some smaller nurseries that mentioned having to rely on tax returns in order to provide information and at the time of interview, these returns would not yet be completed for 2016-17. In future, it may be better to conduct data collection at a strategic point in time when the majority of businesses will have data on hand but not be preparing for the busy spring period.

3. Sample sources

source	% of sample (base: all respondents)				
		turnover			
	national (n=221)	≤ $500k (n=113)	$500,001 to $2 million (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
NGIA	74%	75%	73%	65%	81%
Yellow Pages	24%	22%	26%	35%	16%
True Local	1%	2%	0%	0%	3%
White Pages	1%	1%	2%	0%	0%
Google search	<1%	1%	0%	0%	0%

*Caution, sub sample smaller than N=30.



Key findings

- While the majority of respondents are NGIA members, businesses sourced through Yellow and White Pages, True Local and Google have also participated in the survey.
- Notably, one third of the larger businesses included in the sample are not NGIA members and were sourced via Yellow Pages CD.

Implications

The sample used to obtain interviews is not biased towards industry association members. While this group still represents a substantial proportion of interviews, it is reflective of industry membership. There is consequently a high level of confidence in the sample used for the project.

4. Sample demographics

demographic metric	% of sample (base: all respondents)				
		turnover			
	national (n=221)	≤ $500k (n=113)	$500,001 to $2 million (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
Age:					
18 to 39 years	15%	10%	21%	21%	20%
40 to 59 years	49%	47%	49%	65%	40%
60 and older	36%	43%	30%	14%	40%
Average age	54 yrs	56 yrs	53 yrs	49 yrs	53 yrs
Average years in industry:	24 yrs	25 yrs	25 yrs	21 yrs	25 yrs
Gender:					
Male	72%	74%	66%	74%	69%
Female	28%	26%	34%	26%	31%
Respondent role:					
Owner or joint owner of the business	76%	84%	77%	49%	73%
Manager	20%	16%	16%	40%	20%
MD/CEO	2%	0%	2%	3%	7%
Admin/Accounts	2%	0%	5%	8%	0%

*Caution, sub sample smaller than N=30.

Key findings

- Survey respondents are typically male and while the average age is 54 years with 24 years in the industry, there is considerable variation by age and experience.
- Respondents are typically the owner or manager of the business, but in 2% of cases, the survey was answered by a person working in an administrative or accounts role. In most of these situations, data was provided to them by the business owner prior to participating in the survey.

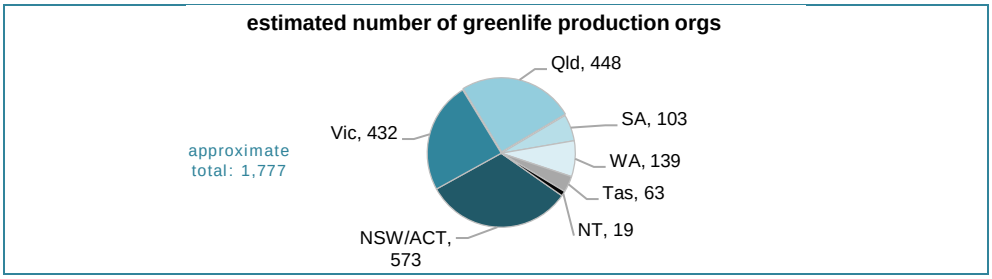
Implications

The survey sample includes respondents from each age group and gender and filling various roles.

5. Number of greenlife production organisations

call outcomes	% mentioning (base: all respondents)							
	national (n=221)	nsw / act (n=76)	vic (n=62)	qld (n=48)	sa (n=13)*	wa (n=10)*	tas (n=9)*	nt (n=3)*
Total numbers sourced	2,374	785	613	588	142	179	78	19
Total businesses where contact made (personal)	1,031	308	285	244	59	86	41	8
% of contacts known to be greenlife production	75%	76%	71%	76%	73%	78%	80%	100%
% of contacts known to NOT be greenlife production	25%	24%	29%	24%	27%	22%	20%	0%
Total greenlife production businesses (estimated)	1,777	573	432	448	103	139	63	19
% greenlife production businesses (estimated)	100%	32%	24%	25%	6%	8%	4%	1%

*Caution, very small sub sample.



Key findings

- In total, 75% of the 1,031 organisations contacted for the project confirmed their status as a greenlife production business and 25% operate in the industry but not as a producer.
- To weight the data set so results represent the entire industry, some assumptions needed to be made. The first assumption is that among the businesses where no contact was made, the proportion that are greenlife production organisations reflects that where contact was made (75%).
- The second assumption is that the sample for the project represents 'the universe' of greenlife production organisations.
- The third assumption made is that any errors in assumption 1 will be countered in assumption 2. For example, if organisations in the 'non-contact' category are more likely to no longer be operating than in the 'contact' category then this will be balanced by the probability that not all greenlife production businesses are included in the contact database.
- Contact results suggest there are approximately 1,777 greenlife production businesses nationally mainly concentrated in NSW, Victoria and Queensland.

Implications

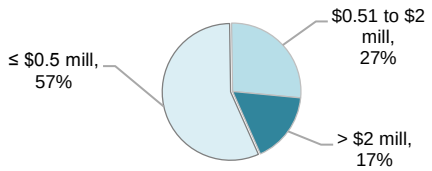
While survey weighting figures are based on results of call analysis and the subsequent assumption that 75% of businesses included in the sample are greenlife production, the report authors are confident weighting figures are reasonably accurate.

6. Organisation size (based on survey sample)

business turnover amount 2015-16	% mentioning (base: respondents able to provide data)			
		turnover		
	national (n=198)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*
$500,000 or less	57%	100%	0%	0%
$500,001 to $1,000,000	15%	0%	58%	0%
$1,000,001 to $1,500,000	6%	0%	22%	0%
$1,500,001 to $2,000,000	5%	0%	20%	0%
$2,000,001 to $2,500,000	1%	0%	0%	9%
$2,500,001 to $3,000,000	3%	0%	0%	16%
$3,000,001 to $3,500,000	1%	0%	0%	9%
$3,500,001 to $4,000,000	1%	0%	0%	4%
$4,000,001 to $4,500,000	0%	0%	0%	3%
$4,500,001 to $5,000,000	2%	0%	0%	13%
More than $5,000,000	8%	0%	0%	47%

*Caution, sub sample smaller than N=30.

business size (base: able to answer)



Key findings

- Random sampling suggests more than half the industry consists of micro businesses, with only a small proportion that are very large.
- 17% of the industry has a turnover of more than $2 million, while 10% is in the $3.5 million and over bracket.
- Almost half the businesses included in the 'more than $2 million turnover' sub-segment have annual sales exceeding $5 million while more than half those included in the $500,001 to $2 million group turnover $500,001 to $1 million.

Implications

The nursery and garden industry is extremely diverse in terms of business size, from very large down to micro. More than half are in the latter category, but contribute only a small proportion of the industry's contribution to the national economy. This result is reflective of most business categories, including those in agriculture, production and environmental.

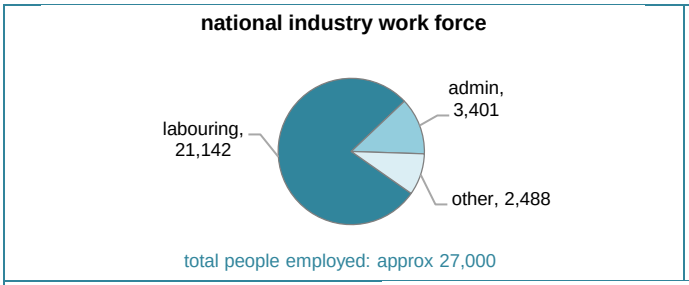
7. Industry workforce

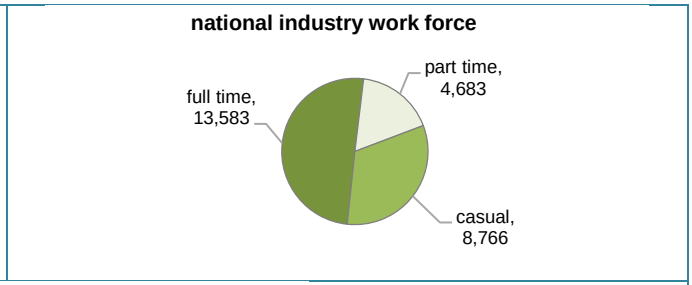
7.1 Number of people employed and roles

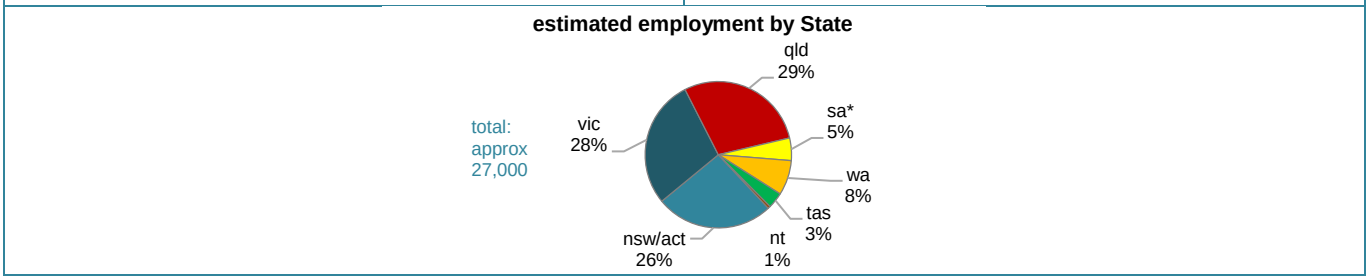
Questions asked:
Q3. How many people including yourself are employed in the business in each of the States it operates in for the following categories?
Q4. And what would be the full time equivalent for each of the following in the States you operate in?

total people employed by production greenlife nurseries 2015-16 (estimated)	% mentioning (base: respondents able to provide data)			
		turnover		
	national (n=218)	≤ $500k (n=113)	$500,001 to $2 million (n=51)	> $2 million (n=28)*
Labouring – full time	10,119	1,824	2,125	6,170
Labouring – part time	3,373	1,067	762	1,545
Labouring – casual	7,650	1,712	2,026	3,912
Admin – full time	2,213	420	465	1,329
Admin – part time	879	310	229	339
Admin – casual	309	48	81	179
Other	2,488	44	591	1,853
Total labouring	21,142	4,602	4,913	11,627
Total admin	3,401	778	775	1,847
Total people employed	27,032	5,425	6,279	15,327
Full time equivalent	18,943	3,802	4,400	10,741

*Caution, sub sample smaller than N=30.







Key findings

- Weighting data suggests approximately 27,000 people work in greenlife production businesses nationally, with half in businesses turning over more than $2 million.
- The average overall is 15 to 16 people, ranging from single operator organisations to those with more than 200 people.
- Nursery labouring roles account for 78% of all positions, admin 13% and 'other' 9%.
- Full time positions are held by 50% of people working in greenlife production businesses, 17% are part time and 32% are in casual roles.
- The vast majority people with roles in the greenlife production industry are employed in the larger Eastern States.

Implications

Data collected suggests that approximately 27,000 people are employed in greenlife production businesses and half these roles are full time positions.

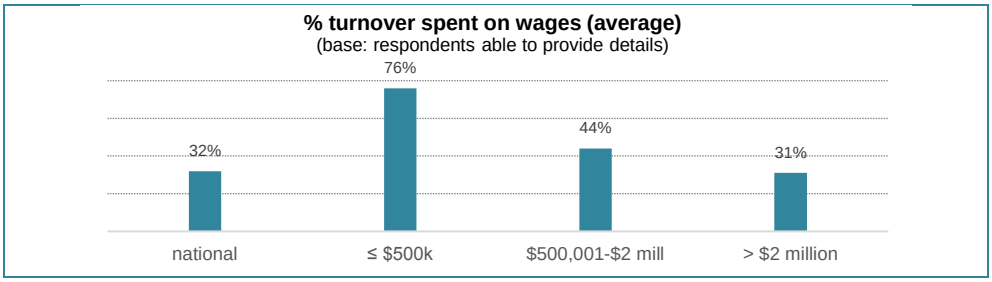
The spread of employment across the States appears representative and gives additional credibility to survey results.

7.2 Wages paid

Question asked:
Q5. What was the total cost of wages for the business in the 2015-16 financial year, including your own?

cost of wages in 2015-16 (estimated)	% mentioning (base: respondents able to provide data)			
		turnover		
	national (n=187)	≤ $500k (n=94)	$500,001-$2 mill (n=51)	> $2 million (n=28)*
Approximate total cost of wages	$1,061,196,457	$154,360,726	$240,531,685	$666,304,046
Average wage based on FTE (including owners)	$56,021	$40,599	$54,666	$62,033
% of turnover spent on wages (average, inc. owners)	32%	76%	44%	31%

*Caution, sub sample smaller than N=30.



Key findings

- On average, wages represent 32% of greenlife production businesses' annual turnover, but it should be noted that in smaller businesses, wages represent a much higher proportion of turnover.
- While the average wage nationally is approximately $56,000, it varies from $40,000 in micro businesses to $60,000 in those turning over more than $2 million per annum.
- It should be noted the figures represented in this section include wages paid to business owners and of course, in micro businesses with no staff other than owners wages will be total profit.

Implications

Survey results appear to conform to typical 'rules' relating to wages as a proportion of turnover.

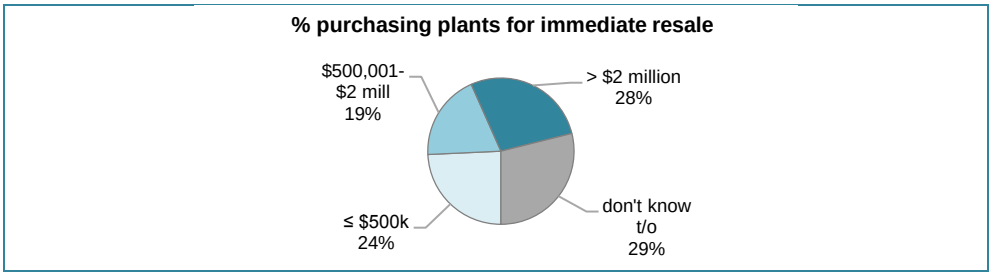
8. Number and value of plants sold

8.1 Number and value of plants purchased for immediate resale

Questions asked:
Q7. During the 2015-16 financial year, did you purchase plants from other greenlife producers or nurseries for immediate resale?
Q8. If yes: What was the total value of the plants purchased from other greenlife producers or nurseries?
Q9. How many plants in total did you purchase?
Q10. What was the total value of these plants when sold?

plants purchased for immediate resale in 2015-16 (estimated)	% mentioning (base: all respondents/those purchasing plants for immediate resale)				
		turnover			
	national	≤ $500k	$500,001 to $2 million	> $2 million*	don't know t/o*
% purchasing plants for immediate resale	42%	42%	33%	48%	50%
Total number of plants purchased	60,361,885	2,837,669	2,294,796	42,898,810	12,330,610
Total value of plants when purchased	$197,013,558	$12,330,241	$10,738,287	$166,543,607	$7,401,424
Total value of plants when sold	$426,312,946	$64,156,123	$29,784,595	$317,954,462	$14,417,767
Average % mark-up	216%	420%	177%	91%	95%

*Caution, sub sample smaller than N=30.



Key findings

- Readers should note the figures provided in this section are rough estimates only due to the large proportion of respondents unable to provide exact details of plant numbers, purchase and resale values.
- Overall, 42% of businesses purchase plants for immediate resale and notably includes 24% of micro businesses.
- An estimated total of more than 60 million plants are purchased for immediate resale and while survey figures suggest mark-up averages 200%, figures provided by larger businesses suggest it is possibly half this amount.

Implications

A considerable proportion of the industry realises a profit from purchasing plants and immediately reselling them at a profit.

8.2 Number and value of plants sold to clients by category

Questions asked:
Q12. In the 2015-16 financial year, approximately how many plants did your business sell to …?
Q13. And what was the total value excluding GST in the plants sold to (from Q12) in 2015-16 …

client category for plants sold in 2015-16 (estimated)	base: respondents able to provide data
Production nurseries:	
% selling to sector	54%
Total number of plants	853,021,438
Total value of plants	$599,443,763
Retail nurseries:	
% selling to sector	59%
Total number of plants	311,713,369
Total value of plants	$1,156,767,576
Revegetation, including forestry:	
% selling to sector	16%
Total number of plants	162,437,384
Total value of plants	$71,825,347
Local, State and Federal Government Depts:	
% selling to sector	31%
Total number of plants	101,848,063
Total value of plants	$159,095,853
Landscapers, developers and builders:	
% selling to sector	40%
Total number of plants	8,171,230
Total value of plants	$558,388,988
Primary industry:	
% selling	14%
Total number of plants	58,910,805
Total value of plants	$104,309,106
Other (includes those unable to breakdown by category):	
% selling to sector	31%
Total number of plants	121,836,980
Total value of plants	$236,642,065
Total plants sold:	
Total number of plants	1,617,939,270
Total value of plants	$2,886,472,697

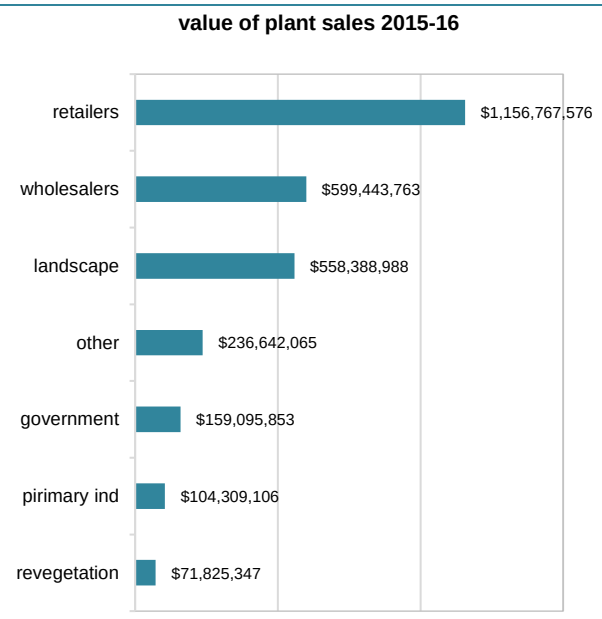
Due to small sample sizes by category, only total data is provided.
NOTE: Data is for the 2015-16 year and not necessarily representative of sales in *every* year.

Key findings

- Readers should note 'other' mentions include totals for those people unable to provide breakdowns by category.
- Data provided by respondents suggests more than 1.6 billion plants were sold by greenlife production businesses in 2015-16 at a total value of $2.89 billion.
- When sales to other production business are excluded (to ensure figures are not double counted), the industry turnover can be said to be approximately $2.29 billion.
- The 'top' 17% of businesses account for 74% of the industry's contribution to the national economy.
- Of note, survey results suggest total turnover in Queensland is approximately $880 million and this result is similar to a recent study conducted by the State Department of Agriculture.

Implications

Survey results suggest the industry contributes a significantly greater amount of money to the national economy than data collected by other methodologies indicated.



8.3 Number and value of plants sold by plant category

Questions asked:
Q14. During the 2015-16 financial year, approximately how many plants did you sell in the following categories?
Q15. And what was the total value excluding GST of (from Q14) sold?

client category for plants sold 2015-16 (estimated)	base: respondents able to provide data
Propagation plants:	
% selling propagation plants	33%
Total number of plants	868,512,751
Total value of plants	$447,601,551
Herbs and vegetables:	
% selling herbs and vegetables	16%
Total number of plants	175,406,556
Total value of plants	$78,073,160
Fruit trees, nut trees, vines:	
% selling fruit trees, nut trees, vines	20%
Total number of plants	8,992,916
Total value of plants	$121,601,948
Bedding and potted colour:	
% selling bedding, potted colour	15%
Total number of plants	161,343,169
Total value of plants	$380,698,008
Indoor plants:	
% selling indoor plants	21%
Total number of plants	37,516,954
Total value of plants	$372,240,125
Perennials, trees and shrubs:	
% selling perennials, trees, shrubs	56%
Total number of plants	144,541,833
Total value of plants	$1,150,735,717
Other (includes those unable to breakdown by category):	
% selling other	14%
Total number of plants	221,625,091
Total value of plants	$335,522,189
Total plants sold:	
Total number of plants	1,617,939,270
Total value of plants	$2,886,472,697

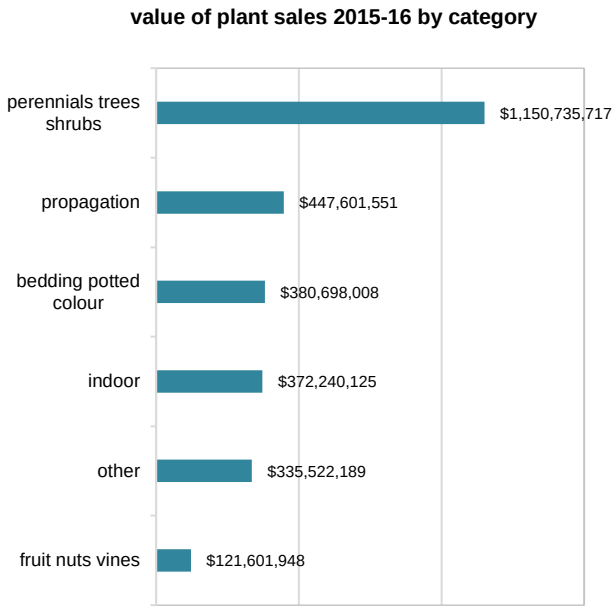
Due to small sample sizes by category, only total data is provided.
NOTE: Data is for the 2015-16 year and not necessarily representative of sales in *every* year.

Key findings

- Readers should note 'other' mentions include totals for those people unable to provide breakdowns by category.
- Nationally, the highest value sale was in perennials, trees and shrubs which represented approximately half the plants sold.
- It should be noted that some of the sales categories will have been to other production businesses.

Implications

The survey sample includes a variety of businesses selling different plant categories.



8.4 Operating costs

Questions asked:

Q16. Do you know what your business's total operating costs were for the 2015-16 financial year, including things like input costs, labour and transport costs, rent etc.?

Q17. If yes: And what were the total operating costs?

Q18. If no: Approximately what proportion of your business turnover was taken up by operating costs for the 2015-16 financial year?

operating costs 2015-16 (estimated)	base: all respondents / those able to provide data				
	national	≤ $500k	$500,001 to $2 million	> $2 million*	don't know turnover
% accurately knowing operating costs	48%	48%	50%	76%	14%
% able to guess operating costs	32%	37%	37%	14%	19%
Average % of turnover as operating costs	28%	unavailable	27%	32%	unavailable

*Caution, sub sample smaller than N=30.

Key findings

- Readers should note the figures provided in this section are rough estimates only due to the large proportion of respondents unable to provide exact details of operating costs and/or annual turnover.
- Average % of turnover as operating costs is not included for micro businesses due to the number of responses that did not make sense. For example, in several cases the costs figures provided were substantially greater than the business turnover to the degree the business would not be viable.
- It is notable that knowledge of operating costs becomes more widespread as business size increases.

Implications

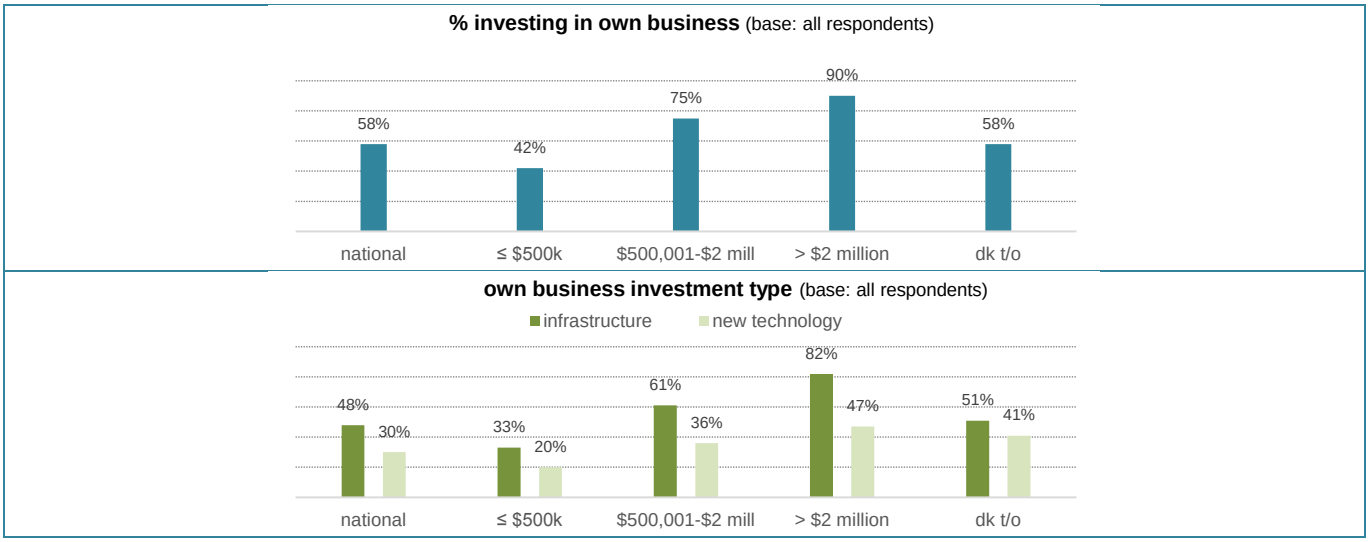
A considerable proportion of the industry does not have accurate data on cost of operating and clearly this is an area where greater support for businesses turning over less than $2 million could be required.

9. Business investment

Question asked:
Q26. During the 2015-16 financial year, did you invest in either infrastructure or new technology for the business?
Q27. If yes: Approximately how much did you invest in infrastructure?
Q28. If yes: Approximately how much did you invest in new technology?

business investment	% mentioning (base: all respondents)				
	national (n=221)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
% making business investment	58%	42%	75%	90%	58%
% NOT making business investment	42%	58%	25%	10%	42%
% investing in infrastructure	48%	33%	61%	82%	51%
Average amount invested in infrastructure	$106,568	$31,759	$68,300	$283,091	$95,615
Total invested in infrastructure	$69,565,952	$7,176,524	$13,718,525	$40,868,840	$7,802,063
% investing in new technology	30%	20%	36%	47%	41%
Average amount invested in new technology	$36,066	$26,233	$21,561	$69,385	$45,875
Total invested in new technology	$19,706,174	$5,375,064	$3,497,317	$7,700,616	$3,133,177
% turnover invested	3%	8%	4%	3%	3%

*Caution sub sample smaller than N=30.



Key findings

- Investment in the business was made in more than half of cases, with an average $106,568 spent on infrastructure and $36,066 spent on new technology.
- Business investment has been more widespread among larger enterprises than those that are 'micro' size.
- Nationally, the amount invested in infrastructure and technology represents 3% of turnover.

Implications

In line with widespread confidence in the future, many businesses invested in infrastructure and/or new technology during 2015-16.

10. Production area

Question asked:

Q6. What is the total farm area in each State used for nursery production – and I would like you to give me outdoor area first and then undercover including greenhouses, cold frames, cloth houses and lath houses?

production area (hectares) (estimated)	% mentioning (base: respondents able to provide data)				
		turnover			
	national	≤ $500k	$500,001 to $2 million	> $2 million	don't know t/o
Outdoor area (approximate)					
Average ha per farm	3.6	1.63	4.44	9.31	4.33
Median ha per farm	1.0	0.50	1.77	4.86	1.00
Estimated total outdoor area (ha)	6,229	2,490	1,954	1,219	566
Indoor area (approximate)					
% of farms with indoor area	84%	82%	80%	88%	91%
Average ha per farm with indoor area	0.9	0.48	0.91	2.66	0.91
Median ha per farm with indoor area	0.4	0.20	0.80	2.00	0.29
Estimated total indoor area (ha)	1,273	324	289	497	163
Estimated turnover per hectare (outdoor + indoor)	$384,760	$57,847	$195,852	$994,423	unavailable

*Caution sub sample smaller than N=30.

Key findings

- In total, greenlife production businesses operate on approximately 6,200 ha of land with the average farm being 3.6 hectares. There is considerable variation by business however, from 1.63 hectares on average among those with a turnover of $500,000 or less to 9.31 hectares where turnover is more than $2 million.
- Overall, 84% of businesses have some indoor or covered area, with an average of just under 1 hectare and a median of 0.4 hectares.
- The estimated total indoor area is approximately 1,200 hectares.
- Notably, businesses with a turnover of more than $2 million manage to make considerably more per hectare than micro businesses.

Implications

Greenlife production businesses use a relatively small amount of land compared to other primary industries when turnover is taken into consideration.

11. Current business phase and future intentions

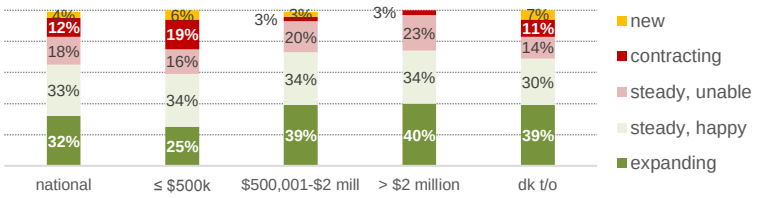
Questions asked:
Q19. Which of the following best describes your nursery business over the past few years?
Q20. At this point in time, what is the intention for the business over the next 5 years?

current business stage	% mentioning (base: all respondents)				
	national (n=221)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
Expanding	32%	25%	39%	40%	39%
Steady, where want it to be	33%	34%	34%	34%	30%
Steady, unable to expand	18%	16%	20%	23%	14%
Contracting/winding down	12%	19%	3%	3%	11%
New business	4%	6%	3%	0%	7%

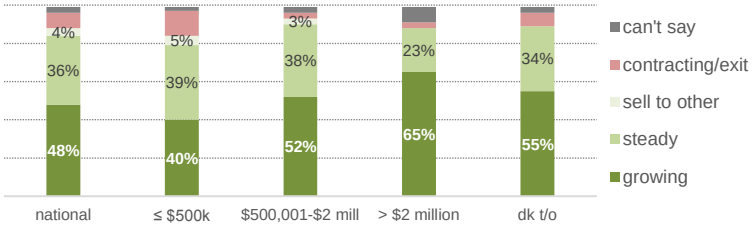
future intentions for business	% mentioning (base: all respondents)				
	national (n=221)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
Growing business	48%	40%	52%	65%	55%
Remaining steady	36%	39%	38%	23%	34%
Contracting/winding down	2%	4%	0%	3%	0%
Sell as business to other person/company	4%	5%	3%	0%	0%
Sell land to developer	1%	1%	3%	0%	0%
Close business	5%	8%	0%	0%	7%
Can't say	3%	2%	3%	8%	3%

*Caution sub sample smaller than N=30.

current business phase (base: all)



business intentions (base: all)



Key findings

- The proportion of businesses in an expansion phase is on par with other industries and respondents are 5 times more likely to say they are expanding or happy with where things are at than they are to say the business is contracting/winding down.
- Encouragingly, almost half of all businesses are intending to grow compared to 8% winding down or exiting the industry either through contraction, selling to a developer or closing the business without selling.
- Micro businesses are the most likely to be currently in a 'winding down' phase.
- Nationally, 6% of greenlife production businesses say they are unlikely to be operating in 5 years' time. This proportion is equivalent to approximately 105 businesses and while it does include some larger enterprises, exits are more likely to come from micro businesses.

Implications

While the industry is likely to lose a few businesses over the next 5 years, almost half those remaining are predicting growth. This finding is an encouraging sign and confirms the widespread positive sentiment detailed in the next section of this report.

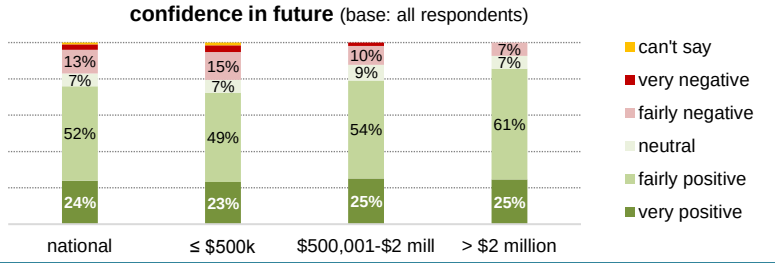
12. Confidence in industry

Questions asked:
Q21. Overall, how do you feel about the future of the nursery and garden industry? Would you say you feel (read out)
Q22. Why do you say that?

confidence	% mentioning (base: all respondents)				
	national (n=221)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
Very positive	24%	23%	25%	25%	28%
Fairly positive	52%	49%	54%	61%	50%
Neutral	7%	7%	9%	7%	3%
Fairly negative	13%	15%	10%	7%	11%
Very negative	3%	4%	2%	0%	7%
Can't say	1%	2%	0%	0%	0%
Total: positive	76%	72%	79%	86%	78%
Total: negative	16%	19%	12%	7%	18%

reasons for level of confidence (main mentions)	% mentioning (base: all respondents)				
	national (n=221)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
Positive mentions:					
Demand for product	56%	52%	55%	74%	57%
Opportunities for innovative/niche products	15%	20%	9%	13%	7%
Increasing opportunities due to industry exits	5%	5%	2%	3%	7%
Optimistic outlook/enjoyment of farming/business (NFI)	5%	3%	3%	6%	13%
Good business management	3%	3%	6%	3%	0%
Negative mentions:					
Decreasing product demand	16%	21%	13%	7%	14%
Specific mentions re supplying Bunnings	10%	10%	11%	6%	11%
Number of nurseries closing down	6%	8%	5%	0%	3%
Input costs	5%	2%	11%	7%	7%
Low prices received	3%	1%	6%	4%	3%

*Caution sub sample smaller than N=30.



Key findings

- Respondents are generally positive about the future, mainly due to confidence in demand for product, but there is also a group with a vision for the industry that includes developing innovative or niche products.
- While 16% are negative about the future, only 3% are *very negative*. Lack of demand for products sold is main reason for concern as well as the price pressure applied by large retailers.
- Of note, 41% of respondents who have been in the industry for more than 15 years are *very positive* about the future, regardless of their business size.

Implications

Confidence in the future is quite widespread and results for this measure are similar to those recorded in DTER projects conducted in other agricultural industries.

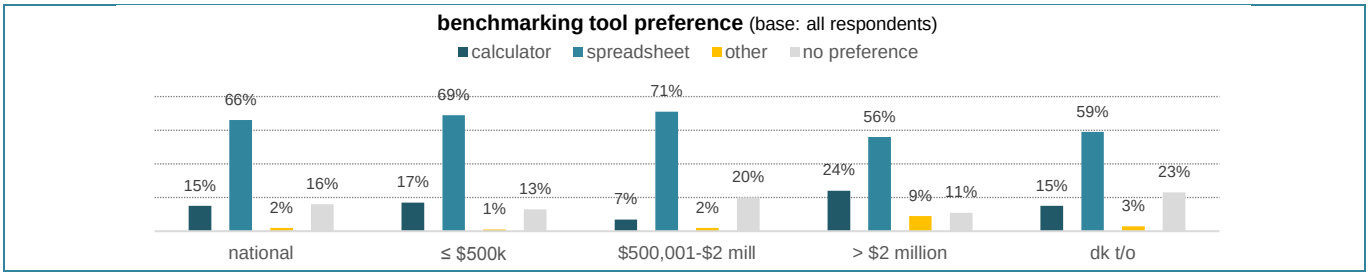
The link between confidence and belief there is demand for product is clear – again, this result is similar to other industries.

13. Benchmarking tool preference

Question asked:
Q26. During the 2015-16 financial year, did you invest in either infrastructure or new technology for the business?
Q27. If yes: Approximately how much did you invest in infrastructure?
Q28. If yes: Approximately how much did you invest in new technology?

benchmarking tool	% mentioning (base: all respondents)				
	national (n=221)	≤ $500k (n=113)	$500,001-$2 mill (n=51)	> $2 million (n=28)*	don't know t/o (n=29)*
Interactive calculator	15%	17%	7%	24%	15%
Excel spreadsheet	66%	69%	71%	56%	59%
Other	2%	1%	2%	9%	3%
No preference	16%	13%	20%	11%	23%

*Caution sub sample smaller than N=30.



Key findings

- Demand for an Excel spreadsheet is widespread, with lower levels of interest in an interactive calculator.

Implications

It may be important to send an interactive benchmarking calculator to survey respondents to gauge their informed opinion on its suitability. It is likely that once they have had an opportunity to understand the benefits of using this type of tool, they will 'warm' to its use.

Appendix 1: In-depth interview topic guideline – end user of data

Interaction with industry:

Explore how respondent interacts with the nursery and garden industry, eg:

Can you provide me with some background on how you are currently involved with the nursery and garden industry?

For how many years have you been involved with the industry in this type of capacity?

Have you been involved in just one specific area or across a number? What are they?

Useful statistics and information:

What types of statistics and other information would be useful in your field?

If necessary, explore for:

- Number of people working in the industry (full time, part time, casual or seasonal)
- Sales areas (retail, broker/resale, landscape industry/developers, agriculture, councils, catchment management, etc.)
- Financial data such as turnover, value of product type, value of business type
- Type, number and value of imports if any
- Type, number and value of exports if any
- Phase (active growth, static, winding down)
- Confidence in the future of the industry
- Other?

Rank importance of data types.

Explore how statistics and data could potentially be used, both in own business and for industry in general. Explore for:

- Benchmarking
- Decision-making
- Business skills
- Industry lobbying potential
- Resource prioritisations
- Etc

Impact on greenlife producer participation:

If respondent is greenlife producer, explore the impact on future participation if statistics/information required was obtainable.

Explore the likelihood of participating online

Explore the types of information/guarantees of confidentiality that would encourage participation

Explore the types of incentives that may be required to encourage participation

Appendix 2: In-depth interview topic guideline – greenlife producers

Perceived useful statistics and information:

What types of statistics and other information would potentially be useful for your business and/or the industry generally?

If necessary, explore for:

- Number of people working in the industry (full time, part time, casual or seasonal)
- Sales areas (retail, broker/resale, landscape industry/developers, agriculture,
- Financial data such as turnover, production value of each sales type, cost of production etc
- Data by State
- Type, number and value of imports if any
- Type, number and value of exports if any
- Phase (active growth, static, winding down)
- Confidence in the future of the industry
- Other?

Rank importance of data types.

Explore how statistics and data would be used. Explore for:

- Benchmarking
- Decision-making
- Business skills
- Industry lobbying potential
- Resource prioritisations
- Etc

If respondent doesn't think statistics will help, explore why, then explore whether these barriers could overcome.

Participation likelihood and drivers:

One of the things we will have to stress is confidentiality:

- Data will be collected by a 3rd party and will be de-identified in line with Privacy Act guidelines
- Data will be collected via telephone interviews
- Random sample of businesses will be included; HIA and other industry bodies or individuals will not know who was interviewed
- All data collected will be aggregated so that it will be impossible to identify results from individual businesses
- If respondents require it, a confidentiality agreement will be forwarded prior to interview

Explore capacity to provide data:

- Type of data available (eg. financial, employment, sales etc)

Explore interest in providing data:

- (eg. financial, employment, sales etc)

Explore types of incentives that may be required to encourage participation:

- (eg. financial, summary of data, dashboard, other)

Explore the types of information/guarantees of confidentiality that would encourage participation:

- (eg. independent collection, etc)

Explore the likelihood of providing data and statistics online in future (if project is successful initially)

Explore likelihood of participation by frequency of data collection (can add that it is most likely to be conducted annually):

- (eg. quarterly, yearly, biennially, etc.)

Appendix 3: Confidentiality statement

22 June 2017

Nursery and Garden Industry Data & Statistics Collection

Confidentiality Statement

Thank you for agreeing to provide data for the Horticulture Innovation Australia project NY16004 – Nursery Industry Research and Statistics 2016/17.

Data for the project will be collected and stored securely by Market Metrics, an independent, fully accredited data collection company based in Frankston, Victoria. Their web address is http://www.marketmetrics.com.au should you wish to read about their services. Data and information collected will only be used for the purposes of this specific project.

In accordance with Australia's strict Privacy Principles, full confidentiality is assured and once information processing has been completed, any identifying data such as your name, company and contact details (including address and postcode) will be removed from your responses to the survey. While interviewing is taking place, data held by Market Metrics will remain identifiable in case there is an anomaly in the data that requires a call back and clarification. Once Market Metrics has completed this process, de-identification will occur.

On completion of all interviewing, Down To Earth Research (DTER) will be provided with a de-identified data set so data can be aggregated and analysed. DTER will then provide an overall industry report to Horticulture Innovation Australia Limited (HIAL). No one from the nursery and garden industry, HIAL, industry organisations, government departments, etc. will know who participated in the study nor the information and data they provided.

Should you have any concerns whatsoever, please contact Pamela Watson from DTER (Victoria) by either email or phone (pam@dter.com.au or 0418 380 105) or Daniel Watson from DTER (WA) (daniel@dter.com.au or 0409 775 553).

Thank you again for your assistance. The data collected for the study will be used to provide a tool that your company will be able to use for benchmarking purposes and to better understand the size and nature of the industry. It will also enable HIAL to have more meaningful discussions with government organisations in the future.

Kind regards

Pamela Watson
Research Director
Down To Earth Research

Appendix 4: CATI questionnaire

Q1. Firstly, I need to clarify how many sites your nursery business operates from _____ sites

If more than 1 site, ask Q2, others go to Q3:
Q2. What states and territories are the sites location in? *Multiple possible*

If only 1 site OR more than 1 site, but in the same State, ask:
Q3. How many people including yourself are employed in the business in the following roles?

If more than 1 site in different States, ask:
Q3. How many people including yourself are employed in the business in each of the States it operates in for the following categories? *If unable to answer, obtain contact details of managers in other States who may be able to provide the information required. DP note: we may need a common ident in this situation so we can merge the data. Interviewer note: If person works in 2 roles, make sure you only record them as working in one role. Explain to respondent that we have to be careful not to double count people, so ask them to include people with 2 roles in the role they primarily work in.*

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Full time nursery labouring duties such as plant handling and/or despatch etc.								
Part time nursery labouring duties								
Casual nursery labouring duties								
Full time business administration full time								
Part time business administration part time								
Casual business administration								
Other (specify)								

So just confirming that is a total of (total from Q3) people employed in some capacity by the business?

Q4. And what would be the full time equivalent for each of the following in the States you operate in? *read out*

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Nursery labouring staff								
Business administration staff								
Other								

Q5. (By State if operate in more than one State), what was the total cost of wages for the business in the 2015-16 year, including your own?

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Total wages								

If only 1 site OR more than 1 site, but in the same State, ask:
Q6. What is the total area of the farm used for nursery production – and I would like you to give me outdoor area first and then undercover including greenhouses, cold frames, cloth houses and lath houses?

If more than 1 site in different States, ask:
Q6. What is the total farm area in each State used for nursery production – and I would like you to give me outdoor area first and then undercover including greenhouses, cold frames, cloth houses and lath houses?

DP note: allow for hectares and acres, convert at computer stage

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Outdoor space								
Indoor space								

Q7. During the 2015-16 financial year, did you purchase plants from other greenlife producers or nurseries for immediate resale?
Yes ---------- 1 continue
No ---------- 2 go to Q11

Q8. What was the total value of the plants purchased from other greenlife producers or nurseries?
$ _____

Q9. How many plants in total did you purchase?
_____
Q10. What was the total value of these plants when sold?
$ _____

Q11. Would you be able to provide accurate information on the number of plants your business sold in the 2015-16 financial year or would you have to give me an estimate?
Accurate ---------- 1
Estimate ---------- 2
Neither/refused ---------- 3

Q12. (By State if operate in more than one State) In the 2015-16 financial year, approximately how many plants did your business sell to … *read out. If none, type 0. If the respondent can only provide details of total plants sold, capture that number in 'Only able to provide total sold' box.*

Q13. And what was the total value excluding GST in the plants sold to (from Q12) in 2015-16 … *read out options where response is not zero. If none is response for Q12, type 0. If the respondent can only provide details of total plants sold, capture that number in 'Only able to provide total sold' box. DP note: loop directly after each mentioned in Q12.*

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Whole sale nurseries:								
Number of plants								
Value								
Retail nurseries:								
Number of plants								
Value								
Revegetation, including forestry:								
Number of plants								
Value								
Local, State & Federal government departments including water corporations, RTA, schools, etc:								
Number of plants								
Value								
Landscapers, developers and builders:								
Number of plants								
Value								
Primary industry:								
Number of plants								
Value								
Other (specify): *DP note: allow for more than 1 other*								
Number of plants								
Value								
Only able to provide total sold/total value:								
Number of plants								
Value								
TOTAL (computer calculate and confirm with respondent):								
Number of plants								
Value								

Q14. During the 2015-16 financial year, how many plants did you sell in the following categories? *Record in grid*
If operating in more than one State:
During the 2015-16 financial year, how many plants did you sell in the following categories in each State? *Record in grid.*

Q15. And what was the total value of (from Q14) of plants sold? If you don't know exactly, please give us your best estimate. *Record in grid. National response only. DP note: loop each category from Q14 straight after Q14. DP note: include a logic check to ensure total of ALL types sold at Q14 = Q12 for both pot numbers and value*

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Propagation plants (eg, plugs, tubestock, cuttings, tissue culture):								
Number of plants								
Value								
Herbs and vegetables (excluding seeds and bulbs):								
Number of plants								
Value								
Fruit trees, nut trees and vines (excluding seeds and bulbs):								
Number of plants								
Value								
Bedding and potted colour (eg. annuals):								
Number of plants								
Value								
Indoor plants (excluding seeds, bulbs):								
Number of plants								
Value								
Perennials, trees and shrubs:								
Number of plants								
Value								
Other (including seeds, bulbs, water plants, shot seed, etc.): *DP note: allow for more than 1 other*								
Number of plants								
Value								
TOTAL (computer calculate and confirm with respondent):								
Number of plants								
Value								

Q16. Do you know what your business's total operating costs were for the 2015-16 financial year, including things like input costs, labour and transport costs, rent etc?

Yes, can provide an accurate figure ---------- 1 continue
Yes, but only a guesstimate ---------- 2 continue
No ---------- 3 go to Q18

Q17. And what were your total operating costs (or estimated total operating costs if Q16 = 2) for the 2015-16 year? $

DP note: If respondent says no in Q16, ask Q18. Others go to Q19

Q18. Approximately what proportion of your business turnover was taken up by operating costs for the 2015-16 financial year? _____ %

Q19. Which of the following best describes your nursery business over the past few years? Has it been …

- In an expansion phase ---------- 1
- In a steady phase because it was difficult to expand ---------- 2
- In a steady phase because it is where it needed to be ---------- 3
- In a contracting or winding down phase ---------- 4
- A new business just starting up ---------- 5

Q20. At this point in time, what is the intention for the business over the next 5 years? Is the intention …

- To grow the business ---------- 1
- Keep the business in a steady phase ---------- 2
- Contract or wind down the business ---------- 3
- Sell it as a business to another person or company ---------- 4
- Sell the land to a developer ---------- 5
- Wind down and close ---------- 6
- *Do not read out/avoid* Can't say ---------- 7

Q21. Overall, how do you feel about the future of the nursery and garden industry? Would you say you feel … *(read out)*

- Very positive ---------- 1
- Fairly positive ---------- 2
- Fairly negative ---------- 3
- Very negative ---------- 4
- *Do not read* Neutral ---------- 5
- *Do not read* Unsure ---------- 6

Q22. Why do you say that? *Probe fully*

.....

Q23. In the 2015-16 financial year, did your nursery business make an operating profit?

- Yes ---------- 1
- No ---------- 2
- Don't know ---------- 3
- Refused ---------- 4
- Not in business in 2015-16 ---------- 5

Q24. And do you expect to make an operating profit in the 2016-17 financial year?

- Yes ---------- 1
- No ---------- 2
- Don't know ---------- 3
- Refused ---------- 4

Q25. Compared to the average of the past 5 years, do you expect profit levels for the 2016-17 financial year to be … *read out*

- Considerably higher ---------- 1
- Slightly higher ---------- 2
- About the same ---------- 3
- Slightly lower ---------- 4
- Considerably lower ---------- 5
- *Avoid* Don't know yet ---------- 6

Q26. During the 2015-16 financial year did you invest in either infrastructure or new technology for the business?

- Yes, new infrastructure ---------- 1 continue
- Yes, new technology ---------- 2 go to Q28
- No ---------- 3 go to Q29

Q27. Approximately how much did you invest in new infrastructure during 2015-16? _____

Q28. Approximately how much did you invest in new technology for the business during 2015-16?

_____

I just have a couple of questions about you now.

Q29. May I ask your age please? _____

Q30. How many years have you been involved in the nursery industry? _____

Q31. Are you the …

- Owner or joint owner of the business ---------- 1
- Manager ---------- 2
- Other role (specify) ---------- 3

Q32. Record gender (do not ask)

- Male ---------- 1
- Female ---------- 2

Q33. Once we have completed our interviews, a benchmarking tool will be developed and sent to all survey participants. Would your preference be to receive … read out

- An interactive calculator ---------- 1
- Or an Excel spreadsheet ---------- 2
- Or something else (specify) ---------- 3
- *Do not read* Happy with either ---------- 4

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix E

Communications & Engagement Strategy

Communications Strategy
NY16004 Nursery Industry Statistics and Research

Introduction

NY16004 Nursery Industry Statistics & Research is a critically required levy project designed to capture timely and accurate data for analysis on the Australian nursery and garden industry. Data is needed to inform industry decision making, resource prioritisation, investment evaluation, strategic planning activities, market trends and tracking industry performance over time.

The project combines a top-down bottom-up methodology that concurrently provides the data for an industry snapshot and prepares the industry to harness the benefits of having this data across three stages:

Stage 1	Data Audit and End User/Data Contributor Consultation
Stage 2	Data Collection: plan, design, execution, analysis
Stage 3	Data tool development

An outcome of Stage 1 will be the analysis of secondary data. This is data that is enduring, periodical, opportunistic and identifying data gaps.

During Stage 2, the primary collection process will be conducted and is scheduled for May, June and July 2017. This process will engage Computer Assisted Telephone Interviewing (CATI) resulting in a random sample of industry businesses being nominated for participation in a telephone survey. The interview team will undertake 300 telephone interviews as contracted under this project. This information will be analysed and the report will be provided.

Both the primary and secondary data will be considered during Stage 3 and this information will be structured to provide a Data Tool for industry.

A major component of the project is to educate, inform and engage industry on the project and specifically the benefits of data to both to their businesses and the nursery and garden community.

Objectives

The industry communication objectives of this project are:

1. To educate the nursery and garden industry of the benefits of timely and accurate data (in general) for their businesses and industry from April 2017 to November 2017 using the most relevant communication channels to drive demand for data into the future.
2. To inform the nursery and garden industry of the project NY16004 and provide mechanisms to support the project; management stakeholder expectations and provide feedback to the project team between April 2017 to November 2017 to ensure relevance to end users and manage preparedness of contributors.
3. To encourage use of and seek feedback on the Data Tool developed out of the project which is scheduled for roll out during November 2017; and facilitate feedback on the Data Tool to inform any future projects on Nursery Statistics and Research.

Audience

Primary Audience: Data contributors being greenlife producers, growing media suppliers and importers of controlled release fertiliser.

Secondary Audience: Data End Users being Nursery & Garden Industry Businesses, Horticulture Innovation Australia, Plant Health Australia, Government Departments (including DAFF, ABS, ABARES) , External Analysts.

Project Communication Activities

Project communication activities will be conducted under two different projects being *NY16004 Nursery Industry Statistics and Research* and *NY15006 Communication Program for the Australian Nursery Industry 2015-2018*.

To address all three communications objectives the following activities are proposed.

Social Media

23 posts across 3 channels: 18 posts NY15006, 5 posts NY16004

- Market Research - **LinkedIn**– revitalise the nursery data LinkedIn page including search for content and post to the page (drives demand and maintains momentum and interest, provides opportunity for discussion and feedback). Include topics
    - Status of NY16004 and articles outlining interim reports
    - Articles of interest on data in nursery/horticulture
    - Launch of data tool
- **Facebook** and **Twitter** messages across the course of the project informing of Steering Committee meetings, project status etc including the announcement of the launch of the Data Tool.

COMPLETED: Under NY15006, approximately 10 Twitter and Facebook posts relating to NY16004 have been published.

Blog posts

4 (2 already completed) blog posts NY15006, 2 blog posts NY16004

- Blog posts on NGIA **NNN e-newsletter** and **Your Levy @ Work** during the course of the project informing of Steering Committee meetings, project status etc including the announcement of the launch of the Data Tool. Additionally, articles which build credibility of the research and sampling practices used by the project.

As part of 15006, two blogs have been completed. These include:

- *A new approach to collecting nursery statistics.* Link: https://yourlevyatwork.com.au/collecting-nursery-statistics/
- *Nursery growers encouraged to help address data gaps*.
  Link: https://yourlevyatwork.com.au/nursery-growers-encouraged-to-help-address-data-gaps/

Additional note: Reference to NY16004 in YLAW blog, *Part 2 of the SIP Series: Understanding the market through better insights*. Link: https://yourlevyatwork.com.au/part-2-of-the-sip-series-understanding-the-market-through-better-insights/

Case Study – Written

1 written, NY15006.

- COMPLETED: Contributor and End User **Case Study** which demonstrates practical use of the Data and explaining reasons for preparedness to provide data for the project.
  Link: https://www.ngia.com.au/Story?Action=View&Story_id=2345

Case Study – ***Digital***

1 digital, NY15006.

- COMPLETED: Contributor and End User **Case Study** which demonstrates practical use of the Data and explaining reasons for preparedness to provide data for the project.
  Link: https://www.youtube.com/watch?v=qoDazK-NZAk

Cox Inall proposes the development of a second grower case study in early 2018, both written and digital, which demonstrates the use and benefits of the recently released data tool including the ability for production nurseries to benchmark business performance.

Digital Asset development
1 infographic NY16004

- **Infographic** on nursery industry data (perhaps update the last version)

Media Releases
1 release NY15006

- Announcement of the data tool + snapshot of national statistics

Workshop
1 workshop NY16004

- **National Conference Workshop** – session on the project and how to use the benchmarking tool featuring Jan Paul van Moort of ACIL Allen Consulting.

Nursery Papers
2 papers NY15006

- COMPLETED: **April 2017 Nursery Paper** –focused on *educating* industry on the benefits of data for business featuring Hamish Mitchell of Speciality Trees
- **February 2018 Nursery Paper** – focusing on the Data Tool– use, access etc. It can also discuss the results of the research in more detail.

Please note: There is a reference to NY16004 in 2018 November Nursery Paper 'Supply Chain and Logistics'. Link available soon.

Messages

Stage 1 (March-May)

- Analysis of all existing data on the nursery industry underway by ACIL Allen. Questions or comments contact NGIA or email stats@ngia.com.au
- In-depth interviews are being conducted by Down to Earth Research to identify industry's data needs and preparedness of businesses to contribute data

Stage 2 (May to July)

- Educating on the reliability and credibility of the sampling practices in the project.
- Primary data collection underway. Industry businesses will be chosen randomly to participate in a telephone interview. We encourage you to participate if you receive a call from Market Metrics.
- Businesses have been surveyed and resulted are being analysed.

Stage 3 – (July to November (and beyond))

- Results of the research
- Data Tool for launch. Questions or comments contact NGIA or email stats@ngia.com.au
- Conference workshop announced
- Key figures of the data project – individually highlighted across channels.

Evaluation

The results of the engagement campaign will be measured through the following means and the outputs detailed in the final report:

- Social media and digital asset engagement: being the number of Likes, Comments, Shares, Views
- Nursery Papers: print distribution, social responses, website downloads
- Blog Posts: unique views, clicks on post, click on links, post downloads
- Case Study: clicks on post, click on links, post downloads, time online
- Media Releases: number of stories published (print and online).

Reporting

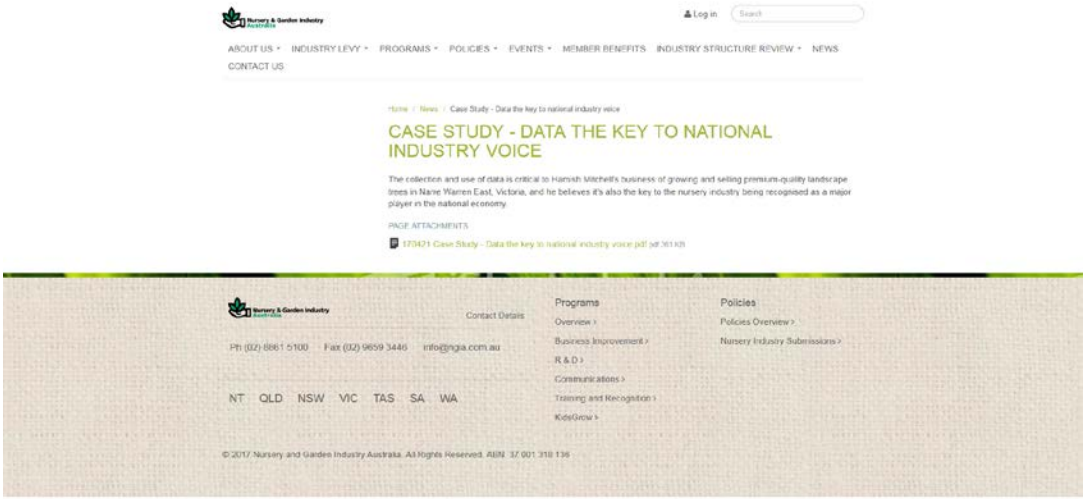
All communication activities being conducted under NY15006 will be reported with that project.

NY16004 will report on the following:

Social Media	5 LinkedIn posts
Blog posts	2 blog posts shared through NNN
Digital Asset Development	Infographic on nursery industry data.
Workshop	National Conference workshop confirmation of scheduling and speaker. Attendance numbers will be provided during Stage 1 of any future project.

Appendix F

Examples of engagement activity

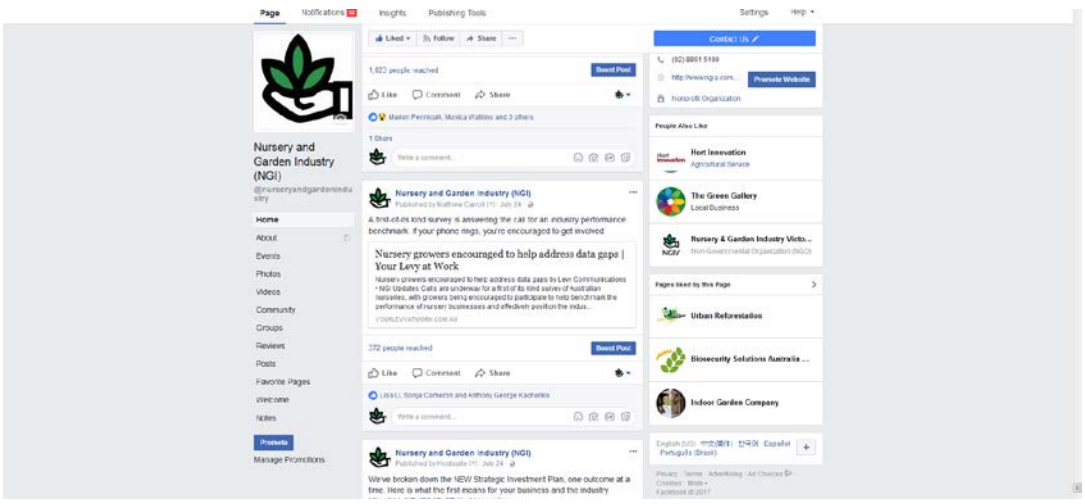


NGIA Website

Case Study

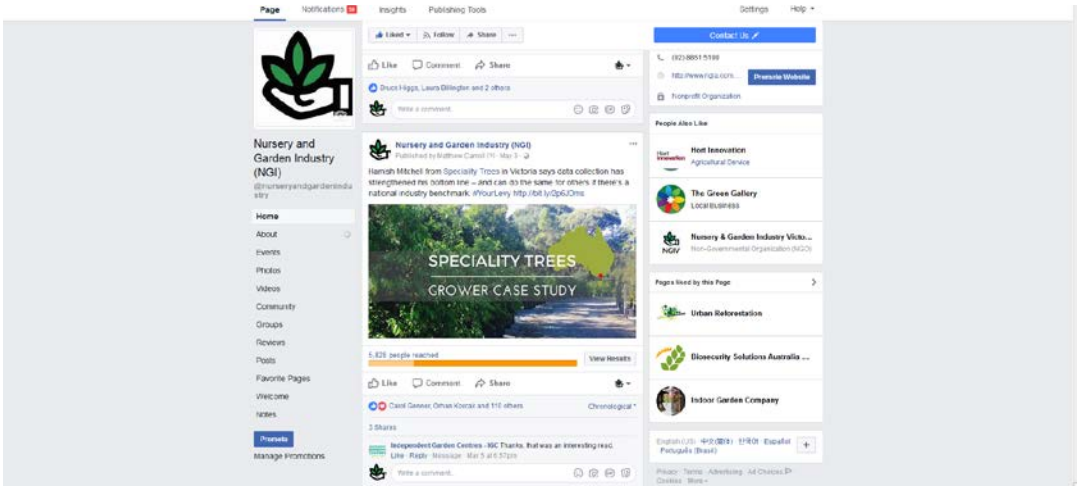
NGIA Website

Nursery Paper



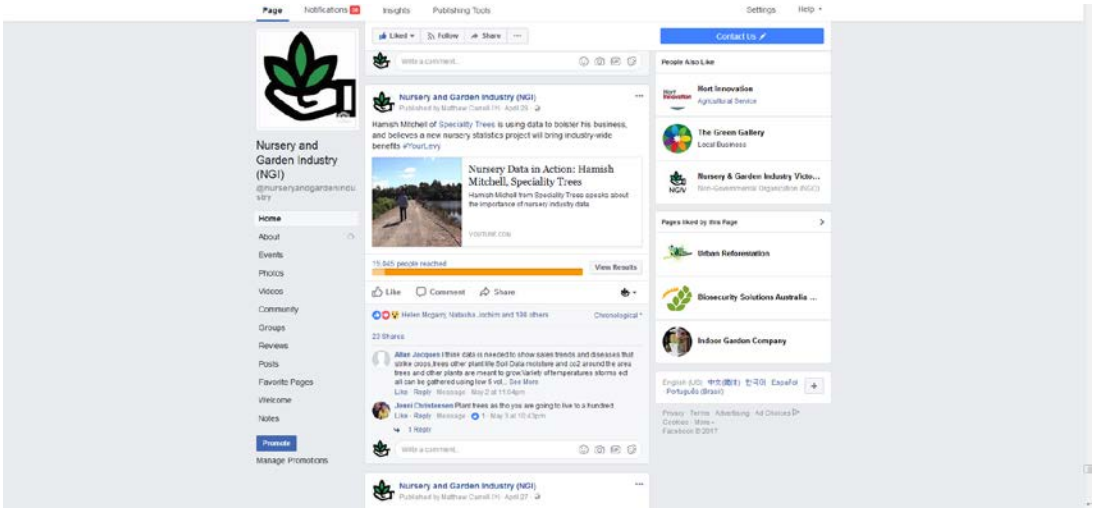
NGIA Facebook

Your Levy @ Work blog



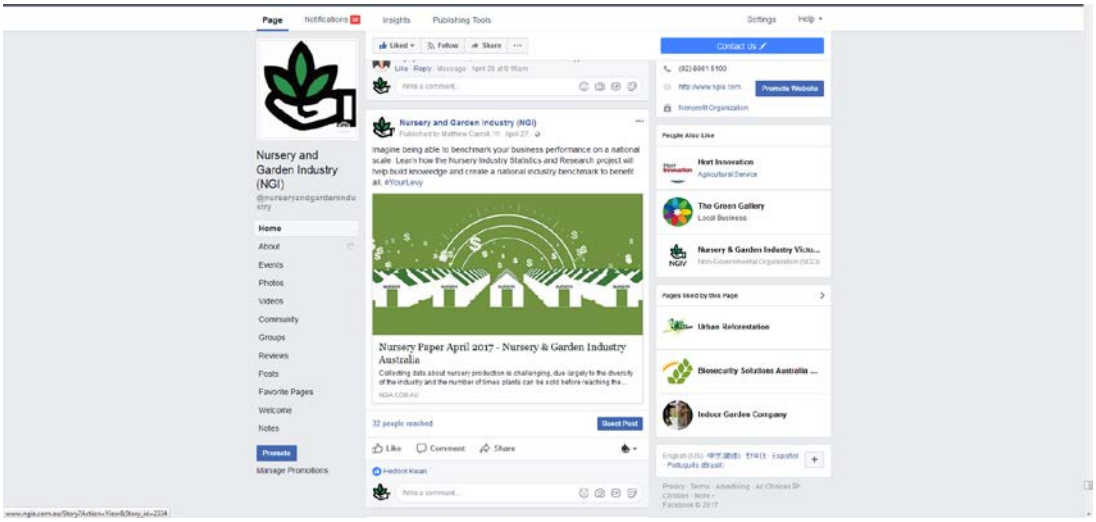
NGIA Facebook

Case Study post (printed)



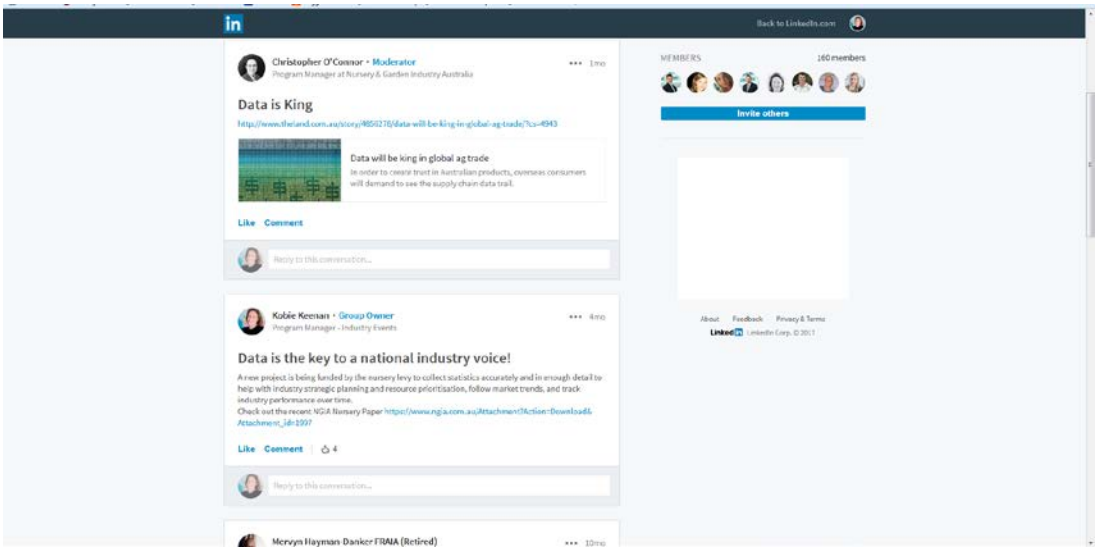
NGIA Facebook

Case Study (video) post



NGIA Facebook

Nursery Paper post

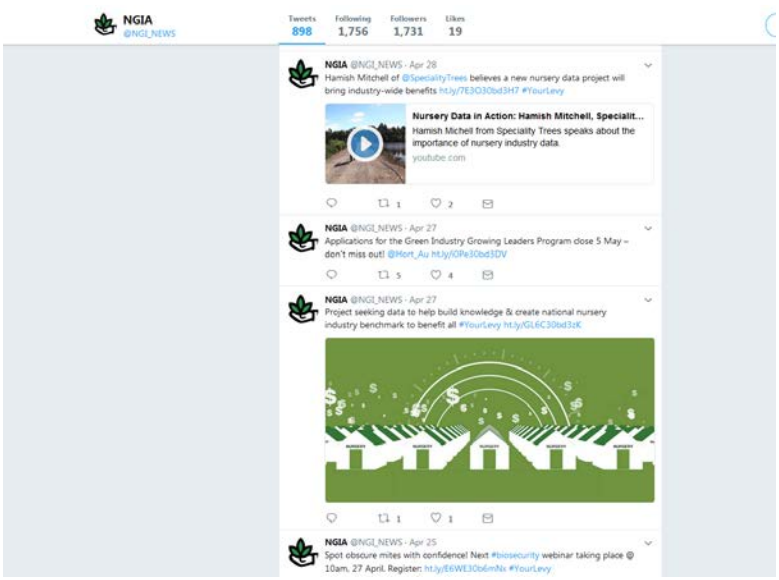


NGIA LinkedIn

Nursery Paper post

NGIA Twitter

Grower Case Study (written)



NGIA Twitter

Grower Case Study (video)

NGIA Twitter

Your Levy @ Work blog

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix G

Final report on the analysis of primary and secondary data

ANALYSIS OF PRIMARY AND SECONDARY DATA

The audit presented in chapter 1 found three key concerns regarding statistical data for the industry:

1. concerns over the adequacy and reliability of value and production data for the industry
2. lack of thorough coverage of industry data
3. concerns over the adequacy and general lack of business performance data for the industry

The survey undertook by the project team aimed at addressing these concerns by focussing on:

- producing a new estimate of the value of production
- producing measures of the volume of production at different market segments
- produce statistically robust business performance data
- deliver a program where additional data requirements can be built upon and is robust but lean enough to be successfully continued into the future

This chapter will review the performance of the survey with regards to addressing these issues and will discuss relevant metrics and findings that can be drawn from the primary collection effort.

Top line results and validation of the methodology

A critical concern of industry players with regards to previous and on-going data collection programs is over the adequacy and reliability of value and production data both at a national and State level. As discussed in chapter 1, QDAF commissioned a survey to determine the economic value of the nursery industry in Queensland. The results of that survey showed that the value of the industry was more than four times higher than what the ABS estimates suggest. Part of the discrepancy was explained by the use of different methods for calculating value as the QDAF measure was obtained on a gross-turnover basis and, as such, will exhibit 'double counting'.

Results from the survey undertaken through NY16004 helps explain the divergence and provide support to the concern that industry players have regarding the potential underestimation of the ABS estimate. As depicted in Table G.1 the gross turnover of the nursery industry estimated through NY16004 in Queensland sits at approximately $ 885 million, a figure consistent in magnitude with QDAF's estimate. When the treatment of double counting is factored in, the value added by the industry in that State amounts to approximately $ 510 million, three times the equivalent ABS estimate for FY2015-16.

TABLE G.1 VALUE OF PRODUCTION OF THE NURSERY INDUSTRY IN QUEENSLAND

Metric	FY2010-11	FY2011-12	FY2012-13	FY2013-14	FY2014-15	FY2015-16
Queensland Department of Agriculture and Fisheries						
Gross turnover	$ 912	$ 867	$ 867	$ 867	$ 880	$ 898
Australian Bureau of Statistics						
Value added	$ 167	$ 168	$ 202	$ 194	$ 201	$ 170
NY16004 survey						
Gross turnover						$ 884
Value added						$ 510

SOURCE: PROJECT TEAM (NY16004 SURVEY), QUEENSLAND DEPARTMENT OF AGRICULTURAL AND FISHERIES AND AUSTRALIAN BUREAU OF STATISTICS

With regards to the national figure, the results from the data collection exercise show that the size of the nursery industry is much larger than what the ABS estimate suggests in regards to industry value and business counts.

TABLE G.2 COMPARISON OF TOPLINE RESULTS – ABS, IBISWORLD AND NY16004 SURVEY

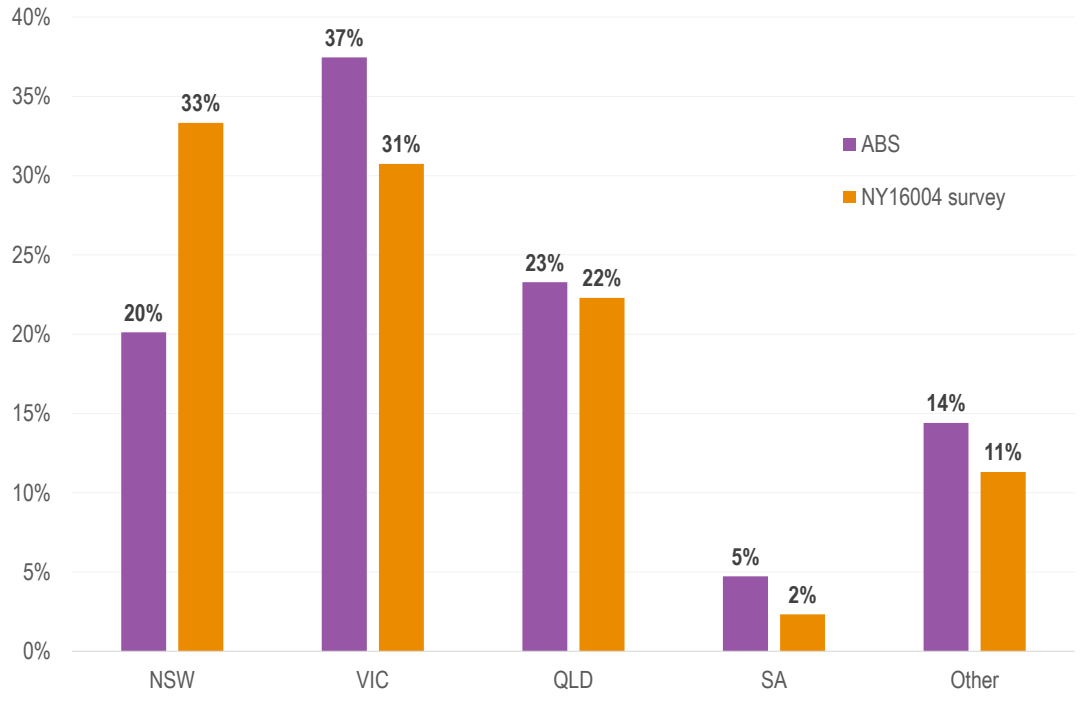
	ABS	IBISWORLD	NY16004
Value of production	$ 730 m	$ 740 m	$ 2,286 m
Discrepancy to ABS	-	+ 1%	+ 215%
Businesses	1,142	1,159	1,777
Discrepancy to ABS	-	+ 2%	+ 55%

Note: ABS business data corresponds to the 2014-15 fiscal year.

SOURCE: PROJECT TEAM (NY16004 SURVEY), AUSTRALIAN BUREAU OF STATISTICS AND IBISWORLD

In terms of the breakdown of value by State. The NY16004 survey shows a similar picture to that of the ABS, with the largest difference being the distribution of value between New South Wales and Victoria (see Figure G.1).

FIGURE G.1 COMPARISON OF TOPLINE RESULTS – DISTRIBUITION OF VALUE ACROSS STATES

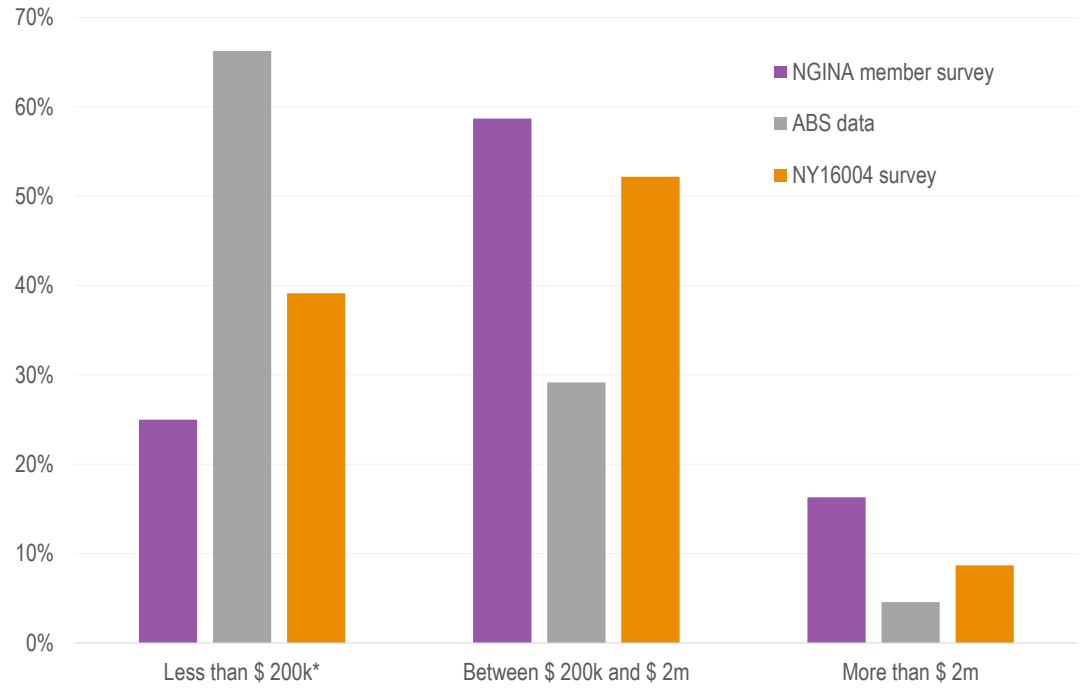


Note: NSW and ACT are combined in the NY16004 survey.

SOURCE: PROJECT TEAM (NY16004 SURVEY) AND AUSTRALIAN BUREAU OF STATISTICS

An important comparison against previous primary collection efforts is with regards to the breakdown of firms by size. As can be seen in Figure G.2, there is a sizeable discrepancy between the results of the survey (and the NSW member survey) and ABS data. Nevertheless, this discrepancy narrows strongly when the lower range is expanded to $ 500,000, as several turnover figures in the NY16004 survey are clustered around the $ 200,000 mark.

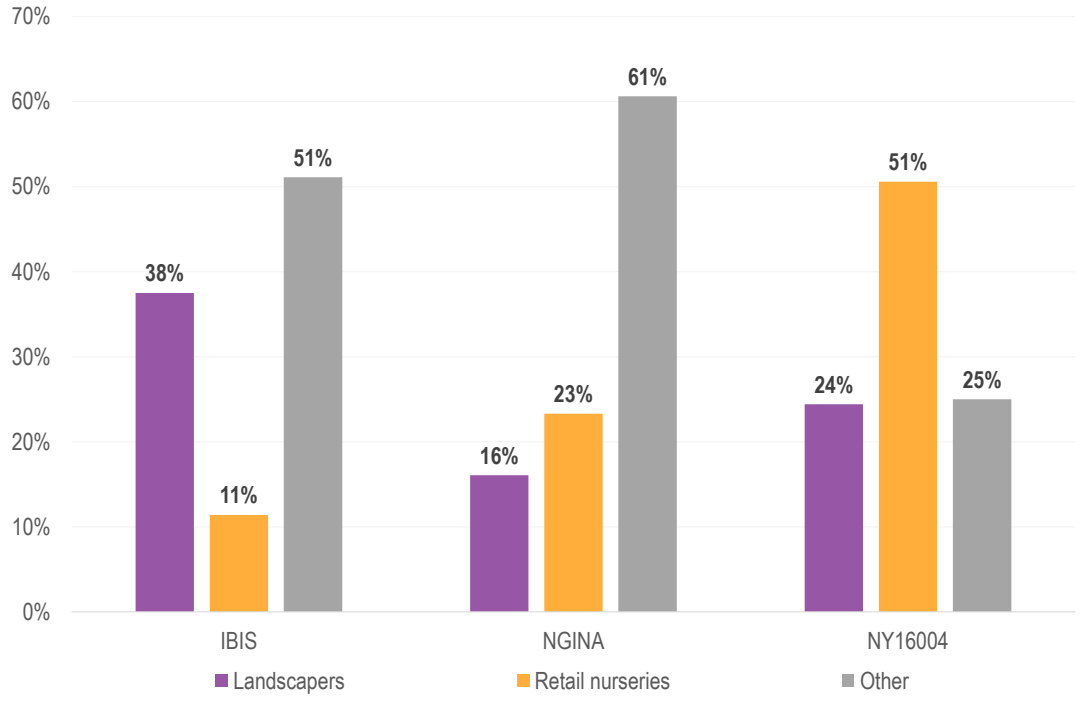
FIGURE G.2 SHARE OF NURSERIES BY TURNOVER IN NSW & ACT



SOURCE: PROJECT TEAM (NY16004 SURVEY), AUSTRALIAN BUREAU OF STATISTICS AND NURSERY & GARDEN INDUSTRY, NSW & ACT (NGIA)

Finally, with regards to the breakdown of value by market segment the survey undertaken through this project generated a somewhat surprising result. Half of industry net sales (i.e. on a value-added basis) would be directed to retail nurseries, while this figure stands at 25 per cent in the NGIA member survey and just above 10 per cent in IBISWORLD estimates. Anecdotal evidence collected before undertaking the survey had already suggested that both existing segmentation estimates were low. However, the magnitude of this segment uncovered through this survey is surprising (see Figure G.3).

FIGURE G.3 INDUSTRY DEMAND SEGMENTATION (AS A % OF SALES)



SOURCE: PROJECT TEAM (NY16004 SURVEY), NURSERY & GARDEN INDUSTRY, NSW & ACT (NGIA)) AND IBISWORLD

A goal of this data collection programs is to obtain an improved picture of the nursery and garden industry that can be shared with official data collectors as they continue to push towards a larger use of primary third party data. In this line, it is useful to compare the survey results to official estimates of area. As shown in Table G.3 the survey has uncovered an area of production higher than the one suggested by the ABS. In addition, the survey indicates a different breakdown of this area by State.

TABLE G.3 NURSERY INDUSTRY AREAS OF PRODUCTION BY TYPE FY2015-16

	National	NSW/ACT	VIC	QLD	Other
Australian Bureau of Statistics					
Outdoor area (ha)	3,898	842	1,392	758	393
Indoor area (ha)	426	103	119	135	68
Total area (ha)	4,323	945	1,511	893	975
Area as % of national	100%	22%	35%	21%	23%
NY16004 survey					
Outdoor area (ha)	6,229	2,373	1,321	1,846	689
Indoor area (ha)	1,273	371	325	425	152
Total area (ha)	7,502	2,744	1,646	2,341	841
% of total	100%	37%	22%	30%	11%

Note: Totals may not sum due to rounding.

SOURCE: PROJECT TEAM (NY16004 SURVEY) AND AUSTRALIAN BUREAU OF STATISTICS

The NY16004 survey found that roughly one quarter of business employed two or less FTE's. This figure somewhat contrast with ABS data (sourced from the ATO) which suggests that almost 6 out of every 10 businesses in the industry have no employees. We believe that this discrepancy occurs because owner operators were including themselves (usually a partnership) in those figures, whereas the ABS data is capturing salaried employees only. When considering the share of businesses that employ 20 or less individuals the NY16004 survey found that 90 out of every 10 firms employ at this level, while the ABS data for 2016 takes that figure to 96 per cent. Finally, in both data sets there are no businesses that reported employing in excess of 200 FTEs. Broadly, both data sets point to a rather similar picture in terms of the distribution of employment in the sector which is largely dominated by micro businesses and SMEs.

Data from the ABS shows that the average age for an Australian farmer sits at 56 and that, on average, farmers have been in the business for 35 years. The NY16004 shows that for the nursery sector in particular the average age is 54 years and tenure sits at around 25 years.

The industry looking forward

This survey and the data tool that will be distributed to industry participants included a series of attitudinal questions aimed at eliciting industry sentiment. At a national level, the survey showed that about 30 per cent of respondents are in an expanding phase and almost half see their business growing over the next five years. These percentages increase across larger organisations. These top-line figures compare well to similar sentiment indicators in other industries. For instance, diffusion indices for Australian manufacturing, services and construction[1] are all sitting at above 50 per cent ('expanding phase') at the closing of this report. These trends have been in place since, at least, the beginning of 2017. In turn, the share of businesses that are 'winding down' both currently and in the short term stands at 12 per cent. This exit rate is very much in line with the national average business exit rate, and would suggest that the industry shows the health of the average sector.

In terms of the drivers of optimism on the industry elicited by the survey, most respondents have expressed general confidence in sustained demand for greenlife products and the possibility to

[1] The Australian Performance of Manufacturing Index (Australian PMI) is a seasonally adjusted national composite index based on the diffusion indices for production, new orders, deliveries, inventories and employment. A PMI reading above (below) 50 points indicates growth (contraction) in more than half of the sectors in the industry. The distance from 50 is indicative of the strength of the expansion (decline). The MSI and MCI indices are similarly constructed for services and construction industries, respectively.

specifically grow some niche segments. On the other hand, negative views also restored to general considerations for demand and the growing bargaining power of suppliers. A visual representation of the verbatim responses of the respondents of the survey depicts the notion that the industry is seeing itself in a positive light (see Figure G.4).

FIGURE G.4 WORD CLOUD OF VERBATIM RESPONSES TO JUSTIFY THE OUTLOOK FOR THE NURSERY AND GARDEN INDUSTRY

Note: The size of the words reflects their frequency in the verbatim responses.

SOURCE: PROJECT TEAM (NY16004 SURVEY)

It must be noted that, as with most field research in social sciences, there is a possibility that the results of the survey have some self-selection or non-response bias built into them. As a matter of fact, some of the businesses that decided to withdraw themselves from participating may at the same time have a more negative view on the industry or their own endeavours and, as such, do not see value in a data collection effort. This is a common theme among research in social sciences and would be prevalent across the board including all other previous collection efforts.

The data collection program looking forward

An overarching aim of the data collection effort initiated through the NY16004 survey was to overcome some of the hurdles that past industry projects have encountered and set the foundation for a sustained statistics collection program. Four key desired outcomes were identified when initiating this process, a critical evaluation of the status of these outcomes is summarised in Table G.4.

TABLE G.4 SUMMARY OF KEY OUTCOMES FROM THE PRIMARY DATA COLLECTION EFFORT

Desired outcome	Progress	Comment
Producing a new estimate of the value of production	Achieved	The program produced a new estimate of the industry's value of production that seems to overcome many limitations
Producing measures of the volume of production at different market segments	Achieved	The program produced detailed value measures by segment and product line
Produce statistically robust business performance data	Not completely achieved	While performance data was collected, many contributors failed to adequately convey the data, hampering robustness
Deliver a program where additional requirements can be built upon and is robust but lean enough to be successfully continued into the future	Achieved	The NY16004 survey is a robust data collection effort that can be easily customised for further iterations

SOURCE: PROJECT TEAM

The collection program initiated by NY16004 survey has delivered a measure of the value of production of the industry that has confirmed anecdotal accounts regarding an underestimation in official figures and at the same time is aligned to a recent approach undertaken by QDAF in Queensland. Moreover, volume and value measures of production by product line and market statement are statistically robust at a national level and for at least three key States.

The current data collection effort has had a larger depth than any other primary collection effort at a national level. While the ABS naturally has a higher coverage and a larger sample, the REACS survey on which the estimates for the industry are built on, only has a handful of questions. Meanwhile, estimations with a large scope such as the *Garden Market Monitors* run until 2009, where mostly based on ABS data. In addition, while other collection efforts such as the one-off NGIA survey or QDAF's *AgriTrends* exhibit similar depth they are circumspect to the State level. In this sense, we understand that NY16004 has added significant value by delivering a very comprehensive primary data set to a much larger, representative sample than what previous efforts with this level of detail have achieved.

Nevertheless, several challenges still remain in place. The collection effort has not delivered a statistically robust picture of business performance data. It was not possible from the responses to the survey to articulate a robust cost structure benchmark and the variances among States suggest that some contributors may have misunderstood or misrepresented some of their answers. Likewise, the variance of average wages at a State level is particularly large. Attitudinal (sentiment) measures exhibited much more robust statistical properties. The hurdles that the survey still has in terms of business data suggest that as it stands the industry as a whole will obtain larger benefits from the program than individual businesses. Indeed, the survey will allow industry bodies to renew their dialogue with government and other parties on the basis of a higher understanding of value creation. Individual firms will see an enhanced picture that what was previously available, although presumably not as detailed as it was initially envisaged.

We remain confident that as the tool and reports are delivered to industry alongside a continuous educational program from peak industry bodies, the acceptance and adoption of the collection program will improve. An important challenge at this stage of the process is to sustain and increase the willingness from industry participants to contribute to similar efforts. In this sense, the sentiment indicators derived from the survey will be critical as they are the more robust of the firm indicators. Hort Innovation, NGIA and other allied organisations should build on these successes to pursue higher participation in further iterations. The base set by this project would easily accommodate variations in depth and breadth and would allow to tailor the survey as industry participants see fit.

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix H

Nursery Industry Data Tool

NURSERY INDUSTRY DATA TOOL - RESULTS

My business' sales:	< $500k
I want to see:	Values
Year	FY2015-16

Print my report | Disclaimer | Terms of Use | Contact

Hort Innovation — Strategic levy investment | NURSERY FUND

THE INDUSTRY

SHARE OF SALES BY PRODUCT		SHARE OF SALES BY MARKET SEGMENT	
Propagation	20%	Wholesale nurseries	23%
Herbs and vegetables	1%	Retail nurseries	35%
Fruit and nut trees	8%	Revegetation	6%
Bedding	3%	Government	5%
Indoor plants	8%	Landscapers	8%
Perennials	55%	Primary industry	3%
Other	5%	Other	20%

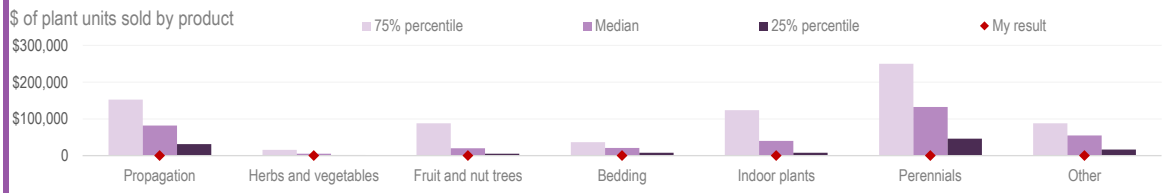
AUSTRALIAN NURSERY PRODUCTION

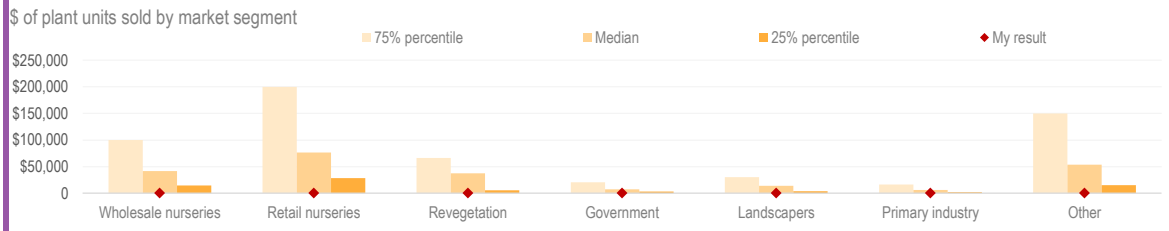
$ 2.29 Bn.	1,777	18,943
VALUE OF PRODUCTION	# OF BUSINESSES	FTE JOBS

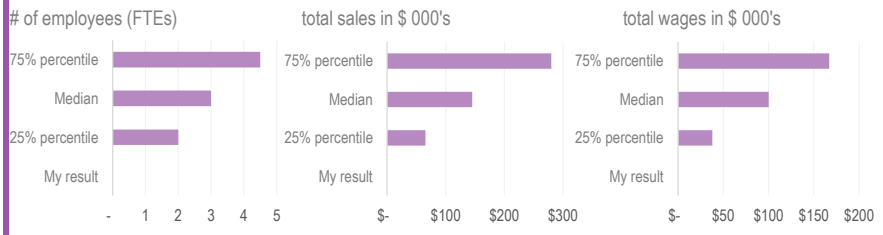
THE < $500k BUSINESS SEGMENT

$ 0.17 Bn.	1,046	3,802
VALUE OF PRODUCTION	# OF BUSINESSES	FTE JOBS

BENCHMARKING FOR SUCCESS







QUICK FACTS - COST STRUCTURE

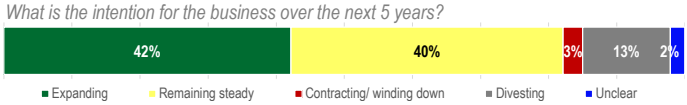
Sales ($ 000's)	what's this?
My result	$ -
Median	$ 145
Wages as % of sales	**what's this?**
My result	#DIV/0!
Median	69%

#DIV/0!

SENTIMENT AND SHORT-TERM OUTLOOK

Which best describes your nursery business over the past few years?

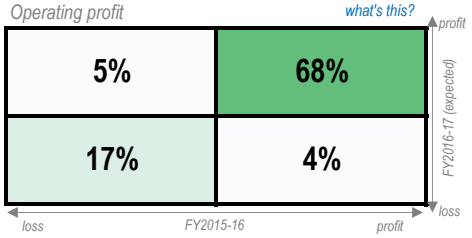
What is the intention for the business over the next 5 years?



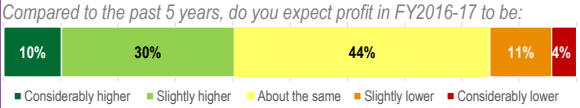
How do you feel about the future of the industry?

from 1 = very positive to 5 = very negative

Operating profit — what's this?



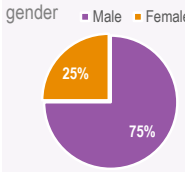
Compared to the past 5 years, do you expect profit in FY2016-17 to be:



Percentage of my peers that in FY2015-16 invested in new…

INFRASTRUCTURE	36%	$17,000	MEDIAN INVESTEMENT
TECHNOLOGY	25%	$10,000	MEDIAN INVESTEMENT

DEMOGRAPHICS - BUSINESS MANAGEMENT



QUICK FACTS - DEMOGRAPHICS

Age	
My result	-
75% percentile	64
Involvement with Nursery Industry (years)	
My result	-
Median	25

NURSERY INDUSTRY DATA TOOL - DATA INPUT

Note: Use this tab to benchmark your business to other similar businesses nationally. The data you enter here cannot be viewed by anyone other than you. This is a local copy of a master document and there is no possibility of this data being disseminated to third party organisations.

Please answer the following questions sequentially.

1	Input the total number of plant units you sold in FY2015-16.		UNITS
2	Could you (roughly) subdivided these sales by product type and market segment?	YES	
3	Do you prefer to do this as percentages or with numbers? *read note*	Percentage	
4	Please input the percentage of plant units you sold under each of these product lines		
	Propagation	0%	
	Herbs and vegetables	0%	
	Fruit and nut trees	0%	
	Bedding	0%	
	Indoor plants	0%	
	Perennials	0%	
	Other	0%	
	Total	**0%**	**the sum of all percentages has to equal 100%**
5	Please input the dollar value of plant units you sold under each of these market segments		
	Wholesale nurseries	0%	
	Retail nurseries	0%	
	Revegetation	0%	
	Government	0%	
	Landscapers	0%	
	Primary industry – Production Horticulture and Agriculture	0%	
	Other	0%	
	Total	**0%**	**the sum of all percentages has to equal 100%**
6	Input the total value of plant units you sold in FY2015-16.		AUD
7	Could you (roughly) subdivided these sales by product type and market segment?	YES	
8	Do you prefer to do this as percentages or with dollar values? *read note*	Dollar value	
9	Please input the dollar value of sales under each of these product lines		
	Propagation	0	
	Herbs and vegetables	0	
	Fruit and nut trees	0	
	Bedding	0	
	Indoor plants	0	
	Perennials	0	
	Other	0	
	Total	**0**	
10	Please input the dollar value of sales under each of these market segments		
	Wholesale nurseries	0	
	Retail nurseries	0	
	Revegetation	0	
	Government	0	
	Landscapers	0	
	Primary industry – Production Horticulture and Agriculture	0	
	Other	0	
	Total	**0**	
11	How many people including yourself were employed in the business in FY2015-16? Please sum full-time equivalent positions for all the establishments that the business operates.		
12	What was the total cost of wages (including on-costs) for the business in FY2015-16, including your own?		AUD
13	How do you feel about the future of the nursery and garden industry?		
14	How old are you?		
15	How many years have you been involved in the nursery industry?		

GO TO REPORT

NURSERY INDUSTRY DATA TOOL - INTRODUCTION

Dear User,

This project has been funded by Hort Innovation, using the nursery industry 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. This data tool has been developed under Project NY16004 Nursery Industry Statistics & Research. Under this project, Down to Earth Research undertook an extensive random sample survey of over 220 nursery production businesses. The survey ensured that statistically relevant samples were captured across primary product lines nationally. The data provides a margin for error (at the 95% confidence level) of ±5.7% on national results. It has been validated by a Steering Committee which includes nursery production growers. It is further validated through a comprehensive desk audit of exiting research which has been conducted by ACIL Allen Consulting. Nursery & Garden Industry Australia (NGIA) has overseen management of this research project and are fully supportive of the results and the data tool.

This tool is designed to enable you to benchmark core aspects of your business against the results collected from the survey. It allows comparisons between the type of plants you sold, and by market segment. The tool also provides the opportunity to compare your business' sales, employees and wages to national averages, as well as enabling you to see how your views of the nursery industry compare to your peers.

Follow these simple steps to benchmark your business to other similar businesses nationally.

1 Select the sales range most relevant to your business

- (●) < $ 500k
- ( ) $ 500k - $ 2m
- ( ) > $ 2m

2 Select whether you would like to see the results in dollars (values) or volumes

- (●) Values
- ( ) Volumes

3 Now it's time to input your data. Please click the banner on the right to get started

Start Here

Hort Innovation
Strategic levy investment

NURSERY FUND

Nursery & Garden Industry Australia

ACIL ALLEN CONSULTING

Down To Earth Research
ABN: 38 873 356 803
Tel: (03) 9708 8008
Fax: (03) 9787 0367
Email: admin@dter.com.au
Web: www.dter.com.au

Terms of Use

Appendix I

Media Release
14 December 2017

Nursery & Garden Industry Australia

Media release

For immediate release Thursday 14 December 2017

New industry data estimates $2.29 billion year for Australia's nursery and garden industry

New data released today by Hort Innovation and Nursery & Garden Industry Australia (NGIA) has shown Australia's thriving green life businesses produced an estimated $2.29 billion of green life in 2015-16.

Hort Innovation Chief Executive, John Lloyd, said the survey results were positive news for the nursery industry, which underpins a significant amount of Australia's food, fibre and foliage plant production including urban landscape and retail through to fruit, vegetable, forestry and revegetation.

"The survey results, which included speaking with more than 200 production nurseries on key aspects of business activity, show that in 2015-16 the industry sold over 1.6 billion plants that will have gone into our environment," Mr Lloyd said.

"The drivers behind these results are the 23,000 individuals working across close to 1780 nursery and garden businesses around Australia."

The results also showed those plants were produced across a variety of regions and environments with outdoor production and indoor production totalling 6,229 ha and 1,273 ha respectively.

Also released today was a data tool providing nurseries with the ability to benchmark themselves against the broader industry to help boost business productivity. The tool is a user-friendly interface available to those nurseries that participated in the survey and by request for other nursery industry levy payers via the Hort Innovation website.

Both initiatives were funded by Hort Innovation using nursery industry levies and money from the Australian Government under *Nursery Industry Statistics & Research (NY16004),* a project seeking to give a first-of-its-kind look into the industry's social, economic and environmental contribution to Australian society.

Nursery & Garden Industry Australia Ph: 02 8861 5100 Fax: 02 9659 3446
Email: info@ngia.com.au Website: www.ngia.com.au

Nursery & Garden Industry Australia

Media release

The project was overseen by a steering committee made up of nursery levy payers and key industry stakeholders including Victorian grower, Hamish Mitchell, who operates Speciality Trees, a production nursery located in Narre Warren East.

Mr Mitchell said the excellent data collected by the survey helped to address concerns that the nursery industry's contribution, employment and size had often been underestimated.

"This is an extensive survey undertaken by Australia's nursery industry, so it's exciting to now unveil these figures, which will provide a clear picture of our vibrant industry and the people driving it forward," Mr Mitchell said.

"This is very good data to use at an industry and business level. I urge growers to access the tool and plug in their data, to help measure year on year results and to support strategic decision-making within the business."

Mr Mitchell said he sees great potential for the methodology utilised in the project to be continued into the future.

"An impressive 200 nurseries participated this year, but I see great momentum for this project to continue and for more involvement from industry next time round," he said.

"As always, the better the data coming in, the better the data going out."

The project was managed by NGIA in partnership with independent research consultants, Down to Earth Research and ACIL Allen Consulting.

For more information, please visit the Hort Innovation website http://horticulture.com.au/resource/nursery-industry-data-tool/

The strategic levy investment project *Nursery Industry Statistics and Research* (NY16004) is part of the Hort Innovation Nursery Fund.

****ENDS****

For further information, please contact Hilary Sims, Cox Inall Communications, on 0474 699 747 or hilary.sims@coxinall.com.au

This communication has been funded by Hort Innovation using the nursery 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.

Appendix J

Covering email to contributors attaching data tool

15 January 2018

Nursery Industry Data Tool

Thank you very much for your contribution to this important project. As strategic levy investment, *Nursery Industry Statistics and Research* (NY16004) is part of the Hort Innovation Nursery Fund.

Nursery Industry Data Tool

As promised through your participation in the nursery industry survey conducted between June and August 2017, we now attach the completed Nursery Industry Data Tool. The Tool is designed to help benchmark core aspects of your business against the results of the data collected through the industry survey, which resulted in engagement with over 220 nursery production businesses. The Tool will also be available to nursery levy payers by request via http://horticulture.com.au/resource/nursery-industry-data-tool/.

With the Tool you will be able to make comparisons in relation to the type of plants you sold and the market segments you operate in. The Tool also provides the opportunity to compare your business' sales, number of employees and wages to national averages, as well as comparing your views on the future of the nursery industry to your peers.

The Tool was funded by Hort Innovation, using the nursery industry research and development levy and contributions from the Australian Government. It aligns with the strategic imperative of advancing the availability and relevance of industry data to enable you to make better business decisions.

How should I use it?

The Tool is an Excel based dashboard that allows you to input data to make comparisons with broader industry performance. It is important for you to know that you are receiving a *local* copy of a master file. Hence, there is no possibility of this data being disseminated to third party organisations. The data you enter here cannot be viewed by anyone else other than you. The 'terms of use' for the Tool are disclosed in the tool.

The Tool has a user friendly interface that you should explore and familiarise yourself with before filling in your data. You can input and erase your numbers as many times as you desire. For instance, you can use the Tool to see how your business would compare if you target a different market segment or a different product mix.

The Tool is the first of its kind to be delivered to the nursery industry. We strongly encourage you to use the Tool, and to let us know what works and what could be improved. Any feedback that is submitted will be retained by Hort Innovation and will be kept anonymous. Your contribution and involvement in developing this version is appreciated, and we encourage your participation in ongoing data initiatives.

What do I need to run the Tool?

The Tool is fully compatible with Excel 2007 versions and above. If you are using an older version of Excel some functionality may be hindered. You must 'enable macros' to be able to use the tool.

If you require assistance or want to provide any comments or feedback on the Tool or broader project please contact communcations@horticulture.com.au

Thank you again for your contribution towards this important project and data initiative for the benefit of the nursery industry.

Appendix K

Covering email for tool requests from Hort Innovation

15 January 2018

Nursery Industry Data Tool

Thank you for your request to access the Nursery Industry Data Tool. This tool is available for use by Nursery Industry levy payers only. As strategic levy investment, *Nursery Industry Statistics and Research* (NY16004) is part of the Hort Innovation Nursery Fund.

Nursery Industry Data Tool

The Tool is designed to help benchmark core aspects of your business against the results of an extensive random sample survey of over 220 nursery production businesses.

With the Tool you will be able to make comparisons in relation to the type of plants you sold and the market segments you operate in. The Tool also provides the opportunity to compare your business' sales, number of employees and wages to national averages, as well as comparing your views on the future of the nursery industry to your peers.

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The Tool is the first of its kind to be delivered to the nursery industry. We strongly encourage you to use the Tool, and to let us know what works and what could be improved. Any feedback that is submitted will be retained by Hort Innovation and will be kept anonymous. Your feedback is valued and will help contribute to future improvements towards nursery industry data resources. We strongly encourage your participation in future data collection initiatives for the nursery industry.

What do I need to run the Tool?

The Tool is fully compatible with Excel 2007 versions and above. If you are using an older version of Excel some functionality may be hindered. You must 'enable macros' to be able to use the tool.

If you require assistance or want to provide any comments or feedback on the Tool or the broader project please contact communcations@horticulture.com.au.

Thank you for your interest in the tool and we look forward to receiving any feedback.

Horticulture Innovation Australia

Nursery & Garden Industry Australia

Appendix L

Conference Program

Monday 19 Feb

0800-1630	Industry Tours
1630-1730	Registration Collection & Exhibition Walkthrough
1730-1930	Waterfront Welcome Drinks

Tuesday 20 Feb

0730	Registration desk open	
0800	Exhibition opens	
0830	**Conference Opening & Welcome** MC Opening Announcements & Welcome NGIA President	
0845	**Address to Industry** Senator Anne Ruston *(to be confirmed)*	
0905	**Welcome to Tasmania – Selling the story of the grower...** Matt Evans, *The Gourmet Farmer*	
0950	**American Trends for Australian Nursery & Garden Businesses** Chris Beytes, *Ball Publishing, Florida USA*	
1035	**MORNING TEA** - Exhibition Area	
1100	**Workshop: Horticulture Masterclass** Dr Alistair Gracie & Dr David Monckton, *Tasmanian Institute of Agriculture, School of Land and Food, University of Tasmania*	**Sorry, not available!** **Dealing with plant shortages** Christina Gnezdiloff, *Evergreen Connect*
		Managing the pressures of farming Kerri-Lynn Peachey, *Australian Centre for Agricultural Health and Safety*
		202020Vision and Plant Life Balance Ben Peacock, *Republic of Everyone*
1245	**LUNCH**- Exhibition Area	
1330	**Drone technology: opportunity for nursery application** Adam Kilpatrick, *University of Adelaide*	**Improving synergies between retailers and growers** Bruce Stanley, *Alpine Nurseries*
	An update from Garden Centers of Australia (GCA) and Garden Releaf 2018 Leigh Siebler, *Garden Centres of Australia*	**Innovative management and marketing strategies for nursery & garden businesses** Chris Beytes, *Ball Publishing, Florida*
	Biosecurity War – 2018's high and medium risks explained Lois Ransom, *Department of Agriculture and Water Resources*	**Hort Innovation Strategic Levy and Frontier Initiatives** Selwyn Snell, *Chairman, Hort Innovation*
1515	**AFTERNOON TEA** – Exhibition Area	
1535	**Nursery & Garden Industry Australia – State of Play** Peter Vaughan, *CEO Nursery & Garden Industry Australia*	
1610	**Industry Structural Change Panel Discussion.**	
1700	Closing announcements – Day 1	
1830	OPTIONAL - Hobart Brewing Company Casual Function	

Wed 21 Feb

0800	Registration Desk open	
0830	**Results of the Tree Standard Research** Professor Mark Tjoelker, *University of Western Sydney*	**The art and science of plant breeding and selection** Angus Stewart
	Nursery Industry Biosecurity Program John McDonald, *Nursery & Garden Industry Australia*	
	Diagnosing Plant Diseases Andrew Manners, *University of Queensland*	**Weed management in nurseries using herbicide** David Docherty, *Syngenta Australia*
1015	**MORNING TEA**- Exhibition Area	
1040	**The future of retail: Five trends shaping how we shop** Louise Grimmer, *University of Tasmania*	**21st Century Plant Propagation - New technologies and techniques** Angus Stewart
	Nursery Research & Statistics & Data Tool Jan Paul Van Moort, *ACIL Allen Consulting*	
	Future for nursery and greenhouse crops Chris Beytes, *Ball Publishing, Florida USA*	**Retail Health Check** Louise Grimmer, *University of Tasmania*
1225	**LUNCH**- Exhibition Area	
1310	**The future of the Nursery Industry & the Digital World** Rose Herceg, *Futurist, Social Forecaster, Chief Strategy Officer, WPP AUNZ*	
1355	**Demographic shifts for greenlife growers and retailers to capture!** Mark McCrindle, *Social Researcher, Principle at McCrindle Research*	
1440	**AFTERNOON TEA**- Exhibition Area	
1500	**Repositioning Industry! Value what you do and others will follow -Culture Shift** Chris Helder, Author of 'Useful Belief' and 'The Ultimate Book of Influence'	
1545	**SURPRISE KEYNOTE SPEAKER**	
1630	Closing announcements – Conference concludes	
1800 Sharp	Industry Dinner -Ferry departs for MONA Museum of Old & New Art	

**Current as at November 2017. Program subject to change without notice*

THE GROWING EDGE

Nursery & Garden Industry National Conference

19-21 February 2018
Wrest Point, Hobart, Tasmania