Horticulture Innovation Australia

Final Report

Apple and Pear industry data collection

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Summary

In 2014 the apple and pear industry advisory committee (IAC) decided that better industry data was needed to effectively manage the Australian apple and pear industry. More detailed industry data will benefit the whole industry including the industry's peak body, Apple and Pear Australia Limited (APAL).

The objective of this project, Apple and Pear Industry Data Collection, was to "improve industry data for the apple and pear industries as demonstrated by improved business profitability".

In recent years, the collection of apple and pear industry data has been limited to survey data collected by Australian Bureau of Statistics (ABS), apple and pear levy data and Nielsen retail sales data.

Key project activities included:

1. Develop an online system for collecting and reporting industry tree data including planted area by variety and state.
2. Collect industry tree data using the online system and a team of project advisors across the country to promote voluntary grower participation
3. Establish a national monitoring orchard network (grower panel) for the purpose of producing accurate national crop estimates
4. Produce an industry crop estimate for the 2015 season by January 2015.
5. Produce an Apple and Pear Industry Statistics Annual

The project produced several key outputs including an online data management system for collecting industry tree statistics called the Australian Pome Fruit Tree Registry. The system is designed so that growers can manage their own statistics using a unique user name and password. In return for their efforts, growers receive a tree schedule report and access to personalised industry benchmarking reports. A user guide and a YouTube tutorial were produced to help new users navigate the website.

A preliminary industry crop estimate was presented to APAL in December 2014 to give an early indication of how big the 2015 national crop was likely to be. Following this, a comprehensive crop estimate was presented to APAL in January 2015 including detailed predictions of production at state and variety level.

A preliminary Tree Stats report was produced in January 2015 to provide an update on new tree data. Comprehensive analysis of industry tree data and production data was presented in the 'Apple and Pear Industry Statistics Annual 2014' which was produced in June 2015.

Three articles were written for the Australian Fruit Grower magazine including:

- September 2014 edition, "New industry data project starts"
- March 2015 edition "A bumper 2015 crop forecast"
- April 2015 edition, "Make your tree stats count".

The quality of industry data has improved significantly over the course of this project as a result of the

new data that includes variety mix and planted area at a state level. All major outputs were delivered, however the very high levels of industry participation (90% by planted area) that were targeted for data collection could not be achieved. Due to cultural barriers and some confidentiality concerns, the success of a voluntary data collection system will be limited unless stronger incentives can be put in place or orchard registration is made compulsory.

AgFirst recommend that APAL continue to promote the Australian Pome Fruit Tree Registry over the months of August and September before the new season begins. The online registry will continue to provide value to industry as the level of industry participation increases over time.

A successful model for estimating the national apple and pear crop has been established and AgFirst recommend that industry crop estimates are produced for the 2016 and 2017 season to return maximum value on the investment industry has made to date. In addition it is proposed that a long term crop estimate is produced that will provide predicted change in industry production for the next five years.

Keywords

Apple industry; pear industry; industry data collection; productivity; variety mix; tree statistics; planted area; crop estimate; Pome Fruit Tree Registry, packhouse survey;

Introduction

In 2014 the apple and pear industry (industry), through the apple and pear industry advisory committee (IAC), decided it needed to prioritise funding for work that would improve the quality and availability of apple and pear industry data. Quality industry data is required by industry to effectively plan for the future and make informed strategic decisions that will deliver the best outcomes for the industry. The 2014-2019 Apple and Pear Industry Strategic Plan states "the industry still lacks the detailed data to effectively manage the industry particularly on a state and regional basis and the detailed post-harvest data."

The collection of industry data in recent years has been largely limited to; agricultural commodities census/survey data collected by Australian Bureau of Statistics (ABS) for the past 15 years, levy data collected by government for the past 14 years and Nielsen retail sales data.

ABS survey data provides total tree numbers and gross production estimates for each state in June each year followed by a more detailed regional breakdown later in the year. Detailed tree data has not been collected since 2008 when ABS conducted the last comprehensive census of the apple and pear industries. Since then no current information on planted area or variety mix has been available. The levy collection authority provides information on the total volume of crop sold into domestic, export, processing and juice markets on a quarterly and annual basis. However no information on varieties is collected. Nielsen apple and pear reporting includes monthly average domestic sales data for apple and pears sold by one major retailer (Woolworths).

The overall objectives agreed for this project included:

- Collect detailed industry tree data including planted area, variety mix, tree age and rootstock by state and region
- Develop an online portal for the collection and reporting of industry data
- Produce an industry statistics annual including current plantings and production
- Develop an effective model for forecasting the national apple and pear crops and produce a crop estimate for the 2015 season.

Two changes were made to the original project description; one related to the way in which voluntary participation in data sharing is incentivised and the other was the inclusion of an industry crop estimate. The original project description included an orchard mapping component which aimed to provide growers with a geographic information system (GIS) map of their orchard as a means of incentivising voluntary participation and the sharing tree data. The mapping of orchards nationally was also intended to help coordinate and manage industry's response to a biosecurity incursion or similar threat. AgFirst research suggested that the majority of commercial growers already have functional orchard maps so it was proposed that growers receive a personalized benchmarking report

as an alternative means of incentivising participation. This meant that growers providing orchard tree statistics received a benchmarking report that shows their data alongside state and national averages.

While an industry crop estimate was also outside of the original project scope, it was included in the AgFirst proposal as a means of helping the industry achieve its' industry data goals sooner than otherwise possible. The industry crop estimate provided valuable information on the expected change in crop volume prior to the 2015 harvest, allowing APAL to release timely communications and industry to adjust seasonal management plans as early as possible.

Methodology

ONLINE INDUSTRY TREE REGISTRY

An online repository, the Australian Pome Fruit Tree Registry (Tree Registry) http://treeregistry.apal.org.au/users/login, was developed by AgFirst to deliver the following features:

1. Semi-automated online survey to capture orchard tree planting data once a year

2. Simple to use system that encourages growers to enter their own data

3. Automated email reminders

4. Grower/orchard tree schedule reports that can be printed or downloaded

5. Bulk data export into MS Excel

6. Industry data analysis and benchmarking reports

An online tree registry was chosen as the preferred means of collating and storing industry tree data. This online registry can be accessed and updated by growers, project advisors and administrators at any time and once constructed, industry surveys can be repeated on an annual basis at minimal cost. AgFirst modeled the tree registry data input fields and reporting values based on key industry data requirements using the New Zealand pipfruit industry tree registry as a benchmark.

Varying levels of computer literacy amongst industry growers presented a barrier to industry adoption of this tree registry and for this reason a national network of project advisors was required to assist growers. Project advisors targeted the largest growers in each state to achieve the best possible industry coverage. A second barrier to industry adoption was grower concern about the confidentiality of their data. To manage this concern, growers were assured that any data they provide was to be held in full confidence for the purpose of the project alone and individual data would only be accessible by the orchard manager/owner and the project administrators.

Using an industry grower database supplied by APAL, each grower registered with APAL was assigned a user name and sent an email invite to log onto the Tree Registry site http://treeregistry.apal.org.au/users/login. The letter of invitation included background information on the project and how it was being funded and implemented. The first email invitations were automatically sent to growers in October 2014, as each grower was entered into the Tree Registry data base. In addition a letter drafted by AgFirst and APAL was sent to all APAL grower members in the month of October from APAL CEO, John Dollisson.

After further development and testing had been completed, a second follow-up letter was emailed to

all growers in November 2014 using the Tree Registry mail-out capability. APAL created a Tree Registry page on the APAL website to promote the project and two articles were produced, one for the September 2014 edition of the Australian Fruit Grower magazine (see appendix E) and one for the April 2015 edition (see appendix G) as part of a communications plan to raise industry awareness and increase the level of industry participation. In January 2015, a YouTube video tutorial was produced to help new user enter tree data into the Tree Registry (https://www.youtube.com/watch?v=fmTr04aZ_CY&list=PL08MjeT-1brjP4_F2Yb96Y4CJAKk8WJ-D&index=1). The video was promoted on the APAL Tree Registry webpage and in the March Australian Fruit Grower magazine article.

METHOD FOR COLLECTING TREE STATISTICS

The collection of industry tree statistics was a voluntary process for Australian apple and pear growers. It was stated at the outset of the project that this was likely to present a major impediment to collecting a full set of industry data. The full support of the industry's peak industry body, Apple and Pear Australia Limited (APAL), was required to promote the project's objectives, value to industry and maximize industry participation. AgFirst anticipated that the level of voluntary participation would be insufficient unless growers were personally encouraged to participate and for this reason, a nationwide network of project advisors was formed. An ambitious target of 90 per cent industry coverage (planted area) was set.

Local consultants, or front line advisors, were selected based on the strength of their local knowledge and grower networks. Each local advisor was provided with training on how to use the online Australian Pome Fruit Tree Registry that had been developed so that they could encourage and assist local growers with entering their tree statistics into the online data management system. Local project advisors were asked to focus their effort on the largest growers that would contribute the greatest amount of data to help achieve the target level of industry coverage. Based on industry intelligence that AgFirst collected from packhouses and grower cooperatives, it is understood that 70-80 per cent of the national apple and pear crop is grown by 10-20 per cent of the larger growers.

The best time to collect tree statistics was identified as being August/September prior to the start of the new season and after growers had made tree planting decisions. Unfortunately data collection could not begin before September due to a later than anticipated start to the project, issues relating to the protection of IP and confirmation of an online hosting platform for the Pome Fruit Tree Registry.

METHOD OF COLLATING PREVIOUS CROP HISTORY

Historical production data was required to confirm the size and composition (e.g. variety mix, fruit size, class 1 recovery) of the national crop in 2014 and provide an accurate baseline for forecasting future crops. This work could not be complete in time to inform the 2015 crop estimate because the 2014 crop was still being sold at the time the 2015 crop estimate was crafted. However the historic data provided information required to produce an industry statistical annual (see Appendix D) and also provided valuable base line data for estimating the 2016 crop.

A survey of industry packhouses was used to collect historic information on the 2014 crop. The survey was distributed in March 2015 by the same front line advisors that were contracted to collect tree statistics. A personalized cover letter provided background information on the project, assurance

of confidentiality and the option to return the completed survey form either directly to AgFirst or to the local project advisor.

The survey form was provided in electronic format as an MS Word document that could be completed and returned electronically or printed and returned as a scanned PDF document. The key data collected in the survey included gross production (Kg), Class 1 production (Kg), Class 2 production (Kg), Process production (Kg) and average fruit size (g) by variety. To capture as much data as possible, packhouses were encouraged to supply whatever data they could, even if this was limited to gross tonnage handled by variety.

Survey data was collated by AgFirst in June and analysed to produce statistical summaries that are reported in the Apple and Pear Industry Statistical Annual 2014 (issued June 2015). Packhouse survey data was complemented with historic data from ABS, Industry Levy Authority, Goulburn Valley Orchard Census and market data compiled by APAL. Where no comprehensive data was available, AgFirst used historic data, industry intelligence and triangulation to produce estimates. Planted area by variety and state was estimated to help produce the 2015 Industry Crop Estimate.

CROP ESTIMATION

A preliminary 2015 crop estimate was presented to APAL in December (see Appendix A). This preliminary estimate was based on extensive consultation with industry stakeholders to ascertain the predicted change in crop size and quality relative to the previous two seasons. This estimate was based on the best historic production data available which was ABS 2013 apple and pear production data. Because accurate data on planted area by variety was not available, the estimate was limited to total gross production by variety and state.

A comprehensive 2015 crop estimate (see Appendix B) was presented to APAL in January 2015 by video link and the outcomes were reported in an article published in the March edition of the Australian Grower magazine (see Appendix F). Headlines from this research also featured on the APAL website with predictions of a bumper crop.

A grower panel was established throughout the country to predict how the productivity of each variety was likely to change from its historical performance. AgFirst aimed to ensure that this grower panel represented a minimum of 10 per cent of the total planted area in each state. Overall the panel area represented 18 per cent of the Australian total planted area.

Local front line advisors audited 20 per cent of their local grower panel area. The audit included fruit counts, visual estimation of crop load and quality, and fruit size measurements. These fruit size measurements were complemented with fruit size monitoring data that had been recorded in the OrchardNet data base.

Based on this audit, AgFirst were able to judge the accuracy of the grower forecast and calculate a correction factor if necessary. The grower panel's corrected crop forecast was then compared to the actual result in 2012 and 2013. The percentage change of our grower panel was then applied to our regional baseline line data to calculate the 2014 and 2015 crop estimates. Baseline data was taken from the 2013 ABS industry survey and variety mix was based on extrapolations carried out by APAL using 2008 ABS census data.

Outputs

- Australian Pome Fruit Tree Registry.

  An online data management system for collecting and reporting industry tree statistics.

- Pome Fruit Tree Registry User Guide (You Tube video tutorial)

  A video tutorial demonstrating how to log into the Australian Pome Fruit Tree Registry, enter business details, enter tree statistics and access benchmarking reports (http://apal.org.au/research-development-extension/projects/australian-pome-fruit-tree-registry/)

- Australian Pome Fruit Tree Registry web page (http://apal.org.au/research-development-extension/projects/australian-pome-fruit-tree-registry/)

  A webpage on the APAL website that provides information on the Industry Data Collection project and the Australian Pome Fruit Tree Registry. This page can be viewed by all site visitors and is not exclusive to APAL members.

- Preliminary National Pome Fruit Crop Estimate 2015 (Appendix A)

  An early season estimate of the national apple and pear crop delivered to APAL in December.

- National Pome Fruit Crop Estimate 2015 (Appendix B)

  A comprehensive national apple and pear crop estimate including the 2014 and 2015 seasons.

- Preliminary Tree Statistics Report (Appendix C)

  A preliminary report on new industry tree statistics collected via the Australian Pome Fruit Tree Registry.

- Apple and Pear Industry Statistics Annual 2014 (Appendix D)

  A comprehensive analysis of industry data including historic data if available and data collected for the 2014 season. Includes production data and tree data by state and variety.

- Australian Fruit Grower magazine articles:
  - "New industry data project starts", September 2014 (Appendix E)
  - "A bumper 2015 crop forecast", March 2015 (Appendix F)
  - "Make your tree stats count", April 2015 (Appendix G)

Outcomes

This projects' intended outcome was to "improve industry data for the apple and pear industries as demonstrated by improved business profitability".

An effective and robust online data management system has been developed for collecting apple and pear industry tree statistics. The Tree Registry has fulfilled the technical requirements needed to capture and manage tree data for the industry into the future but industry adoption has been slower than hoped. The Tree Registry holds tree data for 7,250 ha which is equivalent to approximately 58 per cent of the total planted apple and pear area in Australia. Whilst this is well short of the 90 per cent industry coverage that was targeted, the Tree Registry represents a significant step toward achieving better industry tree data. With stronger grower incentives in place and/or further industry investment to support data collection, the targeted industry coverage could be achieved over the next one-two years.

Already, the registry has provided detailed information on variety mix, rootstock, tree age and tree density that has not been available to industry before now. With the support of a local front line advisor, industry coverage in some states is sufficient to support detailed analysis of tree planting. Coverage across the country is also sufficient to identify clear trends with regard to variety mix and orchard development in different states. This information can be used by the Australian apple and pear industry to identify regions where the greatest or least amount of investment is taking place and target industry development/support programmes according to need.

The industry packhouse survey has provided detailed information on variety mix, fruit size and packout for most regions that has not previously been available. Although the level of industry coverage was less than targeted, the outcome has been sufficient to produce some robust analysis of industry average packout by region and variety (with the exception of Queensland where no detailed packhouse data could be collected). This information will help the industry to analyze the performance of different varieties across the country in the 2014 season. It will also help to inform industry crop estimation work for the 2016 season by providing robust baseline data on packout and fruit size.

The packhouse survey accounted for a gross apple volume of 105,129,000 Kg which is equivalent to approximately 39 per cent of the national apple crop. The survey accounted for a gross volume of 229,980,300 Kg of pears grown for the fresh market which is equivalent to approximately 23 per cent of total national pear crop. In effect this represents a much greater percentage of the fresh pear crop i.e. Class 1 and Class 2 because the survey did not account for any pears delivered directly to processors, which accounts for over 40 per cent of the national crop. Excluding Queensland, survey coverage ranged from a low of 23 per cent in Western Australia to a high of 68 per cent in South Australia, based on the total apple and pear production in each state.

A comprehensive industry crop estimate was produced for the current season (2015) by the mid-January deadline. The crop estimate was based on the best baseline data available including informed estimates of total planted area by state that have not been available since ABS stopped collecting data on planted area in 2008. A grower panel was successfully established that represented approximately 18 per cent of the total planted area in Australia. Targeted coverage was exceeded in all but one state where the panel planted area was equivalent to approximately 6 per cent of the state total.

The crop estimate model successfully forecast a significant increase in both gross production and Class 1 volumes compared to the previous 2014 season. This information enabled the industry,

through APAL, to make informed strategic decisions and release communications about the size of the national crop with greater confidence than in previous years. In order to forecast the 2015 national crop, first the 2014 national crop needed to be estimated using ABS 2013 baseline figures. In June 2015, ABS released final estimates, including gross volumes for the 2014 apple and pear crops. The AgFirst estimate for the total apple and pear crop combined was just 1.68 per cent different from the ABS results and the estimate for the gross apple crop alone was just 1.36 per cent different from the ABS survey results. Although ABS survey data will never be 100 per cent accurate, this currently provides the best national baseline data available and results to date, are giving the project team confidence in the methodology used to produce the 2014 and 2015 national crop estimates.

As the quality of industry baseline data improves, the accuracy of future crop estimates should also improve. With a national grower panel established, efficiency in producing future crop estimates should improve and by retaining an established grower panel, relative changes in productivity between years can be forecast with increased confidence.

Evaluation and Discussion

This data project set out to achieve some ambitious performance targets and outputs that have not been achievable within the project time frame. However, the project has produced some valuable outputs that will be of immediate benefit to industry and will enable more informed decision making in the near future. On this basis, outputs including the Apple and Pear Industry Statistical Annual (Appendix D) and the National Pome Fruit Crop Estimate 2015 (Appendix B) have succeeded in achieving the desired project outcomes.

The industry crop estimate provided valuable information on the expected change in crop volume prior to the 2015 harvest, allowing APAL to release timely communications and industry to adjust seasonal management plans as early as possible. An accurate crop forecast can be used confidently by industry and peak bodies to ensure growers, marketers, supply chain participants and government are kept well informed and are prepared for change in the volume of fruit expected nationally. Marketers, for example, can utilise this information to predict the volume of fruit that is likely to be entering different markets which will directly affect the market price. Growers also benefit from knowing whether access to resources, such as labour and postharvest facilities, are likely to be constrained.

Some significant challenges have been faced over the course of the project resulting in the need to change some of the early milestone delivery dates. Delivery of the Tree Registry was significantly delayed by several factors including the availability of an industry grower data base, confirmation of a suitable online hosting platform and an extended period of product testing before the website was launched. All of these issues were compounded by a later than anticipated start to the project, meaning that collection of tree data began when growers were already busy managing the new season crop.

Computer literacy amongst industry growers was proven to be a significant barrier to adoption of the tree \ registry but this was not unexpected. If more growers had been motivated to participate, the project advisors could have achieved the targeted industry coverage. The greatest barrier to adoption of the tree registry was an apparent lack of motivation to participate and sometimes resistance to sharing information. These are cultural barriers that we believe will take more than one season to overcome. Whilst the limitations of a voluntary data collection scheme were acknowledged and

documented by the project team prior to the project starting, the significance of cultural limitations was underestimated. The current industry culture may reflect the competitive nature of producers who are typically supplying the same local markets. Secondly, most Australian apple and pear growers have no need to operate in a coordinated fashion to optimize access to lucrative export markets like the New Zealand pipfruit industry, for example.

Front line advisors were encouraged to provide regular feedback to the project manager. It became clear that some growers were not motivated by the opportunity to access valuable benchmarking data in return for their participation while other growers saw no benefit in contributing for the benefit of the industry as a whole. Growers that did willingly participate in the project said they did so for the benefit of the industry and for the benefit of their own business. Younger growers were more likely to participate and those that owned or managed higher performing orchards and were often more involved at an industry level. A grower's age, orchard productivity and industry involvement were all factors that influenced the level of grower participation. Some growers were openly opposed to sharing their data and could see no benefit in improving the quality of industry data. This was a relatively small minority however.

As expected, support from the APAL office was critical for effectively communicating project objectives to industry and promoting industry engagement. Despite this support, achieving the targeted level of industry engagement proved challenging and we received limited response to the industry communications and promotion that was carried out.

If industry average productivity continues to improve and Asian export markets increase in value, Australian growers may soon be aiming to export more fruit to maintain business profitability and growth. This change may elevate the importance of industry data to the 'average' grower, and may eventually lead to compulsory orchard registration. In the meantime, the greatest increase in industry coverage is likely to be achieved by influencing some of the larger growers, who to date have not been sufficiently motivated to participate in the project, but are not strongly opposed to sharing data. An industry data collection project of this nature requires significant investment in resources in year one. AgFirst believe strongly that the return on this investment cannot be fully realised within one year. This was reflected in the AgFirst project tender which proposed a 3-5 year term for the project. We believe that the resources and methodology developed over the past twelve months can be further utilised to significantly improve on the project outcomes achieved to date, with a reduced level of industry funding.

Recommendations

Improving the quality of industry data is a priority for the Australian apple and pear industry. Whilst significant advances have been made, some outputs of this Apple and Pear Industry Data Collection project failed to achieve the high levels of industry adoption and industry coverage that were initially targeted. The project team acknowledge that the significance of behavioral and cultural barriers were initially underestimated and believe that any voluntary data collection scheme will struggle to achieve full industry coverage in the short to medium term unless stronger incentives can be put in place.

1. **Data collection**

   To ensure that the Australian Pome Fruit Tree Registry continues to generate value for industry, an ongoing communications plan will be required to at least maintain industry awareness. The industry should continue to promote of the Australian Pome Fruit Tree Registry, encouraging new growers to participate and reminding existing users to update their statistics. The timing of industry communications will be critical and should target the months of August and September to maximize industry engagement. In time, compulsory orchard registration would provide the ultimate solution for effective industry tree data collection.

2. **Crop estimation**

   The crop estimation methodology employed in this project has proven successful. The efficiency and accuracy of industry crop estimation will only improve now that an effective model has been established. It is recommended that industry crop estimates are produced for the 2016 and 2017 season which will return maximum value from the industry investment to date, and result in further improvements to the model. The value of national crop forecasting is expected to increase as apple and pear productivity continues to improve and gross production volumes increase. To help the industry and government prepare for the future more effectively, it is proposed that a 'long term crop estimate' is undertaken to model change in industry size and production volumes over the next five years. This could be undertaken as a desktop exercise by utilizing existing baseline data and projecting growth based on current trends and industry intelligence.

Scientific Refereed Publications

None to report.

Intellectual Property/Commercialisation

All data collected for the purpose of this project belonging to individual businesses or industry stakeholders remains confidential.

The OrchardNet database which was used to produce the National Pome Fruit Crop Estimate remains the property of AgFirst.

Acknowledgements

AgFirst would like to acknowledge the many Australian apple and pear growers and packhouse owners who have contributed data to this project. Without their support this project would not have been possible.

AgFirst would like to acknowledge the financial support of HIA in funding this project and allowing some flexibility to ensure that the best possible outcomes for industry could be achieved.

AgFirst would also like to acknowledge APAL who supported this project and provided valuable resources.

Appendices

A. Preliminary National Pome Fruit Crop Estimate 2015

B. National Pome Fruit Crop Estimate 2015

C. Preliminary Tree Statistics Report

D. Apple and Pear Industry Statistics Annual 2014

E. "New industry data project starts", Australian Fruit Grower, September 2014.

F. "A bumper 2015 crop forecast", Australian Fruit Grower, March 2015.

G. "Make your tree stats count", Australian Fruit Grower, April 2015.

Appendix D

Appendix A

Preliminary National Pome Fruit Crop Estimate 2015

prepared for

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Brisbane, QLD 4003

prepared by

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14th December 2014

Preliminary Australian Pome Fruit Crop Estimate 2015

The following December estimate is based on a combination of stakeholder interviews and base data sourced from Australian Bureau of Statistics (ABS) and Apple and Pear Australia Limited (APAL). Because accurate data on planted area by variety is not available, this estimate is limited to total gross production by variety and state. It is expected that future estimates at this time of year will include productivity metrics including production per hectare, based on data collected via the online Tree Registry. Based on APAL's estimated total planted area for apples, national average productivity in 2013 was approximately 32 tonnes/ha (within the expected range of 30-35 tonne/ha) and this is not expected to change significantly in 2015 provided seasonal factors remain favourable.

Apple and pear production has been estimated by calculating expected change in production compared to the previous two seasons. These percentage values are derived from predictions obtained from growers, marketers, and consultants. A more accurate January estimate will be based on comprehensive data collected from selected grower panellists in each state and will include audited block level crop estimates and fruit size data. Because national production data has not been collected at the variety level since 2008, data supplied by APAL (2008 data extrapolated to 2013) has been used as base data for these estimates to achieve gross production estimates by both state and variety.

Pear data has not been collected at variety level since 2008 and projections have not yet been calculated by APAL as has been done for apples. However, historically pear production has been much less variable than apple production and because close to 90% of the total pear crop is produced in Victoria, a less extensive survey is required to estimate the national crop. For the purpose of this preliminary estimate, total gross production figures from the last ABS census (2013) have been used and production by variety is based on 2013 estimates of planted area supplied by APAL. It should be noted that a significant number of pear trees have been removed over the past two years and this estimate does not account for any reduction in planted area. It is hoped that AgFirst will soon have access to the 2014 SPC Ardmona census data to use when preparing the January crop estimate. Despite out best efforts, we have not yet been able to obtain this data from SPC Ardmona.

Growing conditions to date have been generally favourable across all states with only isolated losses caused by hail and frost events. Trees are carrying relatively full crops with the potential to produce normal-good volumes, similar to the 2013 season and larger than the 2014 season which was characterised by below average production and class 1 recovery rates. To date the fruit is very clean and Class 1 recovery rates could be very good if there are no major problems between now and harvest.

Fruit is reported to be sizing well in all states thanks to favourable conditions at the time of fruit set in most regions. Size is not expected to limit productivity unless drought conditions are experienced between now and harvest. Although it is difficult to predict harvest dates this early in the season, most stakeholders are predicting that harvest will follow normal or slightly earlier than normal timing. Summer fruit harvest started 5-6 days earlier than normal in some regions which may indicate apples will also be early.

Table 1. Total Gross Production by State

	2012	2013	Estimate 2014	Forecast 2015	Change (%)	
State	**Apples (Kg)**				2015 cv 2014	2015 cv 2013
Victoria	132,090,220	124,532,035	115,786,777	124,501,910	7%	0%
Queensland	30,067,519	34,002,172	32,302,063	34,002,172	5%	0%
NSW	44,036,764	42,406,781	36,045,764	42,406,781	15%	0%
Tasmania	26,405,429	28,452,515	24,355,353	30,444,191	20%	7%
South Australia	24,043,101	28,210,313	26,799,798	28,210,313	5%	0%
Western Australia	32,384,279	31,274,208	26,176,512	29,085,013	10%	-7%
	Pears (Kg)					
Victoria	99,980,127	97,691,327	94,760,588	97,691,327	-3%	0%
Queensland	174,969	343,589	343,589	343,589	0%	0%
NSW	440,637	342,277	342,277	342,277	0%	0%
Tasmania	916,797	869,194	869,194	869,194	0%	0%
South Australia	5,816,135	4,954,148	4,954,148	4,954,148	0%	0%
Western Australia	11,944,002	5,004,440	5,004,440	5,004,440	0%	0%
	Total Pome Fruit (Kg)					
	408,299,978	**398,083,000**	**367,740,502**	**397,855,356**	**8.2%**	**-0.1%**

Note: 2012 and 2013 data is from ABS Agricultural Commodities Report

Regional highlights:

- Victoria – crops significantly heavier than 2014. Pink Lady strains are carrying full crops and some Gala crops are particularly heavy, requiring significant hand thinning to optimise fruit size. Granny Smith crops are reported to be more variable, some carrying lighter crops than 2014. Packham pears are carrying full crops but lighter WBC crops are expected (80-90% of a full crop). The percentage of pear trees removed in Victoria is an unknown factor at the time of writing.
- New South Wales – crops expected to be at least 10% greater than 2014 and similar to 2013. Like Victoria, Gala crops are reported to be heavy and Pink Lady strains, Fuji and Red Delicious all have the potential to produce normal-above average crops.
- Queensland – Red Delicious crops are slightly down on average but other varieties have normal-full crops. Rainfall to date has been a concern and more regular rainfall will be required to realise the crops potential.

- Western Australia – some growers had record production in 2013 and slightly below average crops in 2014. Expecting the 2015 crop to fall somewhere between these two seasons.

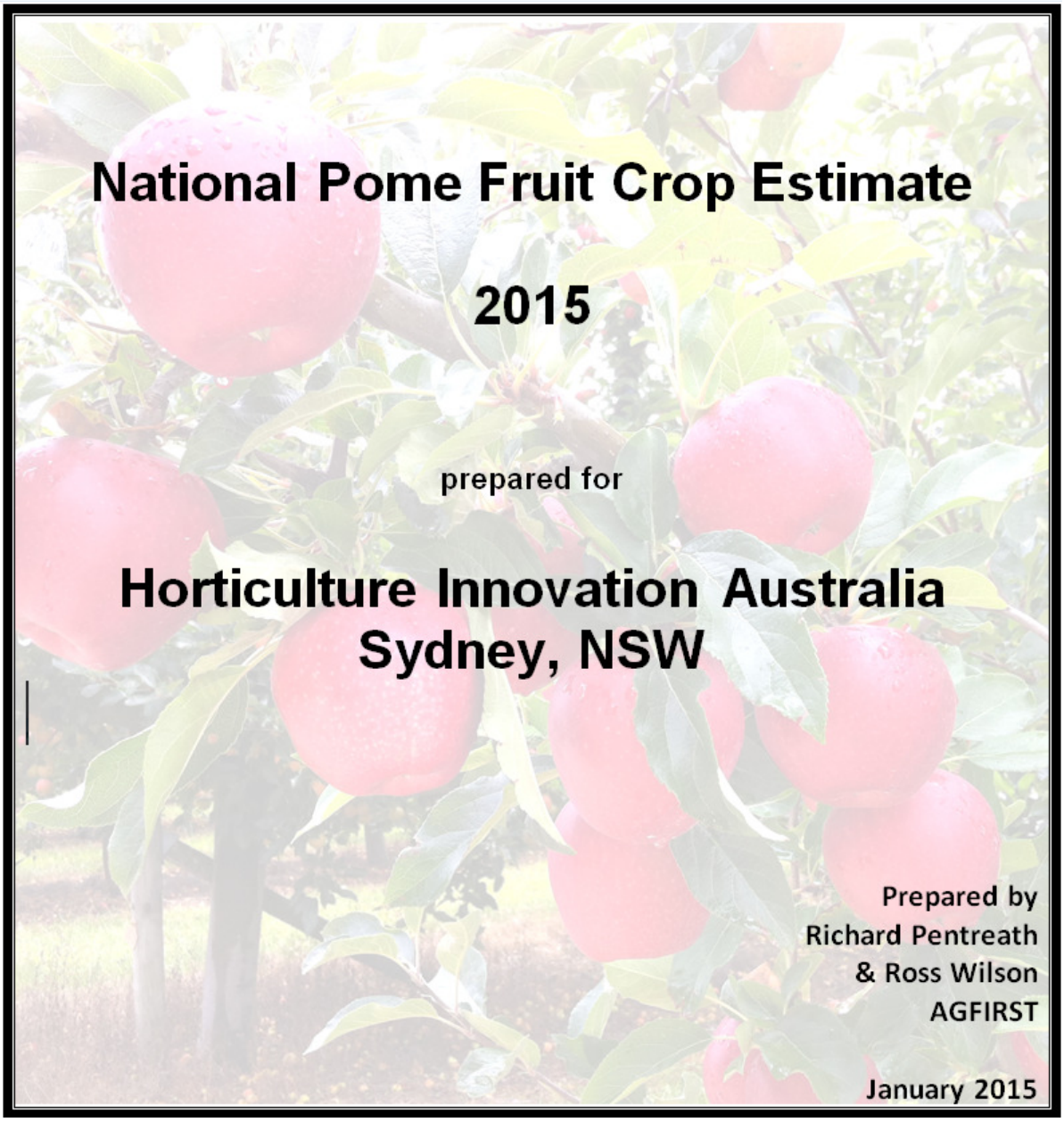
- South Australia – similar trends reported, expecting a bigger crop than 2014 but Pink Lady and Rosy Glow crops are variable.

Table 2. Total Gross Production by Variety

VOLUME (Kg)	2013		2014 Estimate		% Change	2015F		% Change
Cripps Pink	31%	90,308,561	29%	82,391,787	-9%	33%	94,474,585	15%
Cripps Red	14%	39,803,206	13%	36,177,804	-9%	13%	36,783,344	2%
Royal Gala	19%	53,589,390	17%	47,741,479	-11%	20%	56,338,376	18%
Fuji	8%	23,539,303	7%	20,857,635	-11%	8%	23,806,424	14%
Granny Smith	17%	49,891,653	16%	45,721,781	-8%	16%	47,328,460	4%
Golden delicious	3%	8,660,021	3%	7,894,310	-9%	2%	7,206,183	-9%
Red delicious	6%	17,860,748	6%	16,158,142	-10%	6%	17,419,516	8%
Other apples	2%	5,195,018	2%	4,523,329	-13%	2%	5,293,493	17%
Total Apples		**288,847,900**		**261,466,267**	**-9%**		**288,650,381**	**10%**
Packham	42%	45,848,706	41%	44,617,795	-3%	42%	45,848,706	3%
WBC	39%	42,494,329	38%	41,351,340	-3%	39%	42,494,329	3%
Other Pears	19%	20,861,940	19%	20,305,100	-3%	19%	20,861,940	3%
Total Pears		**109,204,975**		**106,274,235**	**-3%**		**109,204,975**	**3%**
Total Pome Fruit		**398,052,875**		**367,740,502**	**-8%**		**397,855,356**	**8%**

Note: Forecast Golden Delicious and Cripps Red volumes have been adjusted to reflect tree removal and grafting to other varieties.

Appendix B


National Pome Fruit Crop Estimate
2015
prepared for
Horticulture Innovation Australia
Sydney, NSW
Prepared by
Richard Pentreath
& Ross Wilson
AGFIRST
January 2015

Contents

1.0 Executive Summary

The national pome fruit crop for 2015 is predicted to be 416,126 tonnes. This represents a 12% increase over the 2014 crop which is estimated to have been 370,923 tonnes. The total Class 1 crop is predicted to be 304,604 tonnes in 2015, up from 253,713 tonnes in 2014 and 273,270 tonnes in 2013 (Table 4). Both the 2015 and 2014 crop estimates are based on relative change from the 2013 crop for which the most recent industry crop statistics are available.

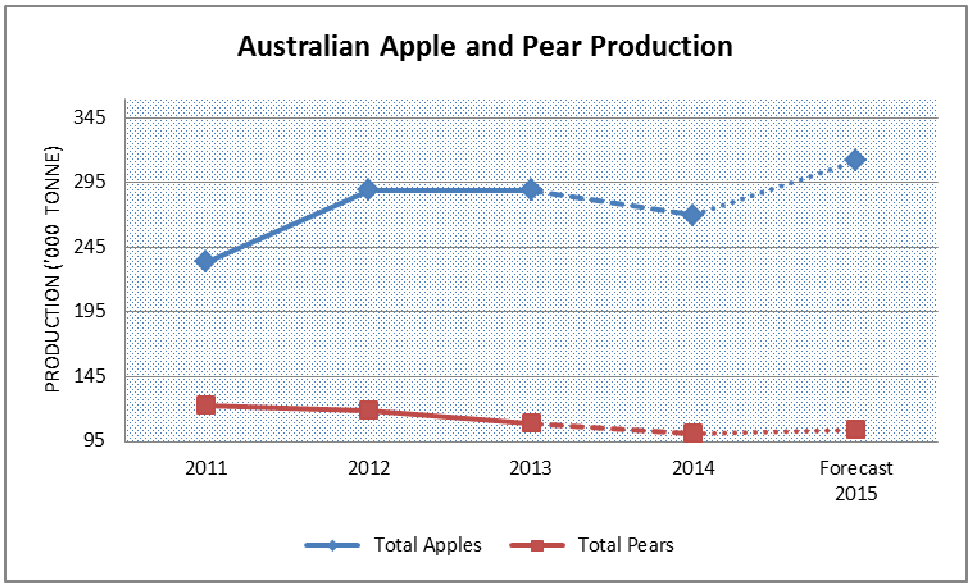
The total planted area in 2015 is estimated to be 12,606 hectares. No significant change in the total planted area is forecast in 2015 but significant change in variety mix is occurring. A separate component of the Apple and Pear Industry Data Collection project is focused on developing a resource for the collection of comprehensive industry tree planting statistics which has been discussed in a separate project report.

The 2015 crop is predicted to be larger than the 2014 crop and fruit size is also predicted to be larger overall. The net result is a 12.5 per cent increase in gross yield from 29.3 tonnes per hectare in 2014 to 33.0 tonnes per hectare in 2015 (Table 6). Class 1 yields are also expected to be very good, up 20 per cent to 26.4 tonnes per hectare in 2015 from 22.0 tonnes per hectare in 2014 (Table 7). This is mainly due to fruit finish being very clean and few environmental perils including extreme heat, hail, and drought – with the exception of the Adelaide Hills district. Losses due to birds and bats have been minimal at the time of writing and bush fires in the Adelaide Hills district are reported to have had minimal impact on local pome fruit crops.

Fruit size is predicted to be slightly larger for most varieties in 2015 than it has been for the past two seasons. This has a profound effect on the profiles by count of each variety with the shifts requiring proactive management by marketers.

Harvest dates are expected to be 7-10 days earlier than 2014 in NSW, WA and SA. Harvest dates in VIC, QLD and TAS are expected to be normal or slightly early.

Figure 1: Australian apple and pear production 2011-2015 (000's tonnes)



2.0 Introduction

The benefits of an accurate industry crop estimate are numerous. The benefactors of an accurate national and regional estimate include:

- Growers
- Marketers
- Shippers and shipping companies
- Packhouses
- Importers
- Packaging manufacturers
- Chemical suppliers
- Government

This estimate includes crop breakdown by variety and region.

3.0 Methodology

The primary aim of the project was to estimate the total crop for apples and pears in all the major production areas (Queensland, New South Wales, Victoria, Western Australia, South Australia and Tasmania) and the nation as a whole. This includes an estimate for all major varieties.

The method used relies on good historical information of crop volume and planted area. Because the official collection of national pome fruit crop and tree statistics has been limited since 2008, apple tree planting statistics and variety mix have been estimated by APAL to 2013 using extrapolation

from the 2008 Australian Bureau of Statistics (ABS) national census. This data has formed the base line data for both the 2014 and 2015 crop estimates.

With the assistance of a grower panel spread throughout the country, we have then predicted how the productivity of each variety is likely to change from its historical performance. The grower panel includes growers in all producer states, and consisted of 2,285 hectares of the varieties studied. This represents 18% of the estimated total planted area of Australia. The variety breakdown of the grower panel is shown in Table 1 below.

Table 1: Planted area of blocks included in the grower panel (Ha's)

Area (Ha)	Total	VIC	NSW	QLD	SA	TAS	WA
Fuji	242.1	85.8	96.2	15.0	15.0	22.2	7.9
Granny Smith	198.0	118.2	3.7	62.2	5.2	0.8	7.9
Cripps Pink	648.2	329.5	121.2	123.4	32.9	21.3	19.9
Red Del.	270.4	25.0	142.2	86.1	3.6	12.5	1.0
Royal Gala	538.8	176.6	141.8	110.4	31.0	69.0	10.0
Sundowner	119.2	82.0	2.7	23.1	4.8	1.0	5.6
Golden Del.	6.7	3.0			3.7		
Other Apples	82.6	11.8	12.3	34.7	6.0	8.9	8.9
Packham Pears	119.2	118.0		1.2			
WBC Pears	45.3	44.7		0.6			
Other Pears	14.2	5.3		1.5		7.4	
Grand Total	**2,284.7**	**999.9**	**520.1**	**458.2**	**102.2**	**143.1**	**61.2**

Our contracted requirement was to ensure our grower panel represented a minimum of 10 per cent of the total planted area including Cripps Pink, Royal Gala, Fuji, Red Delicious, Granny Smith, Sundowner, and Golden Delicious apples, and Packham and WBC pears in each state. This target was exceeded in all states with the exception of Western Australia where a 6-7% of the estimated total area was achieved. Overall, the panel area represents 18 per cent of the total planted area.

Each grower was asked to detail their actual block performance in the 2013 and 2014 years and forecast the crop for 2015. Where it was possible, local front line advisors then audited 20 per cent of the grower panel area. The audit included tree counts, a visual estimation of crop load and quality, and fruit size measurements.

Based on this audit, we were able to judge the accuracy of the grower forecast and calculate a correction factor if necessary. The grower panel's corrected crop forecast was then compared to their actual result in 2012 and 2013. The percentage change of our grower panel was then applied to our regional baseline line data to calculate both the 2014 and 2015 regional crop forecasts for all states. Baseline data for the 2013 national crop was taken from the Australian Bureau of Statistics (ABS) 2013 census, and variety mix was based on extrapolations carried out by APAL using the 2008 ABS census data.

Gaining the necessary level of voluntary grower participation proved challenging but through the combined efforts of the project team, we have been able to achieve industry coverage which exceeds the minimum requirement in all but one state. Due to time constraints and the extra effort required to achieve the necessary industry coverage, a portion of the grower panel area was not audited using the full methodology described above. In some cases tree counts or block walks could not be completed by front line advisors so expert local intelligence was used to make any necessary corrections or adjustments. It is unlikely that this will have any significant impact on the quality of this crop estimate.

4.0 Total Planted Areas

Total planted areas have been estimated for the 2015 season based on a combination of historical ABS census data, recent APAL estimates, Goulburn Valley 2014 census data (courtesy of SPC Ardmona) and local intelligence from industry representatives in each state. Data collected via the Tree Registry was also utilised when estimating national and regional variety mix for the 2014 and 2015 crops. It is expected that the accuracy of future crop forecasts including variety mix and planted area, will improve as more data is captured in the Tree Registry database. At the time of writing, tree statistics for 7,200 hectares had been entered into the Tree Registry, representing approximately 55 per cent of the estimated total pome fruit area.

Adjustments have been made to the percentage planted area for some varieties based on historic trends and local intelligence. The areas of Sundowner, Golden Delicious and Red Delicious have decreased whilst the area planted in Gala and Cripps Pink apples has increased, along with 'Other Apples' including Jazz™. The total area of WBC pears has decreased as a result of tree removal or conversion to new varieties in the Goulburn Valley. Overall, the estimated total pome fruit area has not changed significantly.

Table 2: Estimated Australian Planted Area of Apples and Pears

	2013		2014		2015		Change 2013-2014	Change 2013-2015
AREA (HA)	%	ha	%	ha	%	ha		
Royal Gala	18.7%	2,363	19.4%	2,447	19.5%	2,460	3.6%	4.1%
Cripps Pink	23.2%	2,930	24.2%	3,060	25.0%	3,154	4.5%	7.6%
Granny Smith	9.7%	1,229	9.6%	1,211	9.6%	1,211	-1.4%	-1.4%
Red Delicious	3.7%	473	3.5%	441	3.3%	416	-6.6%	-11.9%
Fuji	6.7%	851	6.6%	833	6.6%	833	-2.1%	-2.1%
Sundowner	5.2%	662	4.5%	568	4.2%	530	-14.2%	-19.9%
Golden Delicious	1.9%	236	1.7%	214	1.5%	189	-9.2%	-19.9%
Other Apple	3.7%	473	4.5%	568	4.8%	605	20.1%	28.1%
Total Apple	**73.0%**	**9,214**	**74.0%**	**9,342**	**74.5%**	**9,397**	**1.4%**	**2.0%**
Packham	10.8%	1,360	10.5%	1,340	10.3%	1,300	-1.5%	-4.4%
WBC	9.1%	1,152	8.5%	1,075	8.0%	1,010	-6.7%	-12.3%
Other Pears	7.0%	888	7.0%	888	7.1%	899	0.0%	1.2%
Total Pear	**27.0%**	**3,400**	**26.0%**	**3,303**	**25.5%**	**3,209**	**-2.9%**	**-5.6%**
Grand Total	**100%**	**12,614**	**100%**	**12,645**	**100%**	**12,606**	**0.2%**	**-0.1%**

5.0 National Crop Volume Historical Statistics

The Australian Apple and Pear industry currently has no accurate breakdown of the national crop by region. The breakdown down of the national crop has been predicted using extrapolated 2008 variety mix data as explained above. In order to make more accurate crop forecasts in the future, a packhouse survey will be undertaken in 2015 as part of the Apple and Pear Industry Data Collection project. The survey will collect statistics on the 2014 apple and pear crop including the quantity of Class 1 fruit packed and average fruit sizes by variety.

6.0 2014 National Crop Forecast

AgFirst predicts the combined apple and pear crop in 2015 to be **416,126 tonnes**. The variety breakdown and percentage shifts compared to 2013 are shown in Table 3 below. The predicted Class 1 crop is shown in Table 4.

The forecast relative change in the size of the national apple crop can be compared with apple sales data collected from Woolworths Supermarkets by AC Neilsen. Woolworths' apple sales over 2014 season were approximately 4% lower than the same period in 2013, reflecting reduced availability of Class 1 fruit.

Table 3: 2014 Australia Total Gross Pome Fruit Forecast (Kg)

GROSS VOLUME (Kg)	2013	2014	Forecast 2015	Change 2013-2014	Change 2013-2015
Royal Gala	55,666,879	51,079,307	62,010,022	-8%	11%
Cripps Pink	100,466,325	99,578,918	112,254,837	-1%	12%
Granny Smith	53,633,527	52,251,622	57,892,204	-3%	8%
Red Delicious	20,999,087	16,324,754	20,024,468	-22%	-5%
Fuji	22,619,056	21,362,908	25,503,160	-6%	13%
Sundowner	20,587,021	16,256,442	18,310,288	-21%	-11%
Golden Delicious	9,309,522	8,486,607	9,703,937	-9%	4%
Other Apple	5,584,645	5,065,005	6,060,010	-9%	9%
Total Apples	**288,866,062**	**270,405,564**	**311,758,926**	**-6%**	**8%**
Packham	47,411,396	45,364,900	46,573,998	-4%	-2%
WBC	40,271,332	35,514,630	36,453,031	-12%	-9%
Pears Other	21,522,247	19,640,903	21,340,505	-9%	-1%
Total Pears	**109,204,975**	**100,520,433**	**104,367,534**	**-8%**	**-4%**
Total Pomefruit	**398,071,037**	**370,925,997**	**416,126,460**	**-7%**	**5%**

Table 4: 2014 Australia Total Class 1 Pome Fruit Forecast (Kg)

CLASS 1 VOLUME (Kg)	2013	2014	Forecast 2015	Change 2013-2014	Change 2013-2015
Royal Gala	40,859,489	37,338,973	47,065,607	-9%	15%
Cripps Pink	73,440,884	74,086,715	83,517,598	1%	14%
Granny Smith	36,578,065	35,844,612	43,998,075	-2%	20%
Red Delicious	13,922,395	11,606,900	15,418,840	-17%	11%
Fuji	14,589,291	12,625,479	16,245,513	-13%	11%
Sundowner	15,852,006	11,444,535	13,805,957	-28%	-13%
Golden Delicious	6,525,975	6,118,844	6,996,539	-6%	7%
Other Apple	3,842,235	3,398,619	4,848,008	-12%	26%
Total Apples	**202,711,759**	**187,898,066**	**231,675,852**	**-7%**	**14%**
Packham	37,929,116	36,291,920	39,587,898	-4%	4%
WBC	34,230,632	28,411,704	30,985,077	-17%	-9%
Pears Other	18,293,910	15,712,722	18,139,429	-14%	-1%
Total Pears	**91,004,146**	**80,416,347**	**88,712,404**	**-12%**	**-3%**
Total Pomefruit	**274,270,945**	**253,713,382**	**304,604,569**	**-7%**	**11%**

7.0 Regional Crop Forecast

Production trends were similar across most states between 2013 and 2014 however the degree of change between seasons does vary significantly.

The South Australian crop is predicted to be larger than the 2013 crop and the 2014 crop. This has been attributed to a number of factors including a significant percentage of young trees coming into production, less extreme climatic conditions in 2014/2015 and adoption of improved management systems in recent years. Most varieties are carrying full crops similar to, or heavier than 2013 and the quality is good at this time. Cripps Pink and Rosy Glow trees are carrying significantly larger crops than 2014 and 75mm of rainfall in December/January was well timed to relieve water stress.

A significant number of trees have been removed or grafted to new varieties over the past year in Southern Australia and this is expected to limit the total crop volume in 2015. Whilst the number of trees removed is not known, our prediction for the 2015 season may prove to be on the high side even though allowance has been made for tree removal/conversion to new varieties. The main varieties being replaced include Sundowner, Red Delicious, Golden Delicious and some older Cripps Pink. Recent fires in the Adelaide Hills district are reported to have had only minor impact on local apple and pear crops.

Packham trees in Victoria are typically carrying full crops whilst some WBC trees are carrying lighter crops this year. Overall the pear crop in Victoria is expected to be up on 2014 but smaller than the 2013 crop due to the removal or replacement of WBC trees. Growers are expecting the apple crop to be approximately 10% up from 2014 and we are predicting it will also be larger than the 2013 crop. Cripps Pink and Royal Gala crops are full and Granny Smith is also predicted to be up on 2014 although crop load is more variable.

New South Wales has experienced good growing conditions this season and normal to above average crops are expected for most varieties. Royal Gala crops are heavy whilst Red Delicious, Cripps Pink and Fuji are all close to normal or slightly above normal.

Growers in Western Australia are expecting an above average crop in 2015 but fruit size is likely to be a little down on average for some varieties. Growers have expressed concerns about poor chemical thinning results and high hand thinning costs. Little damage from birds or sunburn has been reported and fruit finish is looking particularly good. Temperatures have been mild this summer with only one day over 40 degrees C in December.

Queensland had a particularly light crop in 2014. The 2015 crop is predicted to be 20-25 per cent bigger than 2014, but slightly smaller than 2013. Good rainfall in December has allowed the crop to continue sizing and also filled dams that will now be able to supply water for the rest of the season.

Table 5: 2015 Forecast crop distribution by variety and region.

VOLUME (Kg)	Total	VIC	NSW	SA	WA	QLD	TAS
Royal Gala	62,010,022	18,809,648	12,309,440	4,136,636	6,589,348	8,469,450	11,695,500
Cripps Pink	112,254,837	57,271,454	11,006,227	16,899,000	12,940,379	7,711,776	6,426,000
Granny Smith	57,892,204	37,507,247	3,251,338	3,623,922	7,084,400	6,228,836	196,461
Red Delicious	20,024,468	1,314,543	7,449,821	1,119,965	665,020	7,855,118	1,620,000
Fuji	25,503,160	6,161,200	6,185,636	4,122,184	2,629,969	1,364,172	5,040,000
Sundowner	18,310,288	9,538,458	2,325,019	2,178,360	1,578,251	1,283,500	1,406,701
Golden Delicious	9,703,937	5,496,333	-	1,105,534	91,100	-	3,010,970
Other Apple	6,060,010	1,400,500	1,673,978	973,360	800,250	27,659	1,184,263
Total Apples	**311,758,926**	**137,499,382**	**44,201,459**	**34,158,961**	**32,378,717**	**32,940,512**	**30,579,895**
Packham	46,573,998	40,209,750	140,881	1,981,659	3,753,330	140,700	347,678
WBC	36,453,031	34,289,656	130,818	1,486,244	500,444	45,869	-
Pears Other	21,340,505	18,375,739	67,634	1,486,244	765,679	123,692	521,516
Total Pears	**104,367,534**	**92,875,145**	**339,333**	**4,954,148**	**5,019,454**	**310,261**	**869,194**
Total Pomefruit	**416,126,460**	**230,374,526**	**44,540,792**	**39,113,108**	**37,398,171**	**33,250,773**	**31,449,089**

Note: Where nil production is recorded there was insufficient information in the baseline data or production volumes are very small.

8.0 Productivity

The grower panel gave us their forecast of the 2015 crop by variety for their own properties including predicted Class 1 recovery rates. Table 6 below shows predicted gross productivity per hectare for the 2015 season and change relative to the previous two seasons. Table 7 shows the estimated Class 1 yield per hectare based on grower panel predictions.

Gross yield per hectare is predicted to increase 13% from 2014 with an average 33.0 tonnes per hectare compared to 29.3 tonnes per hectare in 2014 and 31.6 tonnes per hectare in 2013. Favorable growing conditions early in the season helped to set up good crops which have subsequently continued to size well. Regional threats and challenges have varied from extended cool wet periods in Tasmania to extended hot dry periods in South Australia, but overall it has been a good season for growing apples and pears.

Predicted Class 1 yield per hectare is 26.4 tonnes per hectare in 2015 compared to 23.8 tonnes in 2014 and 22.0 tonnes in 2013. This prediction represents an increase of 20 per cent from 2014 Class 1 yield and an increase of 11 per cent from 2013 Class 1 yield. It should be noted that a number of factors could affect the actual outcome between now and harvest including hail, pests and diseases, extreme heat and flooding for example.

Some increase in productivity can be attributed to the significant number of young trees coming into full production in some regions. The influence of young blocks included in the grower panel was moderated in some cases where the percentage of young tree was thought to be greater than the regional average. As knowledge of industry tree statistics improves, the make-up of future grower panels can be adjusted to better represent each region.

Yield data collected as part of the Future Orchards industry extension program was last reported in the 2013-2014 Orchard Business Analysis Report (OBA). The average gross yield calculated for the monitor orchard group was 39.1 tonnes per hectare in 2013 and 38.7 tonnes per hectare in 2014 (forecast). Because all of the monitor orchards achieve above average performance, it is no surprise that average productivity is higher for this group. A smaller drop in productivity between 2013 and 2014 relative to the industry forecast reflects the fact that the OBA group, are likely to have better risk mitigation practices in place relative to other growers.

Table 6: National Gross Yield (Kg/Ha)

GROSS YIELD (Kg/HA)	2013	2014	Forecast 2015	Change 2013-2014	Change 2013-2015
Royal Gala	23,563	21,625	26,244	-1.3%	11.4%
Cripps Pink	34,295	33,844	38,445	-1.2%	12.1%
Granny Smith	43,658	43,149	47,807	-20.2%	9.5%
Red Delicious	44,443	36,976	48,105	-3.6%	8.2%
Fuji	26,595	25,660	30,634	-8.7%	15.2%
Sundowner	31,122	28,639	34,562	-8.5%	11.1%
Golden Delicious	39,405	36,308	43,098	-10.4%	9.4%
Other Apple	11,819	10,708	13,512	-3.0%	14.3%
Total Apple	**31,862**	**29,614**	**35,301**	**-7.6%**	10.8%
Packham	34,861	33,854	35,826	0.1%	2.8%
WBC	34,958	33,037	36,092	-9.6%	3.2%
Pears Other	24,237	22,118	23,738	-7.1%	-2.1%
Total Pear	**31,352**	**29,670**	**31,885**	**-2.8%**	1.7%
Total Pomefruit	**31,559**	**29,334**	**33,009**	**-6.7%**	**4.6%**

Table 7: National Class 1 Yield (Kg/Ha)

Class 1 YIELD (Kg/HA)	2013	2014	Forecast 2015	Change 2013-2014	Change 2013-2015
Royal Gala	17,295	15,808	19,919	-9%	15%
Cripps Pink	25,069	25,180	28,603	0%	14%
Granny Smith	29,775	29,601	36,334	-1%	22%
Red Delicious	29,465	26,290	37,041	-11%	26%
Fuji	17,154	15,165	19,514	-12%	14%
Sundowner	23,964	20,162	26,059	-16%	9%
Golden Delicious	27,623	26,178	31,074	-5%	12%
Other Apple	8,132	7,185	10,809	-12%	33%
Total Apple	**22,310**	**20,696**	**26,169**	**-7%**	**17%**
Packham	27,889	27,084	30,452	-3%	9%
WBC	29,714	26,429	30,678	-11%	3%
Pears Other	18,178	16,589	18,990	-9%	4%
Total Pear	**25,260**	**23,367**	**26,707**	**-7%**	**6%**
Total Pomefruit	**23,785**	**22,032**	**26,438**	**-7%**	**11%**

9.0 Fruit Size Predictions

AgFirst have produced a fruit size forecast for the 2015 year based on two methods:

1. Grower panel forecast
2. Fruit size monitoring

A grower panel was set up across the country that accounted for 2,285 ha or 18 per cent of the total planted area of Australia. The growers on this panel supplied their actual crop outcomes over the past two years (including fruit size) and forecast their crop in 2015. Our first estimate of fruit size is the true average of the grower forecast. We believe the true average is more accurate than the weighted average as the growers with small blocks are as accurate at predicting size as the very large blocks.

Our second method was to undertake fruit size monitoring of a number of blocks across Australia. Our original contract proposed that the Agfirst Data project team would supplement the monitoring that was contracted by Future Orchards™ and those that were undertaken by private growers. Unfortunately Future Orchards were only contracted for a cut down extension project in 2014/15 and all fruit size monitoring in this contract was stopped. However through the sheer determination of the whole AgFirst team and the cooperation of many private growers we have still managed to fruit size a good proportion of blocks right across the country. The total number of blocks collecting crop volume data in 2015 is 570, the number collecting fruit size data in 2015 is currently 366. All blocks had data into OrchardNet. The number of blocks that have access to size monitoring data throughout the growing season is shown in the table below.

Table 8: Number of blocks that were monitored for fruit size within OrchardNet

Variety	2013	2014	2015
Braeburn	1	2	2
Fierro Fuji	3	4	6
Fuji	30	28	37
Envy	0	0	1
Granny Smith	26	35	40
Jazz	11	12	16
Jonathan	6	8	6
Kanzi	7	13	8
Cripps Pink	86	100	95
Red Delicious	16	24	31
Gala types	91	110	109
Sundowner	5	11	10
Other apples	5	2	3
Corella	0	5	1
Packham Pears	10	0	1
WBC	1	0	0
TOTAL	298	354	366

Because Agfirst have been collecting fruit size data during the growing season for a number of years, we are able to match the 2013 and 2014 curves to the actual fruit size outcomes and then compare the YTD 2015 curves with 2013 and 2014 to make a forecast for 2015.

All blocks that are fruit sized also have their Full Bloom date recorded so we are able to look at the data by “date” and “days after full bloom” (DAFB). This is important, as for some varieties, DAFB is more accurate, and for other varieties date is more accurate. The early varieties tend to be more accurate when compared DAFB and the late varieties by date.

The OrchardNet system has many advantages, one of them being the ability to graph data for comparisons. In this report we will show the graphs for the Australian National Average. To generate the regional forecasts we also accessed the regional data however this is too large to include in this report. All OrchardNet users have the ability to access regional, state and national averages by variety so through participation in the grower panel; regional companies can access this data for their own planning purposes.

2015 Forecasts

The tables below document the 2015 forecast compared to the grower panel average of 2013 and 2014. We have no better national information on previous size outcomes until we complete the packhouse survey of the 2014 crop.

Growth rates almost across the country are generally above both 2013 and 2014. Both the grower panel and our fruit size monitoring are predicting a similar trend of larger fruit size. Clearly the conditions for growth have generally been more favorable in the 2014/15 growing season.

Most of the data is shown in grams however we have converted both the panel forecast and the monitoring forecast to an average count for a 12.5 kg carton, the standard pack type for Class 1 fruit in Australia.

There are some interesting regional trends which larger supply chain participants can use when designing their marketing plans.

Table 9: National Average Conventional Fruit Size Predictions 2015

Variety	Grower panel average fruit size (g)			Fruit Size monitoring 2015 Forecast (g)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	162	161	166	164	75	76
Pink Lady	177	177	177	178	71	70
Granny Smith	173	173	174	178	72	70
Red Delicious	200	180	194	190	64	66
Fuji	187	188	195	200	64	63
Sundowner	175	178	182	184	69	68
Golden Delicious	175	175	175	na	71	na
Packham	183	183	188	na	66	na
WBC	160	160	160	na	78	na

Table 10: Queensland Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	151	151	157	151	80	83
Pink Lady	171	170	174	178	72	70
Granny Smith	175	175	174	180	72	69
Red Delicious	196	179	180	na	69	na
Fuji	184	180	180	215	69	58
Sundowner	176	177	176	na	71	na
Golden Delicious	na	na	na	na	na	na
Packham	175	175	175	na	71	na
WBC	160	160	160	na	78	na

Table 11: Orange Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	158	158	158	165	79	76
Pink Lady	178	185	172	178	73	70
Granny Smith	na	173	175	190	71	66
Red Delicious	194	171	179	185	70	68
Fuji	187	180	180	na	69	na
Sundowner	na	na	na	na	na	na
Golden Delicious	na	na	na	na	na	na
Packham	na	na	na	na	na	na
WBC	na	na	na	na	na	na

Table 12: Batlow Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	162	175	182	180	69	69
Pink Lady	175	180	182	190	69	66
Granny Smith	160	185	185	190	68	66
Red Delicious	204	182	206	190	61	66
Fuji	189	197	213	215	59	58
Sundowner	160	171	186	185	67	68
Golden Delicious	na	na	na	na	na	na
Packham	na	na	na	na	na	na
WBC	na	na	na	na	na	na

Table 13: Northern VIC Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	160	161	148	160	84	78
Pink Lady	176	176	176	170	71	74
Granny Smith	176	171	168	168	74	74
Red Delicious	na	na	na	na	na	na
Fuji	na	na	na	na	na	na
Sundowner	175	175	170	180	74	69
Golden Delicious	na	na	na	na	na	na
Packham	185	185	193	na	65	na
WBC	na	na	na	na	na	na

Table 14: Southern VIC Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	161	144	157	160	80	78
Pink Lady	175	176	173	178	72	70
Granny Smith	167	166	167	175	75	71
Red Delicious	na	na	na	na	na	na
Fuji	178	184	190	180	66	69
Sundowner	na	na	na	180	na	69
Golden Delicious	na	na	na	na	na	na
Packham	na	na	na	na	na	na
WBC	na	na	na	na	na	na

Table 15: Tasmania Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	161	144	157	160	80	78
Pink Lady	178	177	177	177	71	71
Granny Smith	180	180	180	185	69	68
Red Delicious	198	179	180	180	69	69
Fuji	184	180	181	190	69	66
Sundowner	174	176	175	175	71	71
Golden Delicious	na	na	na	na	na	na
Packham	180	200	200	na	63	na
WBC	na	na	na	na	na	na

Table 16: South Australia Regional Average Fruit Size (g)

Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	165	158	161	170	78	74
Pink Lady	177	174	174	177	72	71
Granny Smith	177	177	178	na	70	na
Red Delicious	199	186	180	na	69	na
Fuji	191	183	189	190	66	66
Sundowner	183	182	179	182	70	69
Golden Delicious	176	175	174	na	72	na
Packham	na	na	na	na	na	na
WBC	na	na	na	na	na	na

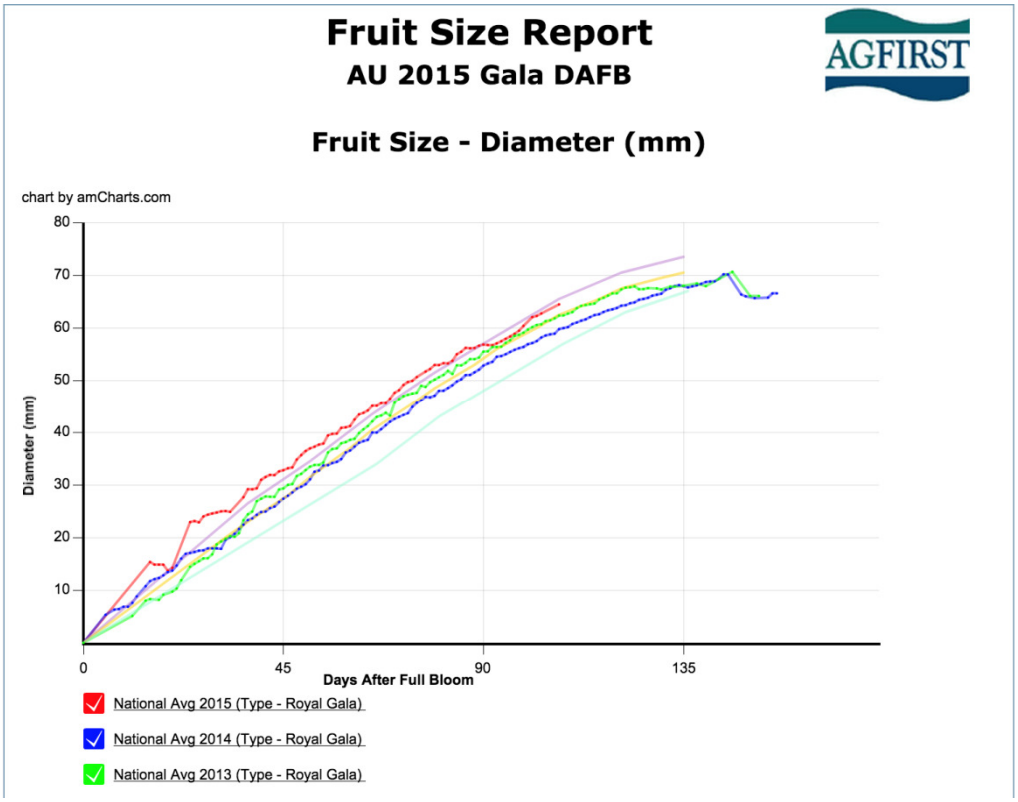
Table 17: Western Australia Regional Average Fruit Size (g)

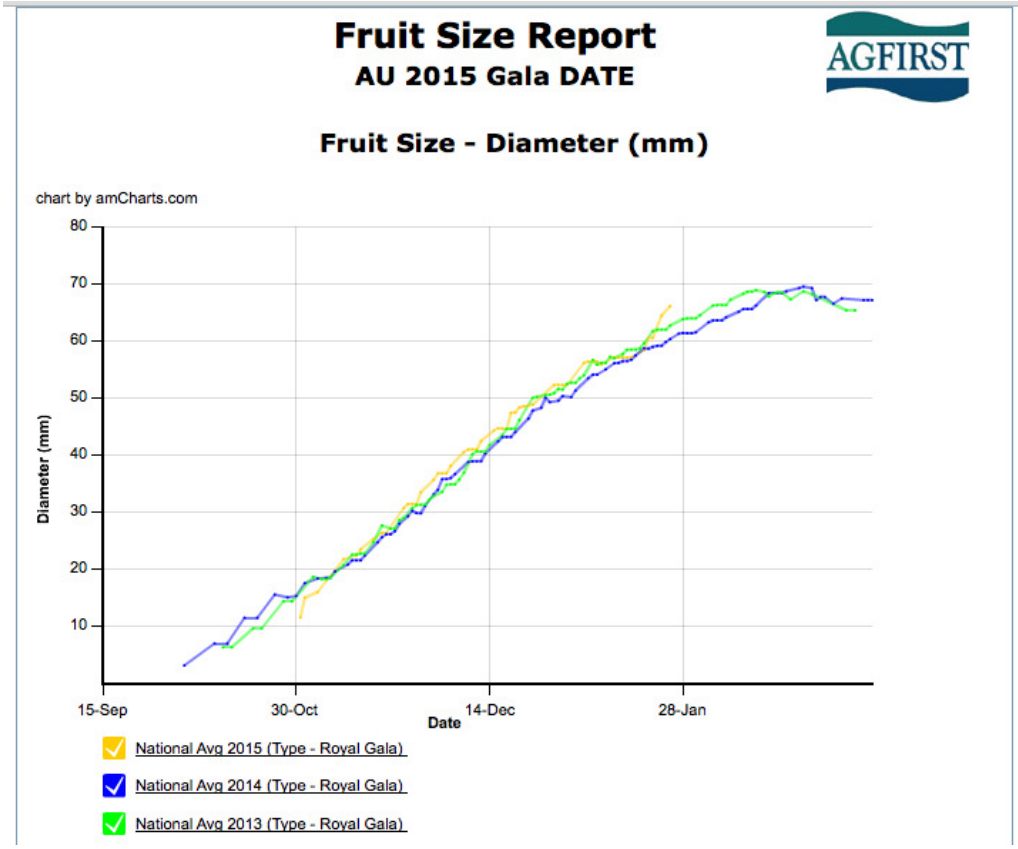
Variety	Grower panel average fruit size (gms)			Fruit Size monitoring 2015 Forecast (gms)	Forecast average count based on grower panel (12.5 kg carton)	Forecast average count based on fruit size monitoring (12.5 kg carton)
	2013	2014	2015F	2015F		
Royal Gala	161	157	162	158	77	79
Pink Lady	181	178	180	178	69	70
Granny Smith	181	181	186	170	67	74
Red Delicious	165	165	170	na	74	na
Fuji	183	190	190	na	66	na
Sundowner	189	187	188	na	66	na
Golden Delicious	na	na	na	na	na	na
Packham	na	na	na	na	na	na
WBC	na	na	na	na	na	na

Fruit Growth Monitoring

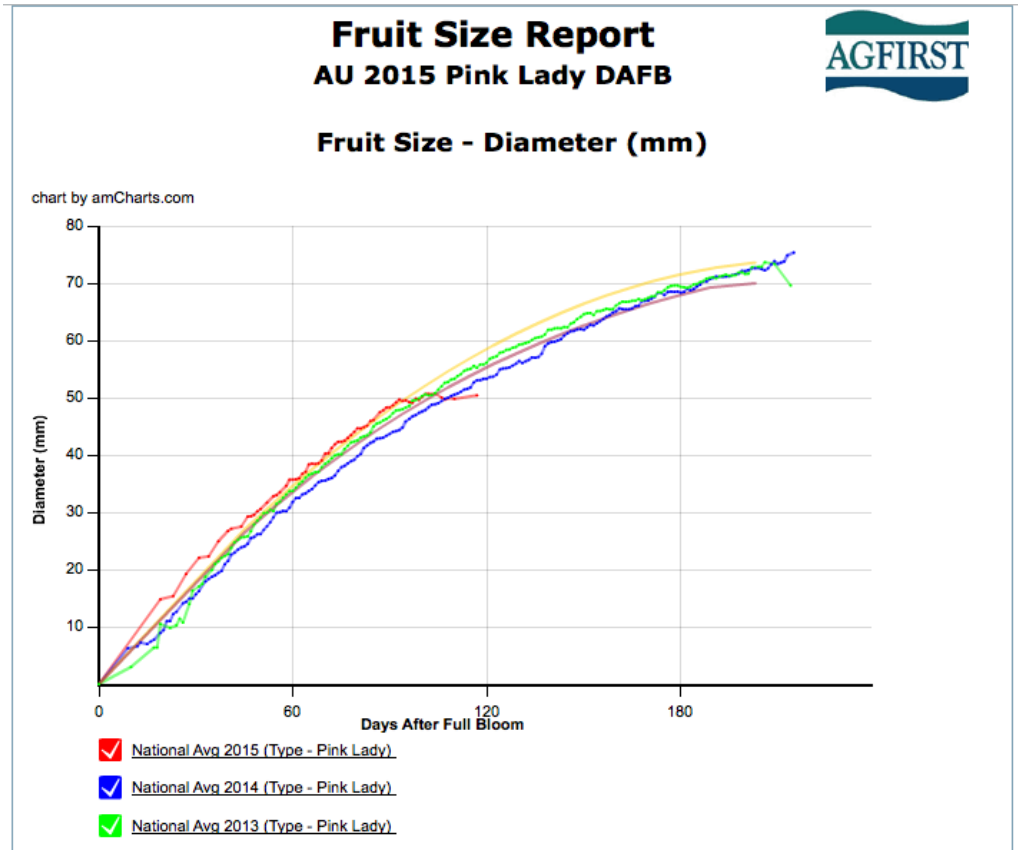
The following graphs show the national comparison between the 2015, 2014 and 2013 seasons. For each variety we show the data plotted against DAFB and by Date. Only the national averages are shown, regional data is available to all panel members that carry our fruit sizing. If any companies want access to the regional and state averages they only need to participate with some of their own blocks.

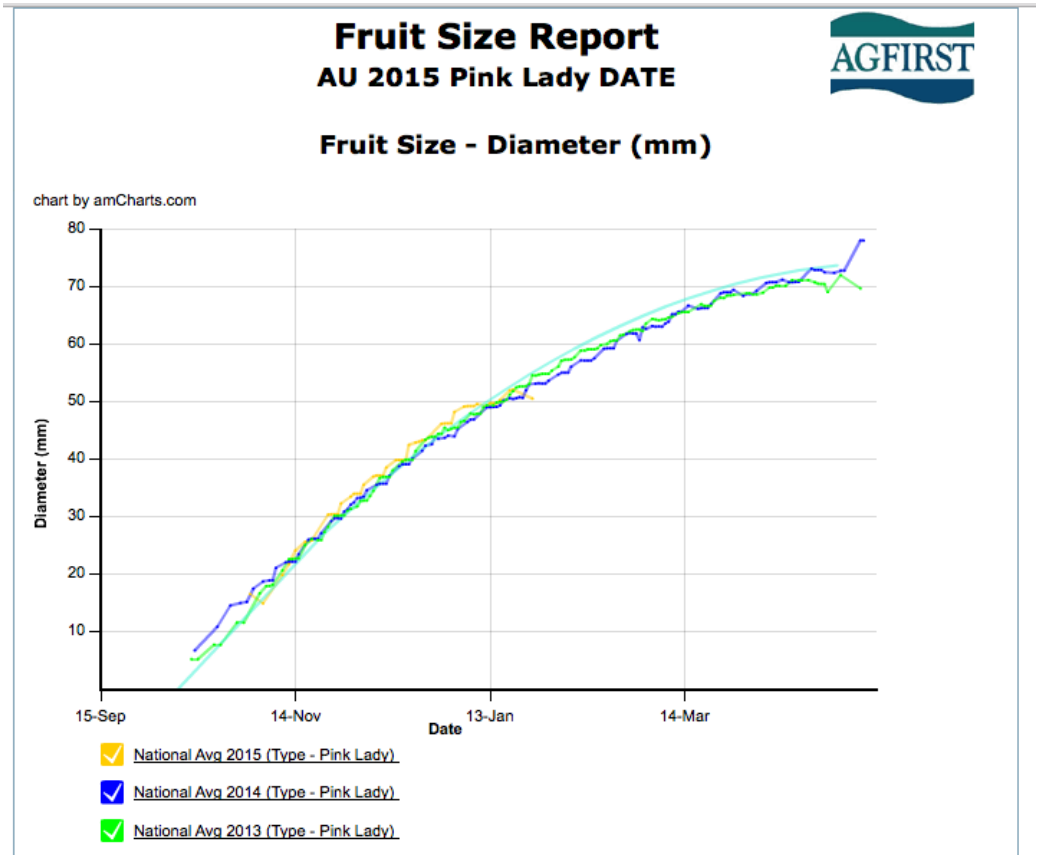
Gala


Fruit Size Report
AU 2015 Gala DAFB
AGFIRST
Fruit Size - Diameter (mm)
chart by amCharts.com
Diameter (mm)
80
70
60
50
40
30
20
10
0
45
90
135
Days After Full Bloom
National Avg 2015 (Type - Royal Gala)
National Avg 2014 (Type - Royal Gala)
National Avg 2013 (Type - Royal Gala)

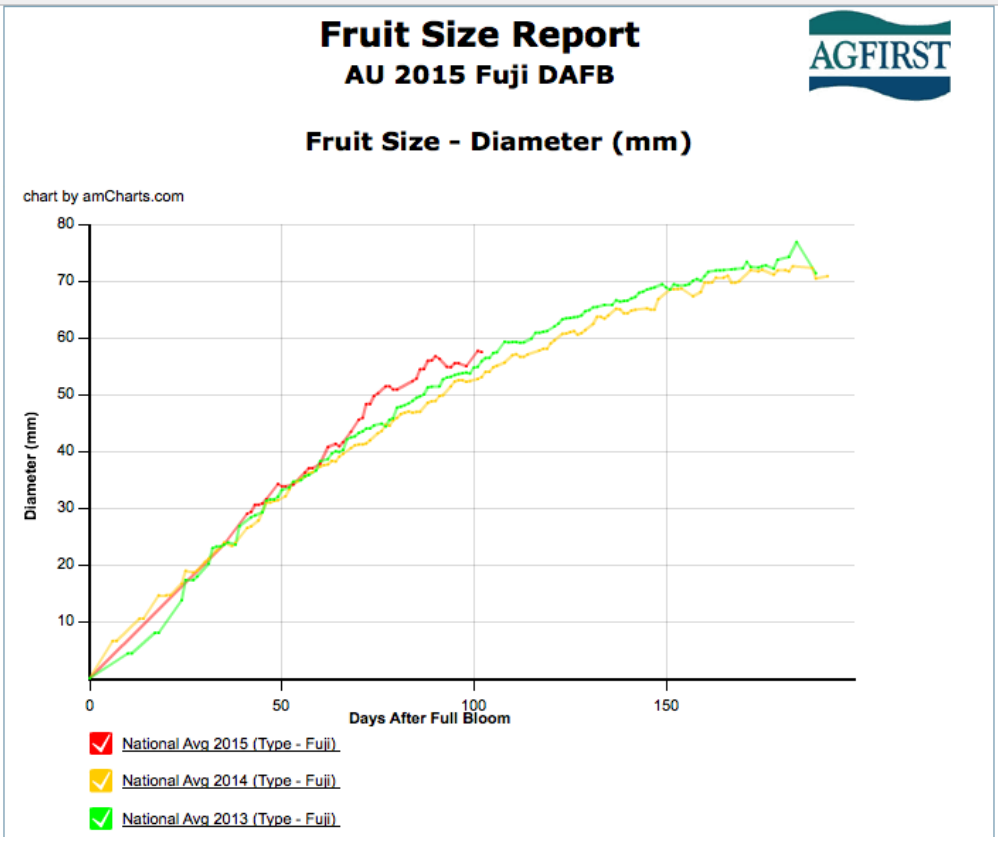

Fruit Size Report
AU 2015 Gala DATE
AGFIRST
Fruit Size - Diameter (mm)
chart by amCharts.com
Diameter (mm)
80
70
60
50
40
30
20
10
15-Sep
30-Oct
14-Dec
28-Jan
Date
National Avg 2015 (Type - Royal Gala)
National Avg 2014 (Type - Royal Gala)
National Avg 2013 (Type - Royal Gala)

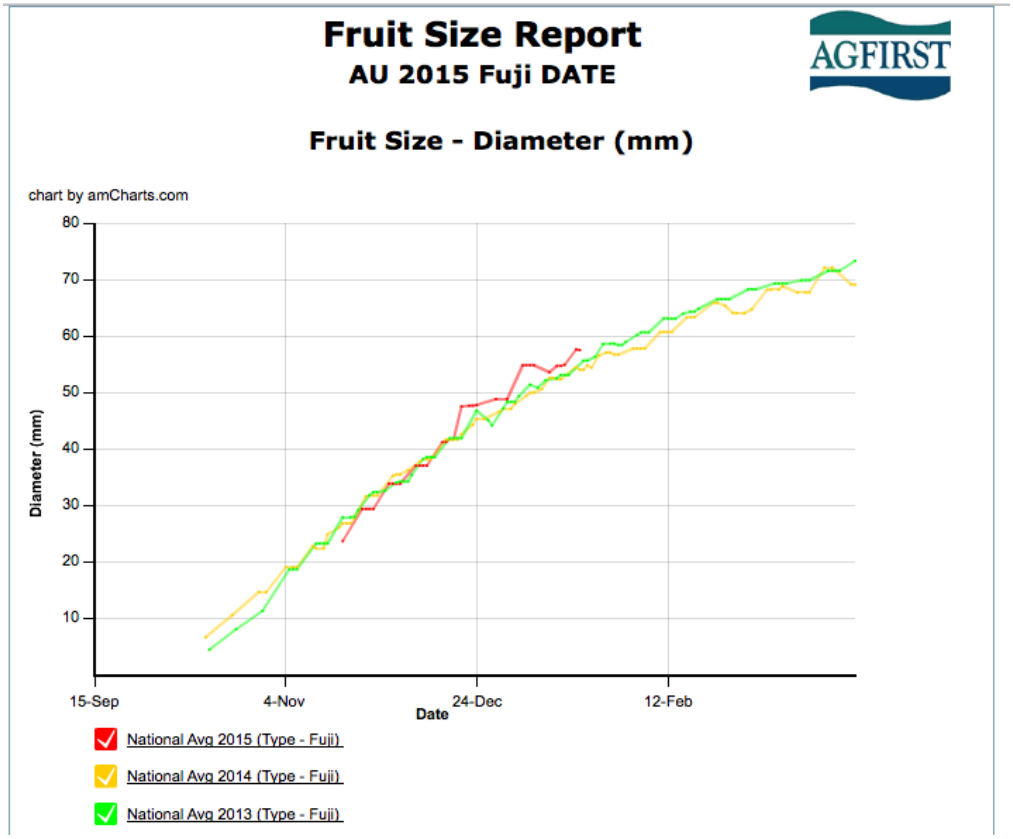
Cripps Pink


Fruit Size Report
AU 2015 Pink Lady DAFB
AGFIRST
Fruit Size - Diameter (mm)
chart by amCharts.com
Diameter (mm)
80
70
60
50
40
30
20
10
0
60
120
180
Days After Full Bloom
National Avg 2015 (Type - Pink Lady)
National Avg 2014 (Type - Pink Lady)
National Avg 2013 (Type - Pink Lady)


Fruit Size Report
AU 2015 Pink Lady DATE
AGFIRST
Fruit Size - Diameter (mm)
chart by amCharts.com
Diameter (mm)
80
70
60
50
40
30
20
10
15-Sep
14-Nov
13-Jan
14-Mar
Date
National Avg 2015 (Type - Pink Lady)
National Avg 2014 (Type - Pink Lady)
National Avg 2013 (Type - Pink Lady)

Fuji

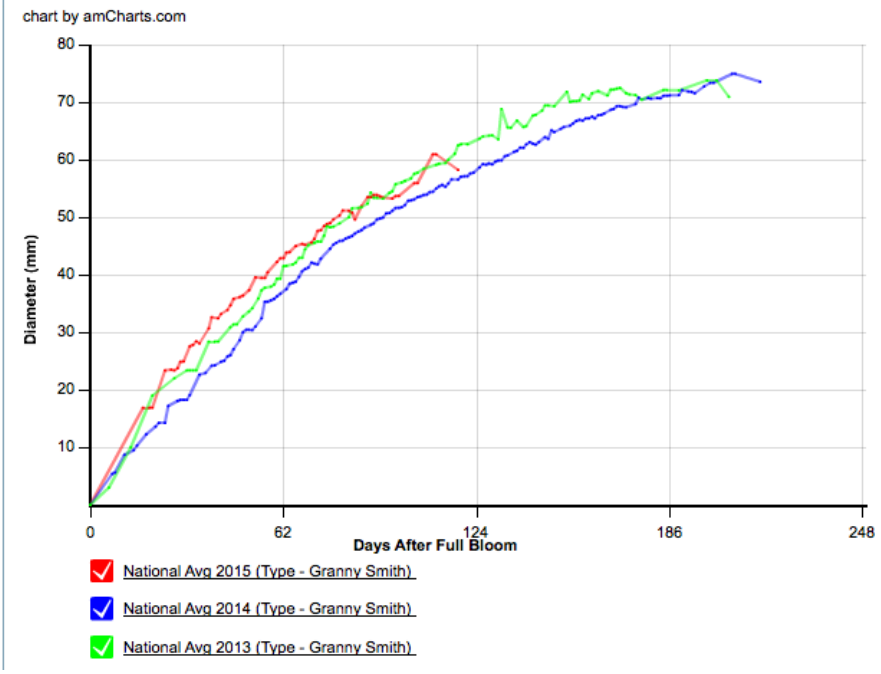




Granny Smith

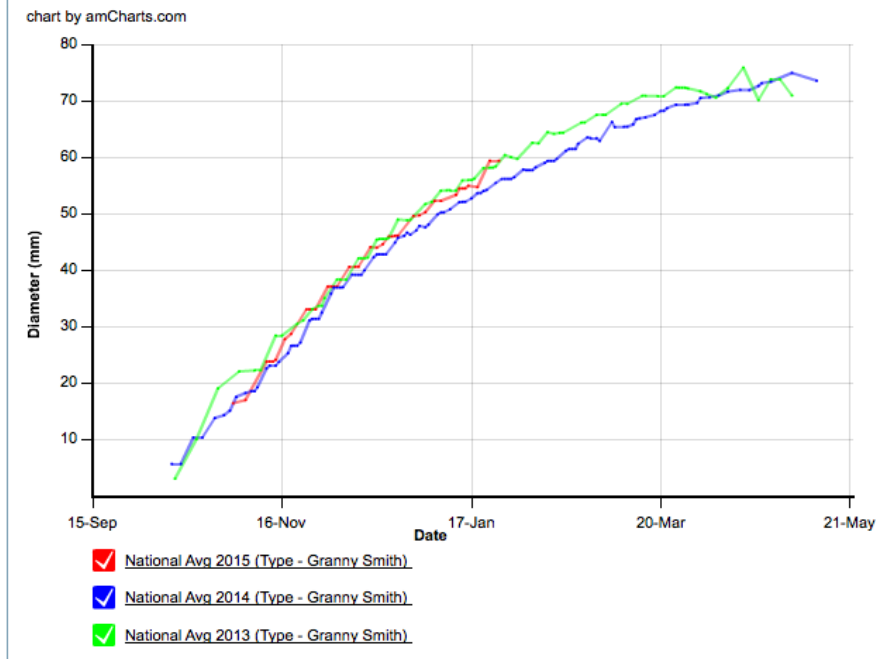
Fruit Size Report
AU 2015 G Smith DAFB

Fruit Size - Diameter (mm)



Fruit Size Report
AU 2015 G Smith DATE

Fruit Size - Diameter (mm)



Appendix 1 ~Complete Breakdown of National Estimate

	2013		2014		2015F		Change 2013-2014	Change 2013-2015
AREA (HA)	%	ha	%	ha	%	ha		
Royal Gala	18.7%	2,363	19.4%	2,447	19.5%	2,460	3.6%	4.1%
Pink Lady	23.2%	2,930	24.2%	3,060	25.0%	3,154	4.5%	7.6%
Granny Smith	9.7%	1,229	9.6%	1,211	9.6%	1,211	-1.4%	-1.4%
Red Delicious	3.7%	473	3.5%	441	3.3%	416	-6.6%	-11.9%
Fuji	6.7%	851	6.6%	833	6.6%	833	-2.1%	-2.1%
Sundowner	5.2%	662	4.5%	568	4.2%	530	-14.2%	-19.9%
Golden Delicious	1.9%	236	1.7%	214	1.5%	189	-9.2%	-19.9%
Other Apple	3.7%	473	4.5%	568	4.8%	605	20.1%	28.1%
Total Apple	**73.0%**	**9,214**	**74.0%**	**9,342**	**74.5%**	**9,397**	**1.4%**	**2.0%**
Packham	10.8%	1,360	10.5%	1,340	10.3%	1,300	-1.5%	-4.4%
WBC	9.1%	1,152	8.5%	1,075	8.0%	1,010	-6.7%	-12.3%
Other Pears	7.0%	888	7.0%	888	7.1%	899	0.0%	1.2%
Total Pear	27.0%	**3,400**	26.0%	**3,303**	25%	**3,209**	**-2.9%**	**-5.6%**
Total Pomefruit	**100%**	**12,614**	**100%**	**12,645**	**100%**	**12,606**	**0%**	**0%**
					Forecast			
VOLUME (Kg)	%		%		%		% Change	% Change
Royal Gala	14.0%	55,666,879	13.8%	51,079,307	14.9%	62,010,022	-8.2%	11.4%
Pink Lady	25.2%	100,466,325	26.8%	99,578,918	27.0%	112,254,837	-0.9%	11.7%
Granny Smith	13.5%	53,633,527	14.1%	52,251,622	13.9%	57,892,204	-2.6%	7.9%
Red Delicious	5.3%	20,999,087	4.4%	16,324,754	4.8%	20,024,468	-22.3%	-4.6%
Fuji	5.7%	22,619,056	5.8%	21,362,908	6.1%	25,503,160	-5.6%	12.8%
Sundowner	5.2%	20,587,021	4.4%	16,256,442	4.4%	18,310,288	-21.0%	-11.1%
Golden Delicious	2.3%	9,309,522	2.3%	8,486,607	2.3%	9,703,937	-8.8%	4.2%
Other Apple	1.4%	5,584,645	1.4%	5,065,005	1.5%	6,060,010	-9.3%	8.5%
Total Apple	72.6%	**288,866,062**	72.9%	**270,405,564**	74.9%	**311,758,926**	**-6.8%**	**7.9%**
Packham	11.9%	47,411,396	12.2%	45,364,900	11.2%	46,573,998	-4.3%	-1.8%
WBC	10.1%	40,271,332	9.6%	35,514,630	8.8%	36,453,031	-11.8%	-9.5%
Pears Other	5.4%	21,522,247	5.3%	19,640,903	5.1%	21,340,505	-8.7%	-0.8%
Total Pear	27.4%	**109,204,975**	27.1%	**100,520,433**	25.1%	**104,367,534**	-8.0%	-4.4%
Total Pomefruit	100.0%	**398,071,037**	100.0%	**370,925,997**	100.0%	**416,126,460**	**-6.8%**	**4.5%**
YIELD (Gross Kg/ Ha)								
Royal Gala		23,563		21,625		26,244	-1.3%	11.4%
Pink Lady		34,295		33,844		38,445	-1.2%	12.1%
Granny Smith		43,658		43,149		47,807	-20.2%	9.5%
Red Delicious		44,443		36,976		48,105	-3.6%	8.2%
Fuji		26,595		25,660		30,634	-8.7%	15.2%
Sundowner		31,122		28,639		34,562	-8.5%	11.1%
Golden Delicious		39,405		36,308		43,098	-10.4%	9.4%
Other Apple		11,819		10,708		13,512	-3.0%	14.3%
Total Apple		**31,862**		**29,614**		**35,301**	**-7.6%**	**10.8%**
Packham		34,861		33,854		35,826	-5.8%	2.8%
WBC		34,958		33,037		36,092	-9.6%	3.2%
Pears Other		24,237		22,118		23,738	-7.6%	-2.1%
Total Pear		**31,352**		**29,670**		**31,885**	**-5.4%**	**1.7%**
Total Pomefruit		**31,559**		**29,334**		**33,009**	**-7.0%**	**4.6%**

Appendix C

Preliminary Tree Statistics Report 2015

prepared for

Horticulture Innovation Australia

prepared by

Richard Pentreath

30th January 2015

Contents

DISCLAIMER

1. Introduction

The collection of accurate industry tree statistics is a core component of the Pome Fruit Industry Data Collection project (AP13035). The method chosen to achieve this objective has been centred on the development of an online 'Tree Registry' that allows growers and management companies to enter their tree statistics voluntarily. In return for their effort, the grower is provided a complete summary of their data in an exportable format along with the ability to benchmark their statistics against both state and national averages. All data belonging to individual growers remains confidential and can only be accessed by the grower, assigned managers and the system administrators (AgFirst).

At the time of writing, tree statistics for 7,116 hectares had been entered into the Tree Registry, approximately 55% of the estimated total planted area for the nation (12,850ha). This is well short of the 80% industry coverage that was targeted but is viewed as a good start considering the considerable challenges that have been faced. Timing of the campaign launch was delayed by several factors beyond the control of the of the project team meaning the launch coincided with one of the busiest times of the year for orchardists. The objective now is to steadily increase in the percentage industry coverage over the course of the year, during a period when orchardists will have more time and should be more likely to participate in the project.

Because the current data set is not sufficient in size or coverage to draw robust conclusions, this preliminary report presents some emerging trends relating to variety mix, tree age and tree density across the nation. Certain states/varieties have been excluded from comparison where only small planted areas have been entered into the database. A more comprehensive analysis of tree statistics will be included in the Industry Statistics Annual that will be presented to industry by July 2015. This analysis will include comparison with historic tree planting statistics to gain a better understanding of the type and rate of change within the industry.

The findings presented in this preliminary report should be used with caution and will be subject be change as the size of the industry database increases and further quality assurance is carried. For the purpose of this report, all pome fruit varieties have been reported together but future reporting will show apple and pear varieties separately to allow easier interpretation of the data.

2. Planted Area

The total planted pome fruit areas has been estimated using historic ABS census data (tree numbers), Goulburn Valley census data (courtesy of SPC Ardmona) and local intelligence from industry stakeholders including packhouses, grower organisations and front line advisors. These estimates represent the baseline from which the 2015 crop estimate has been calculated and can be updated as more statistics are loaded into the Tree Registry and new industry census data comes to hand.

The estimated total planted areas by state are summarised in Tables 1 & 2 below. Total planted area (by variety) from the Tree Registry is not presented because this data is weighted towards those regions with the most data entered and does not yet reflect the true national average. However, the

variety mix within some states is thought to be close to the actual variety mix for that state, so where sufficient data has been entered into the Tree Registry the regional statistics have been presented.

Tables 1 & 2: Estimated total planted areas for apples and pears.

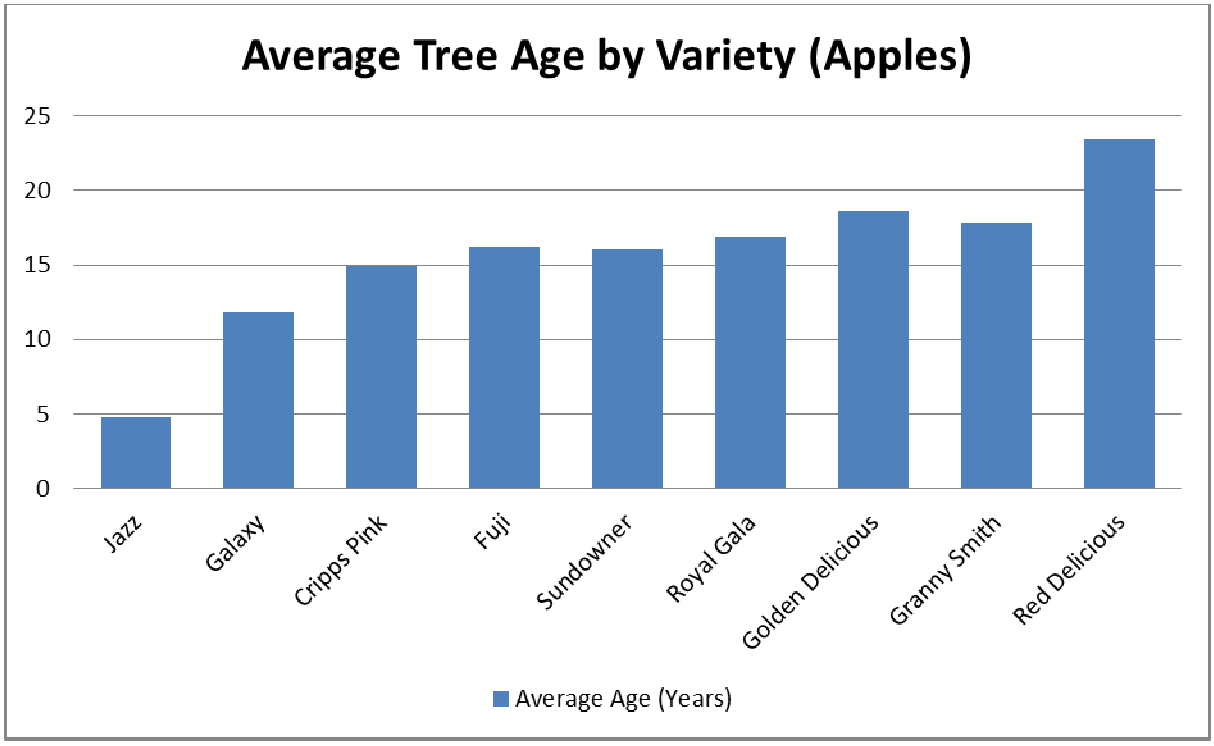
Apples	Estimated Production (% of total)	Estimated Planted Area (Ha)
QLD	12%	1,100
VIC	42%	3,800
NSW	15%	1,650
WA	11%	1,000
SA	10%	1,100
TAS	10%	800
Total		9,450

Pears	Estimated Production (% of total)	Estimated Planted Area (Ha)
QLD*		
VIC	89%	3,040
NSW*		
WA	5%	171
SA	5%	170
TAS	1%	34
Total		3,415

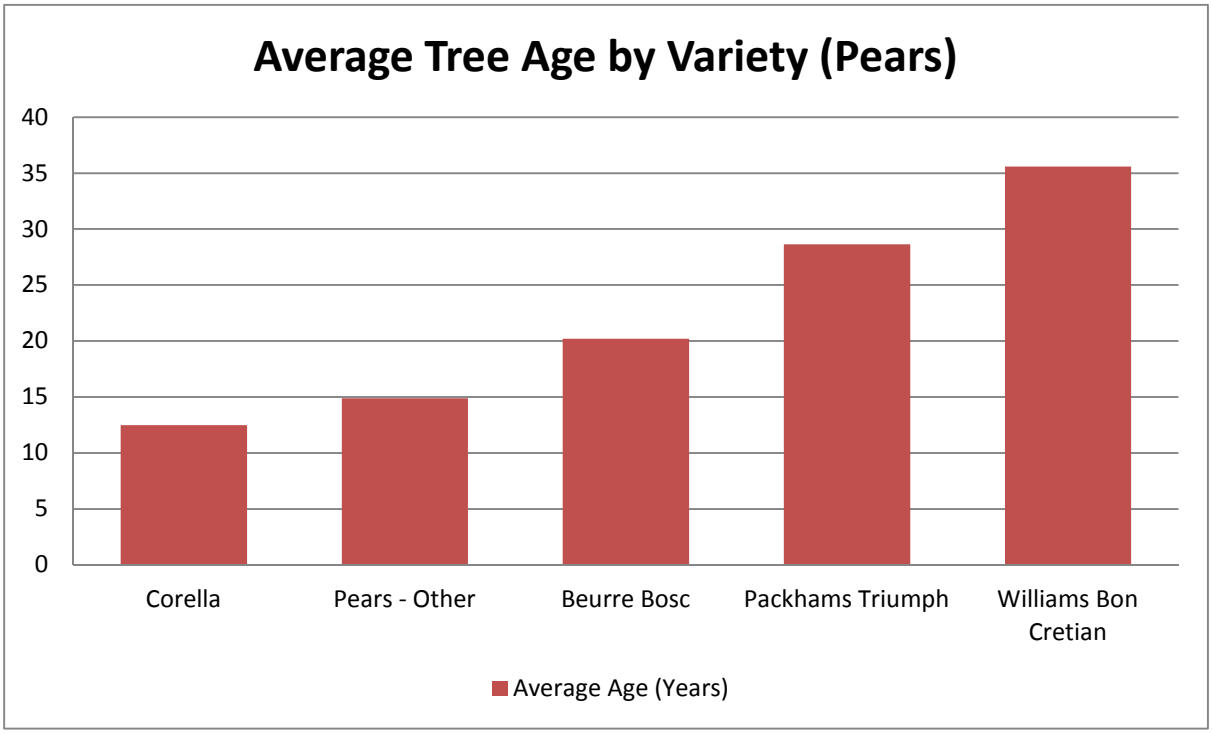
*Less than 1% of the estimated total planted area.

3. Average Tree Age

The average tree age for traditional varieties such as Red Delicious, Golden Delicious and Granny Smith is between 18 and 28 years. Jazz™ is one of the most widely planted new varieties and has an average tree age of just five years. The average age of Cripps Pink (and accepted mutations), the most widely planted variety in Australia is just under 15 years according to the current data set.

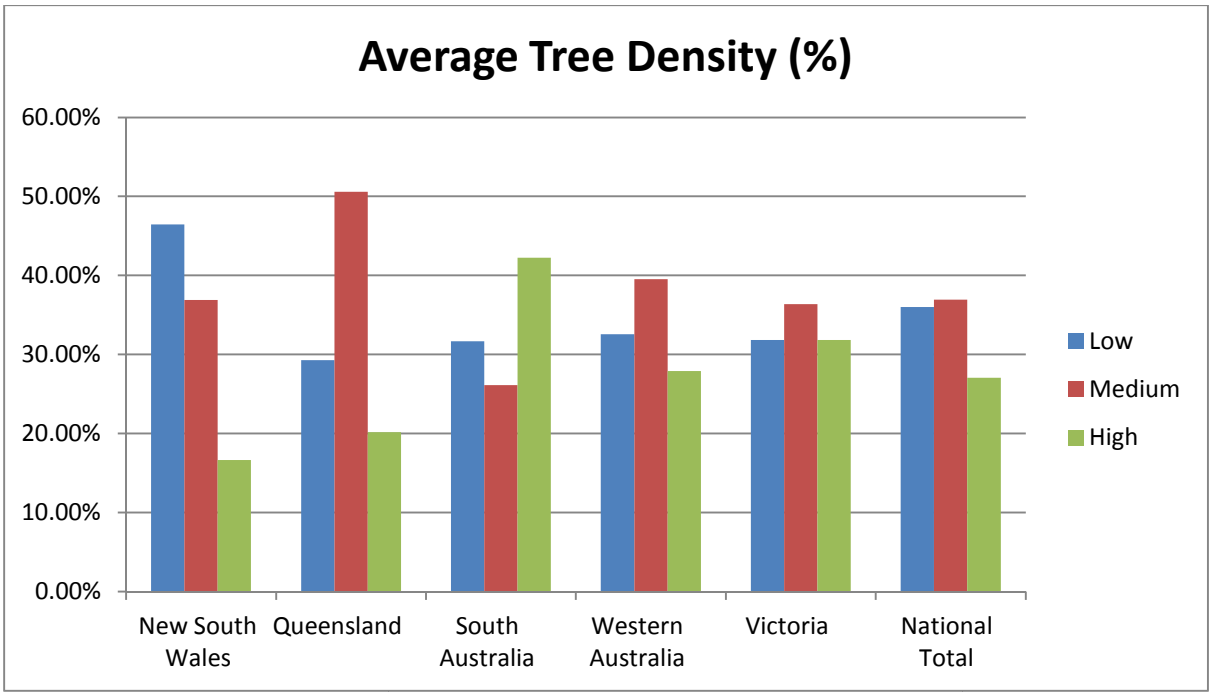


The average age of William Bon Cretian pear trees is approximately 35 years compared to Packham trees which have an average age of 29 years. The average age for both Corella and 'Other Pear' varieties is less than 15 years. Compared to apple trees, the average age of pear trees is considerably higher, reflecting much slower rates of change for pear tree plantings.



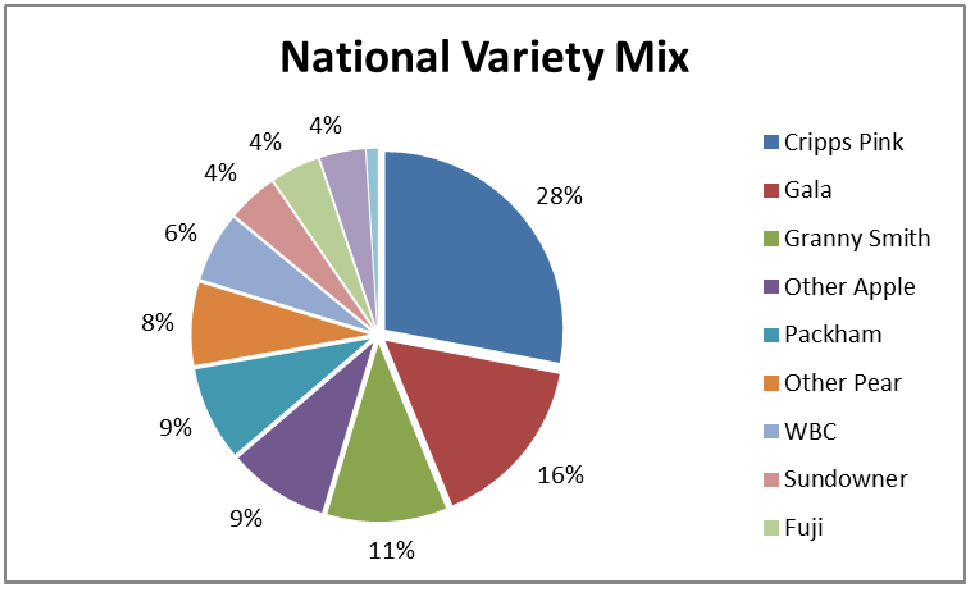
4. Planting Density

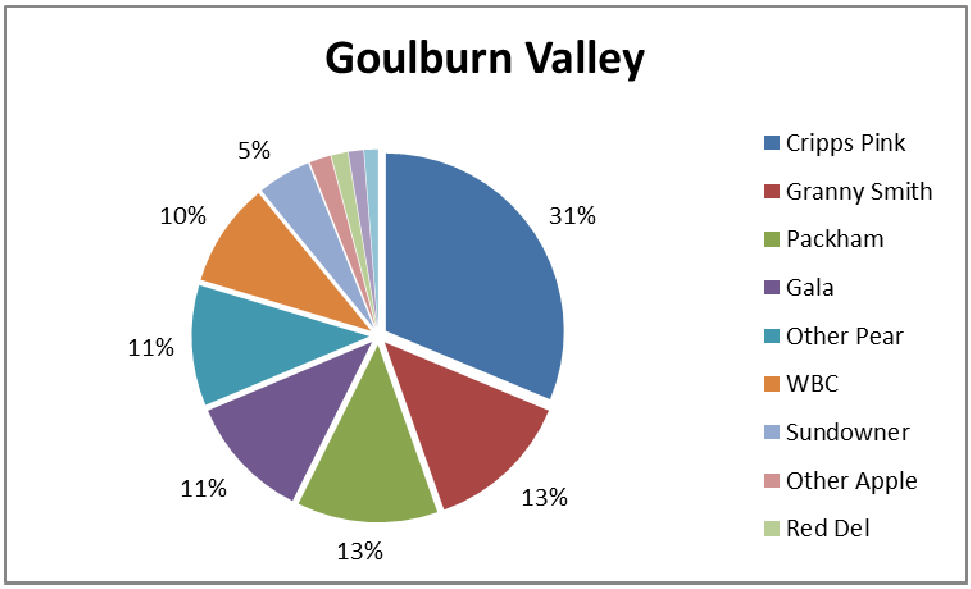
Average tree density for the nation is split quite evenly between low, medium and high density planting. According to the current data set, high density plantings now account for 27% of the national total versus approximately 36% for both low and medium density plantings. This percentage of high density planting is greater than expected and may reflect the fact that typically younger or more 'progressive' orchard owners have entered tree statistics online ahead of older or more 'conservative' orchard owners. Lower percentages of high density planting in Queensland and Western Australia are expected but New South Wales is lower than expected and may increase as more data is captured. South Australia has the greatest percentage of high density plantings reflecting the higher rate of orchard re-development in South Australia compared to the other states.

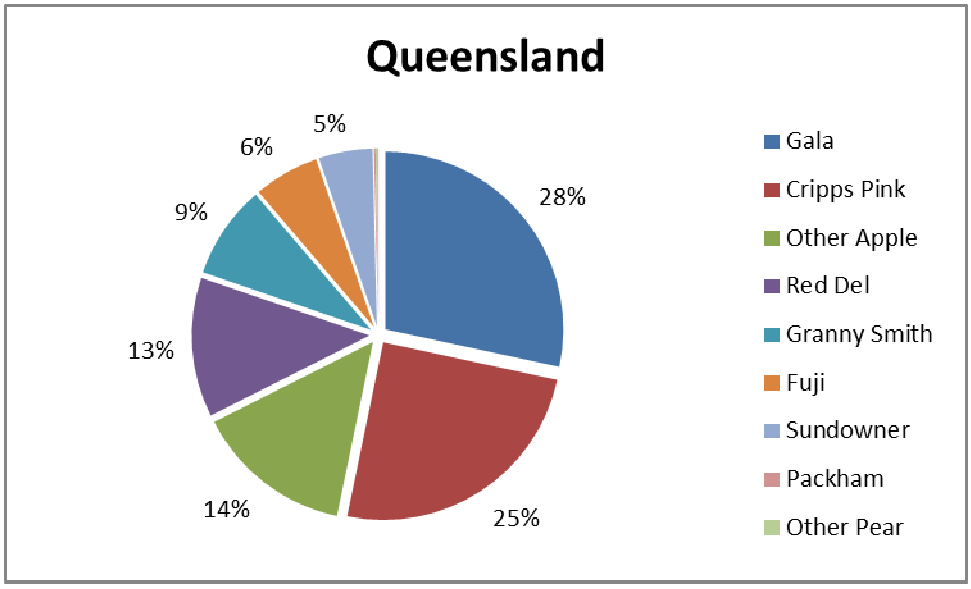


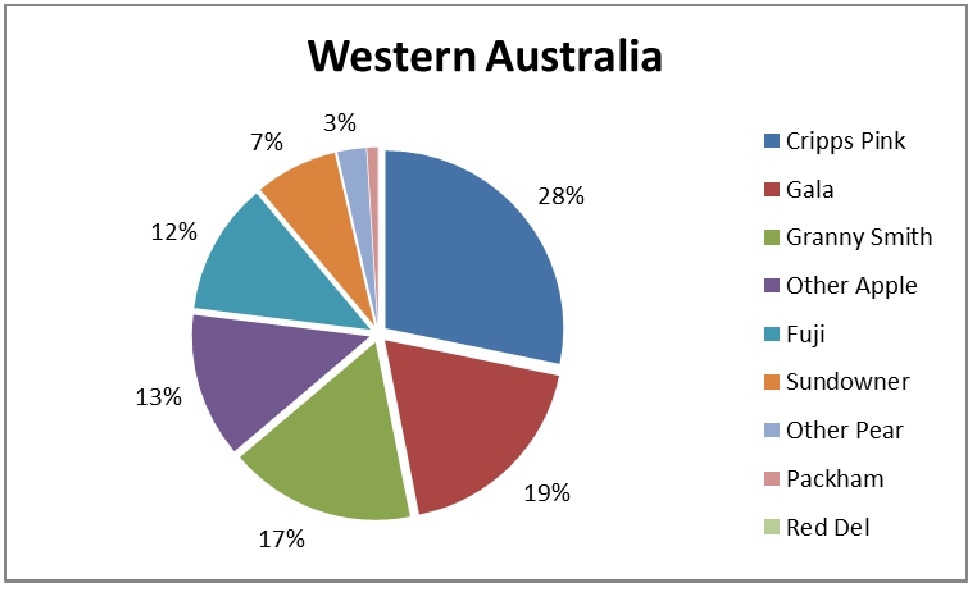
5. Variety Mix

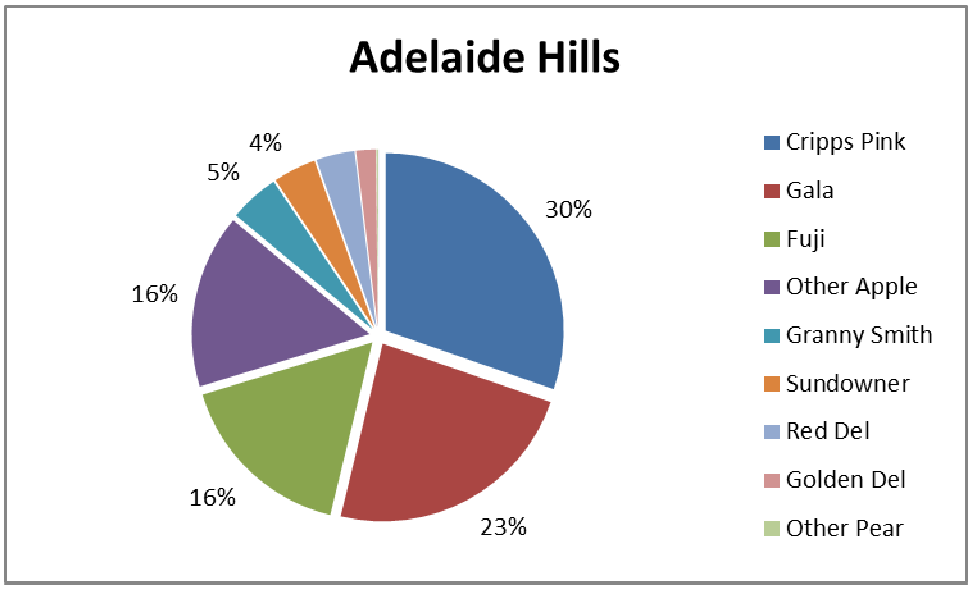
Variety mix based on current Tree Registry data for the nation and roughly aligns with historic statistics in terms of relativity. In order of significance, Pink Lady, Royal Gala and Granny Smith apples represent the most widely planted varieties. 'Other Apples' currently occupies a greater portion of the national variety mix than expected which again suggests that the current data is weighted toward more commercially orientated orchards which have carried out more orchard re-development than the 'average' orchard. It will be interesting to see how this changes as more data is captured. Pear varieties are probably under-represented because a relatively small amount of pear data has been captured in regions other than Victoria, compared to apple data in the same regions.




Goulburn Valley
5%
10%
31%
11%
11%
13%
13%
Cripps Pink
Granny Smith
Packham
Gala
Other Pear
WBC
Sundowner
Other Apple
Red Del


Queensland
5%
6%
28%
9%
13%
14%
25%
Gala
Cripps Pink
Other Apple
Red Del
Granny Smith
Fuji
Sundowner
Packham
Other Pear


Western Australia
3%
7%
28%
12%
13%
19%
17%
Cripps Pink
Gala
Granny Smith
Other Apple
Fuji
Sundowner
Other Pear
Packham
Red Del


Adelaide Hills
30%
23%
16%
16%
5%
4%
Cripps Pink
Gala
Fuji
Other Apple
Granny Smith
Sundowner
Red Del
Golden Del
Other Pear

Appendix D

Apple and Pear Industry Statistical Annual 2014

Prepared For Horticulture Innovation Australia & Apple and Pear Australia Ltd
Issued July 2015

Prepared by
AgFirst Consultants

Contents

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NOTES

1 Introduction

The Apple and Pear Industry Statistical Annual is an output of the Apple and Pear Industry Data Collection Project (AP13035) which was funded by HIA and supported by APAL. This statistical annual provides the most accurate and comprehensive data available and the time of writing and includes statistics gathered by the Australian Bureau of Statistics (ABS), Australian Department of Agriculture and outputs of the Apple and Pear Industry Data Collection Project (Australian Pome Fruit Tree Registry data and Industry Packhouse Survey data). The aim of this statistical annual and the Apple and Pear Industry Data Collection Project is to improve the quality of Australian Apple and Pear industry data.

2 Methodology

This report relates to the apple and pear crop harvested in 2014 and includes all production programmes including organic. Depending on the data source, the end of year date varies but the overarching objective is to report the best data available for the 2013-2014 year and to maintain the relativity of data between years. Data sources have been listed and unless otherwise stated, gross production volumes are reported.

2.1 Planted Area (Section 1)

The Australian Bureau of Statistics does not collect information on planted area and recent industry estimates of planted area have been based on tree numbers, production volumes and historic data. Planted area was estimated during the course of the Industry Data Collection Project in order to produce the Industry Crop Estimate 2015. These calculated values have been reported along with ABS 2014 production data and tree data which provide a cross reference (relativity). There is good correlation across these data sets and the estimated areas by state align with industry intelligence. Comprehensive information on industry planted area has not yet been collected via the Australian Pome Fruit Tree Registry but it is hoped that industry will continue to provide data and increase the level of industry coverage over time. Complete data on planted areas for the Goulburn Valley (the largest apple and pear production region) has been made available via the Goulburn Valley Orchard Census and this is data is included in the Australian Pome Fruit Tree Registry and also reported in this annual.

Planted area by variety has been calculated using data from the Australian Pome Fruit Tree Registry which has been triangulated with historic data on variety mix and production data collected via the Industry Packhouse Survey conducted in 2015 as part of the Apple and Pear Industry Data Collection Project. Recent APAL estimates of planted area by variety have been based on extrapolations from the last comprehensive ABS industry census conducted in 2008.

The percentage of apple and pear blocks protected by hail netting is reported based on Australian Pome Fruit Tree Registry data.

2.2 Tree Density and Age (Section 2)

Average apple and pear tree density by state has been calculated using tree numbers from the most recent ABS Agricultural Commodities survey and planted area estimates. The proportion of low, medium and high density planting by state (apples and pears combined) has been calculated using Pome Fruit Tree Registry data. Both data sets show similar trends that reflect varying levels of investment in orchard development between states.

Average tree age by state is based on Pome Fruit Tree Registry data and is reported as the percentage of total trees that are either less than or more than six years of age. This analysis provides an indication of how much orchard development has taken place in recent years (new development or re-development) in each state. Detailed tree age data by variety is reported for the Goulburn Valley (from the Goulburn Valley Orchard Census 2014) and national averages by variety are reported based on Pome Fruit Tree Registry data.

Planted rootstocks are reported for Australia and for each state based on Pome Fruit Tree Registry data.

2.3 Production (Section 3)

Change in gross production over time has been reported based on industry levy data and ABS Agricultural Commodities Survey data. The difference between ABS data and Levy data has narrowed in recent years.

Production by variety has been estimated using Packhouse Survey data collected for the 2014 crop. The survey accounted for a gross apple volume of 105,129,000Kg which is equivalent to 39 per cent of the estimated national apple crop of 270,405,000Kg. In total the Packhouse Survey accounted for a gross pear volume of 22,980,300Kg which equates to approximately 23 per cent of the estimated national pear crop of 100,520,400Kg (including the process crop). The survey excludes any crop that was sent directly to processors and therefore reflects only crop grown primarily for the fresh market. Whilst the survey did not confirm total production volumes for the 2014 season, it provided valuable information on industry packout, variety mix and average fruit size for the 2014 season.

2.4 Packout and Fruit Size (Section 4)

National and state averages (excluding Queensland) for packout by variety have been collected via the Industry Packhouse Survey that was conducted in 2015. No data could be reported for Queensland because the survey was not completed by any fruit packers in this state, partly due to the lack of suitable records available. With the exception of Queensland, survey coverage ranged from a low of 23 per cent in Western Australia to a high of 68 per cent coverage in South Australia, based on the estimated total apple and pear crop for each state.

Average fruit size is reported for each major variety for the 2014 season and is the average weight (grams) reported by packhouses that participated in the Industry Packhouse Survey. State averages are not reported because not all packhouses were able to provide average fruit size data in a standard format. Average weights are reported in this Statistical Annual rather than average fruit count (fruit count per TCE) because this is the format in which most data was received.

2.5 Consumption, Imports and Exports (Section 5)

This data is sourced from Department of Agriculture, GTIS and the Australian Bureau of Statistics. Domestic consumption has been calculated using industry levy data and population statistics to estimate consumption per capita.

SECTION 1: PLANTED AREA

Table 1.1 Apple Planted Area by State compared to 2014 ABS Statistics

State	Area (Ha)	Area (%)	ABS Trees (%)	ABS Prod. (%)
TAS	800	8%	12%	11%
WA	1,000	11%	13%	13%
SA	1,100	12%	10%	8%
QLD	1,100	12%	9%	8%
NSW	1,650	17%	17%	15%
VIC	3,800	40%	39%	44%
Total	**9,450**			

Table 1.2 Pear Planted Area by State compared to 2014 ABS Statistics

State	Area (Ha)	Area (%)	ABS % (Trees)	ABS % (Prod.)
VIC	3,040	89%	79%	89%
WA	171	5%	10%	4%
SA	170	5%	7%	5%
TAS	34	1%	3%	1%
Total	**3,415**			

Figure 1.1 **APPLE PLANTED AREA BY STATE (%)**

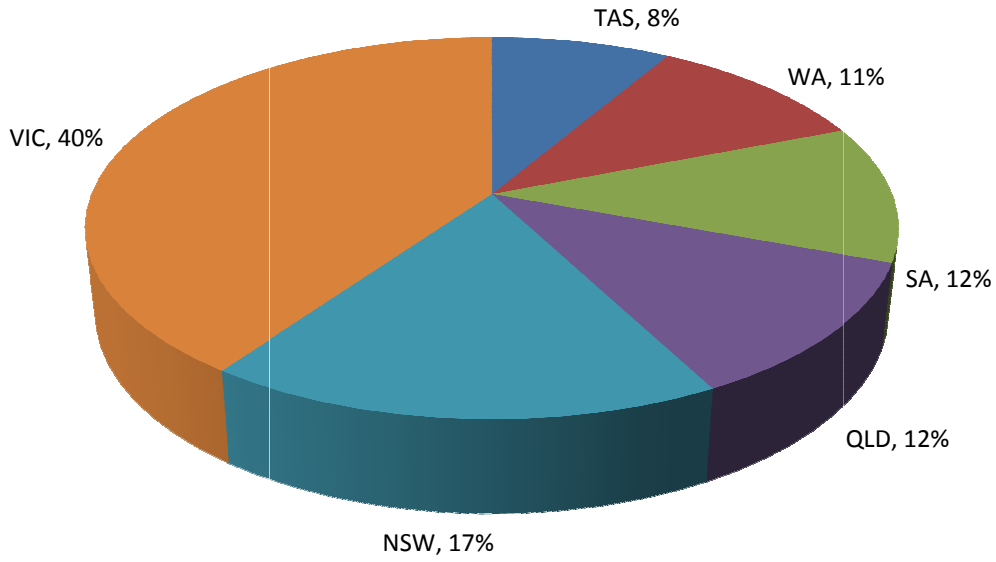


Figure 1.2 **PEAR PLANTED AREA BY STATE (%)**

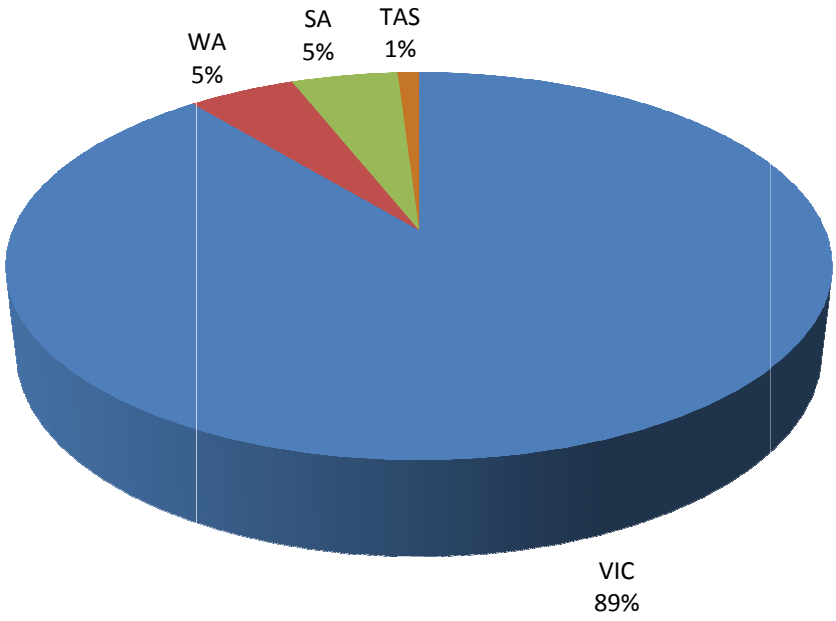


Table 1.3 Apple Variety Mix by Planted Area (%)

Variety	NSW	QLD	SA	TAS	VIC	WA	Australia
Cripps Pink	21%	22%	27%	11%	37%	29%	32%
Granny Smith	2%	13%	7%	3%	28%	16%	21%
Royal Gala	25%	25%	22%	56%	14%	19%	18%
Red Delicious	14%	21%	5%	2%	3%	3%	7%
Fuji	22%	5%	21%	0%	3%	12%	7%
Other Apple	2%	1%	6%	0%	7%	3%	5%
Sundowner	3%	5%	4%	6%	5%	5%	5%
Jazz	0%	8%	2%	23%	1%	6%	3%
Golden Del.	0%	0%	2%	1%	2%	1%	1%
Kanzi	6%	1%	2%	0%	0%	4%	1%
Jonathan	6%	0%	3%	0%	0%	0%	1%

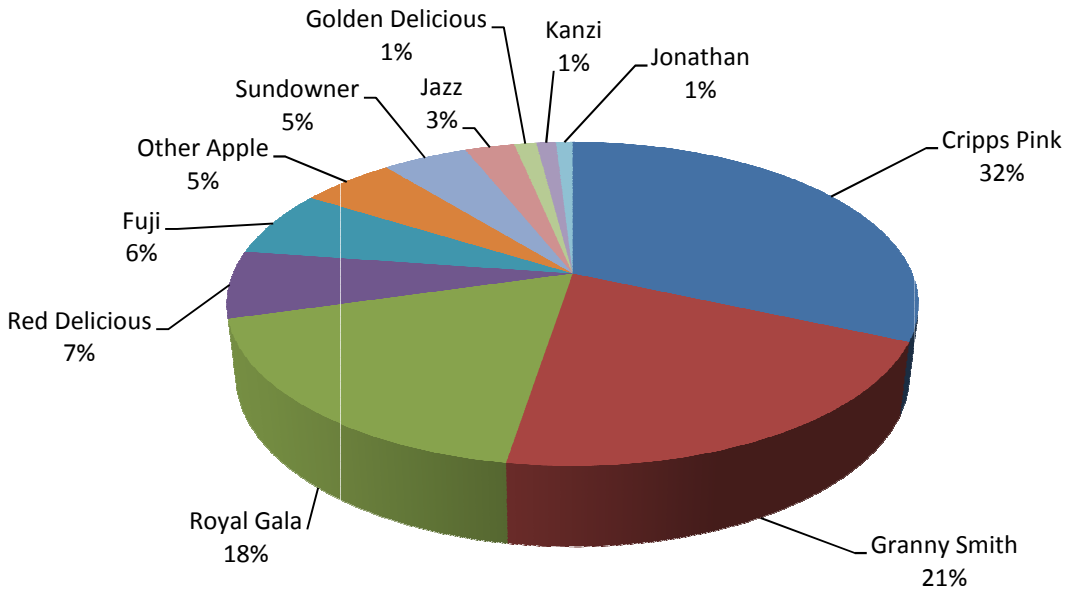
Source: Industry Tree Registry

Table 1.4 Pear Variety Mix by Planted Area (%)

Variety	QLD	SA	VIC	WA	Australia
Packhams	58%	48%	45%	13%	45%
WBC	18%	24%	39%	7%	38%
Bosc	24%	14%	7%	0%	7%
Corella	0%	3%	6%	5%	5%
Josephine	0%	0%	3%	0%	3%
Other Pears	0%	7%	0%	75%	1%

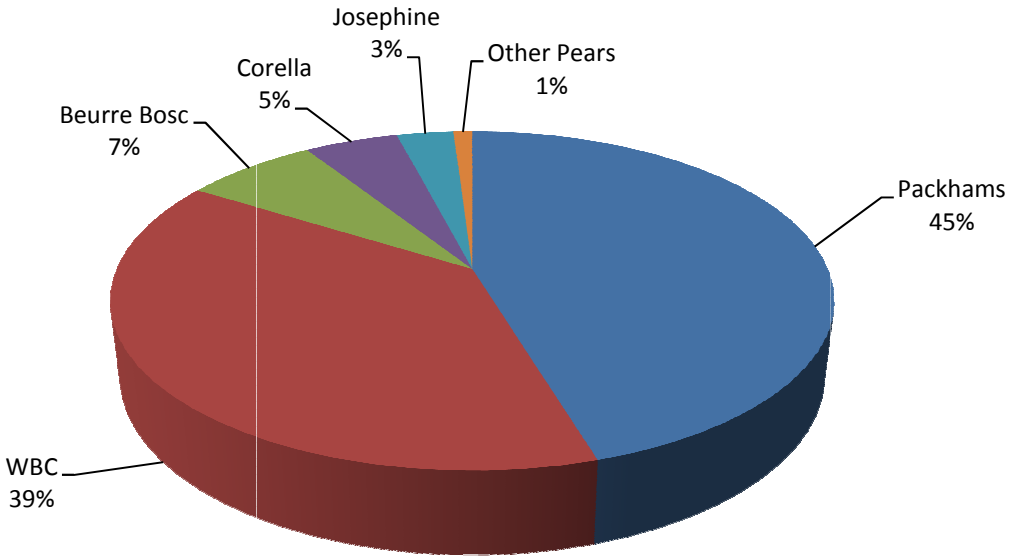
Source: Industry Tree Registry

Figure 1.3 APPLE PLANTED AREA BY VARIETY



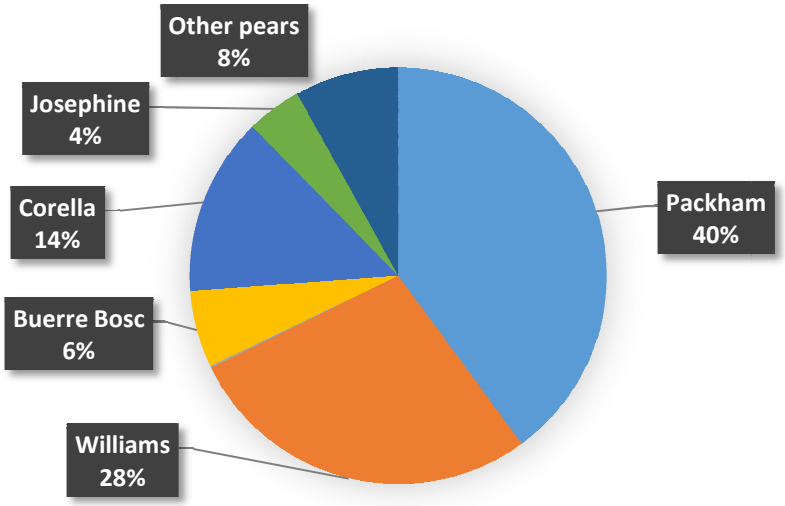
Source: Industry Tree Registry

Figure 1.4 PEAR PLANTED AREA BY VARIETY



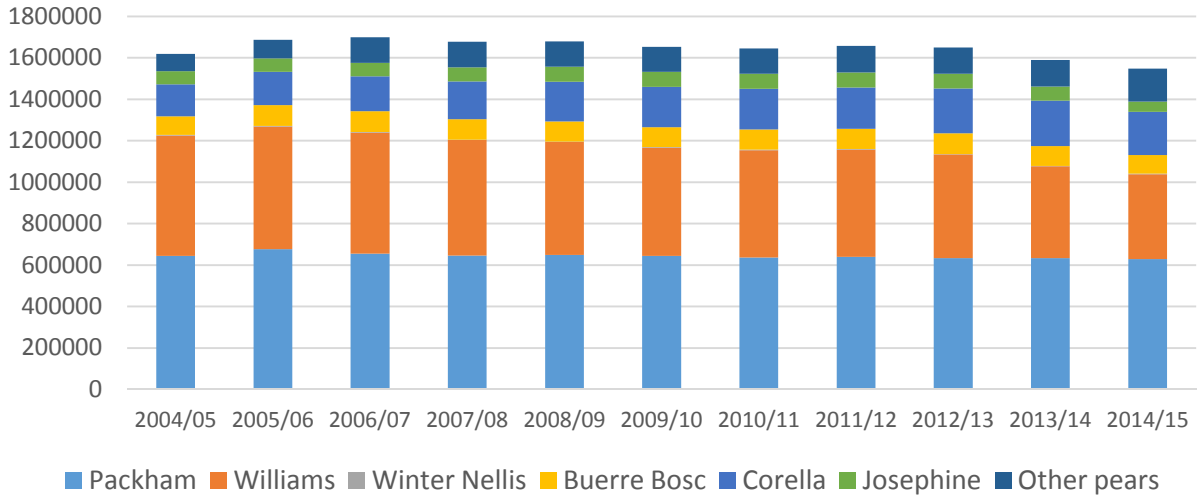
Source: Industry Tree Registry

Figure 1.5 GOULBURN VALLEY PEAR TREE NUMBERS BY VARIETY (%)



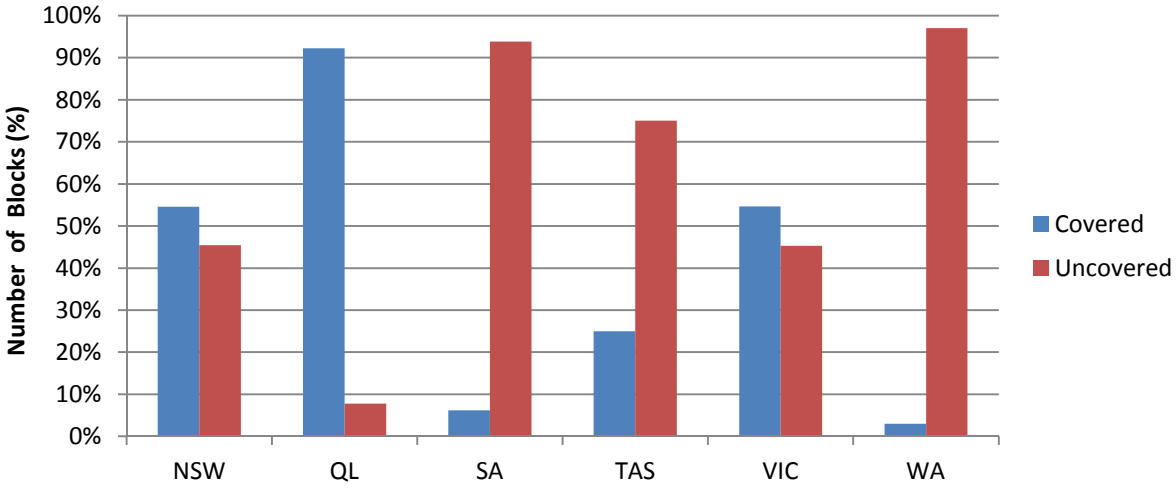
Source: Goulburn Valley Orchard Census 2014

Figure 1.6 GOULBURN VALLEY PEAR TREE NUMBERS OVER TIME



Source: Goulburn Valley Orchard Census

Figure 1.7 NUMBER OF NET COVERED BLOCKS BY REGION



Source: Industry Tree Registry June 2015

SECTION 2: TREE DENSITY AND AGE

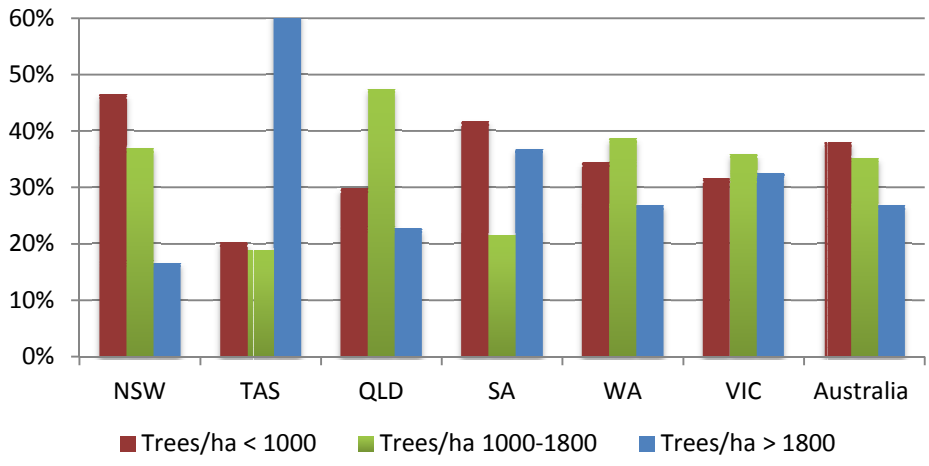
Table 2.1 Apple Tree Density (Trees/Ha)

State	Total Trees (ABS)	Planted Area*	Trees/Ha
NSW	1,900,027	1650	1152
TAS	1,363,312	800	1704
QLD	1,063,318	1100	967
SA	1,095,468	1100	996
WA	1,515,913	1000	1516
VIC	4,527,424	3800	1191
Australia	11,467,001	9450	1213
*Source: Industry Crop Estimate 2015			

Table 2.2 Pear Tree Density (Trees/Ha)

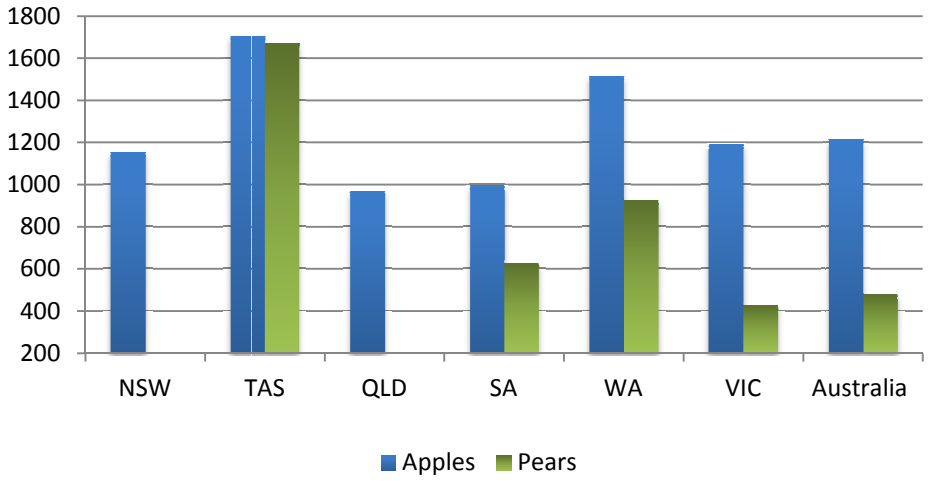
State	Total Trees (ABS)	Planted Area*	Trees/Ha
TAS	56782	35	1622
SA	106958	170	629
WA	157986	171	924
VIC	1292815	3040	425
Australia	1640646		480
*Source: Industry Crop Estimate 2015			

Figure 2.1 **AVERAGE TREE DENSITY (APPLES AND PEARS)**



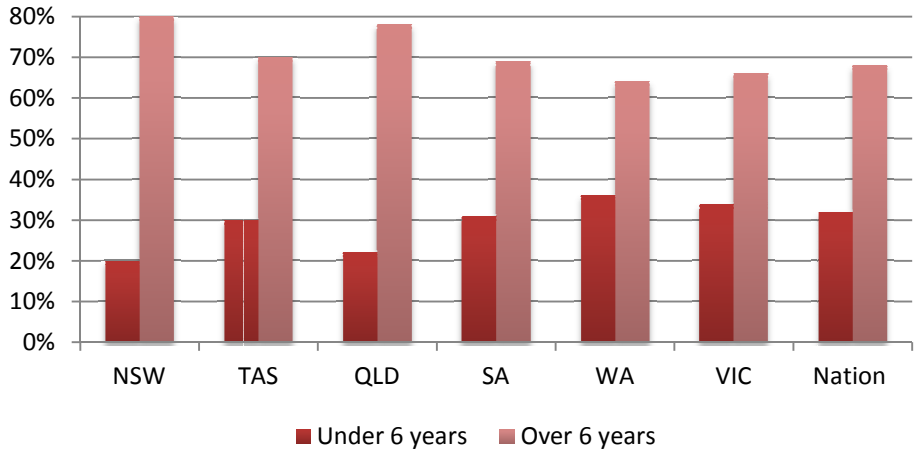
Source: Industry Tree Registry 2015

Figure 2.2 AVERAGE TREE DENSITY (TREES PER HECTARE)



Source: ABS 2014 and Industry Crop Estimate 2015

Figure 2.3 AVERAGE TREE AGE (APPLES AND PEARS)



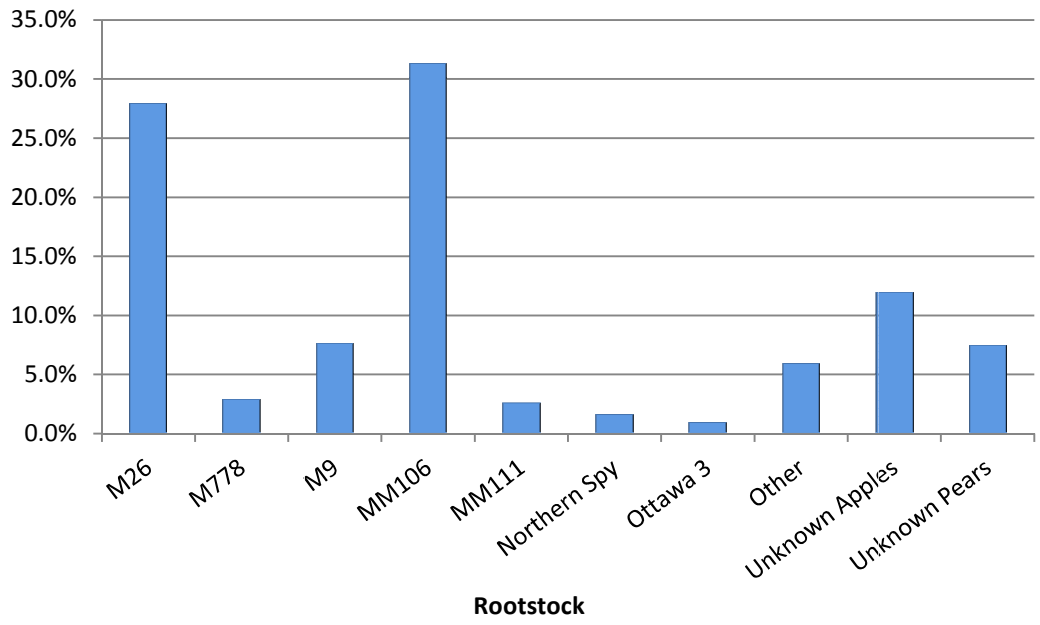
Source: Industry Tree Registry June 2015

Table 2.3 Apple and Pear Rootstock by State (%)

Rootstock	NSW	QLD	SA	TAS	VIC	WA
M26	34.4%	15.9%	47.9%	44.4%	5.5%	2.2%
M778	0.0%	10.3%	0.0%	0.0%	0.0%	0.0%
M9	16.0%	5.1%	4.4%	12.2%	4.3%	0.0%
MM106	37.1%	59.3%	18.6%	10.5%	3.4%	2.1%
MM111	0.5%	1.4%	0.0%	22.5%	0.2%	0.0%
Northern Spy	3.6%	0.8%	1.2%	2.1%	0.6%	0.0%
Ottawa 3	3.4%	0.0%	0.1%	0.0%	0.1%	0.0%
Other	5.0%	7.2%	1.3%	8.3%	0.0%	9.8%
Unknown Apples	0.0%	0.0%	26.5%	0.0%	84.9%	39.5%
Unknown Pears	0.0%	0.0%	0.0%	0.0%	1.0%	46.4%

Source: Industry Tree Registry June 2015

Figure 2.4 **AUSTRALIA PLANTED ROOTSTOCK EXCLUDING VIC (%)**



Source: Industry Tree Registry June 2015

Table 2.4 Apple and Pear Tree Age by Variety (Years)

Apple Variety	1-5	6-10	11-15	16-20	21+
Alvina Gala	58%	39%	3%	0%	0%
Braeburn	0%	11%	22%	33%	33%
Brookfield	18%	44%	31%	7%	0%
Buckeye Gala	18%	60%	21%	0%	2%
Envy	91%	9%	0%	0%	0%
Fierro Fuji	60%	37%	0%	2%	0%
Fuji	9%	12%	18%	25%	37%
Galaxy	5%	23%	41%	27%	3%
Golden Delicious	4%	12%	19%	12%	54%
Granny Smith	10%	19%	16%	10%	43%
Greenstar	25%	69%	6%	0%	0%
Hi Early	0%	0%	4%	14%	82%
Jazz	47%	44%	5%	2%	2%
Jonathon	30%	20%	18%	4%	28%
Kanzi	72%	26%	2%	0%	0%
Cripps Pink	14%	24%	28%	29%	11%
Red Delicious	11%	2%	8%	10%	68%
Rockit	100%	0%	0%	0%	0%
Royal Gala	12%	7%	15%	28%	39%
Sundowner	4%	9%	49%	20%	18%
Other Apples	30%	6%	22%	25%	17%
Pear Variety	**1-5**	**6-10**	**11-15**	**16-20**	**21+**
Beurre Bosc	25%	5%	15%	10%	45%
Packhams Triumph	12%	4%	12%	4%	68%
WBC	17%	0%	25%	8%	50%
Winter Nelis	0%	0%	0%	50%	50%
Other Pears	28%	2%	28%	19%	23%

Source: Industry Tree Registry 2015

Figure 2.5 GOULBURN VALLEY AVERAGE TREE AGE BY VARIETY

Apple Variety	Tree Age (years)
Buckeye Gala	8
Fuji	7
Gala	12
Galaxy	17
Golden Delicious	28
Granny Smith	17
Jonathon	50
Pink Lady	19
Red Delicious	18
Rosie Glow	10
Royal Gala	12
Ruby Pink	6

Pear Variety	Tree Age (years)
Corella	12
D'Anjou	24
Josephine	25
Packham	32
W.B.C.	50

Source: Goulburn Valley Orchard Census 2014

SECTION 3: PRODUCTION

Table 3.1 Apple and Pear Production 2006-2014 (tonnes)

Pome Fruit Production	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Apples									
Fresh (tonnes)	193,497	192,501	192,109	190,430	196,615	196,523	199,584	201,833	199,244
Juicing (tonnes)	92,232	65,873	44,501	49,991	63,719	59,607	73,321	83,682	64,414
Processing (tonnes)	15,776	30,836	22,964	22,296	19,132	13,616	14,159	9,055	13,402
Export (tonnes)	5,417	2,968	2,254	2,468	2,558	2,850	2,459	1,712	2,885
Levy apple total (tonnes)	306,922	292,178	261,829	265,184	282,023	272,595	289,524	296,282	279,945
ABS apple total (tonnes)	276,427	270,476	247,389	295,134	264,401	299,778	289,064	288,878	266,771
Pears									
Fresh	47,439	49,995	51,301	53,146	54,766	60,807	66,403	56,745	57,579
Juicing (tonnes)	42,286	53,058	37,883	43,920	29,438	35,964	53,205	43,619	43,422
Processing (tonnes)	492	388	579	649	246	539	437	348	194
Export (tonnes)	5,695	3,229	2,478	4,067	2,889	3,231	4,668	4,391	3,490
Levy pear total (excl Nashi)	95,912	106,671	92,241	101,783	87,338	100,540	124,713	105,103	104,685
ABS pear total (incl Nashi)	142,419	134,764	130,492	120,376	95,111	123,267	119,274	109,206	98,035

Source: ABS and Dept. of Agriculture

Figure 3.1 **AUSTRALIAN APPLE PRODUCTION 2003-2014 (Tonnes)**

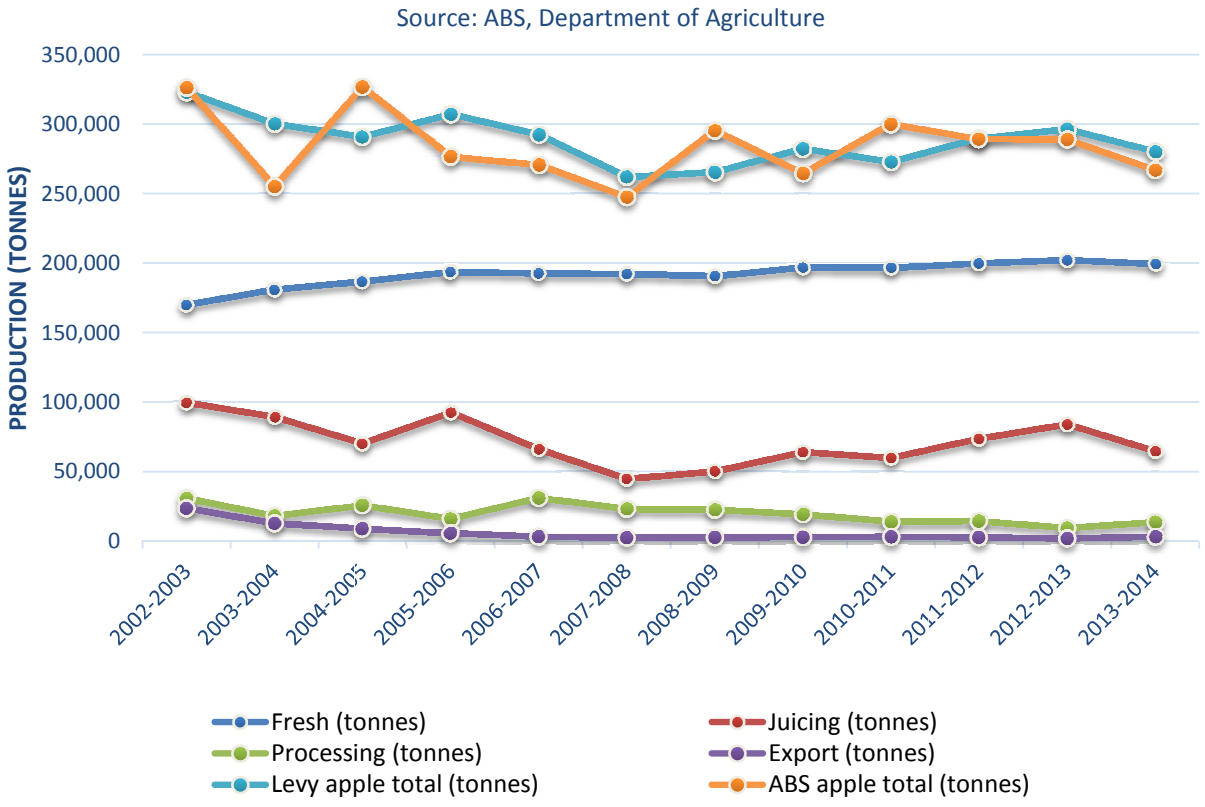


Figure 3.2 **AUSTRALIAN PEAR PRODUCTION 2003-2014 (Tonnes)**

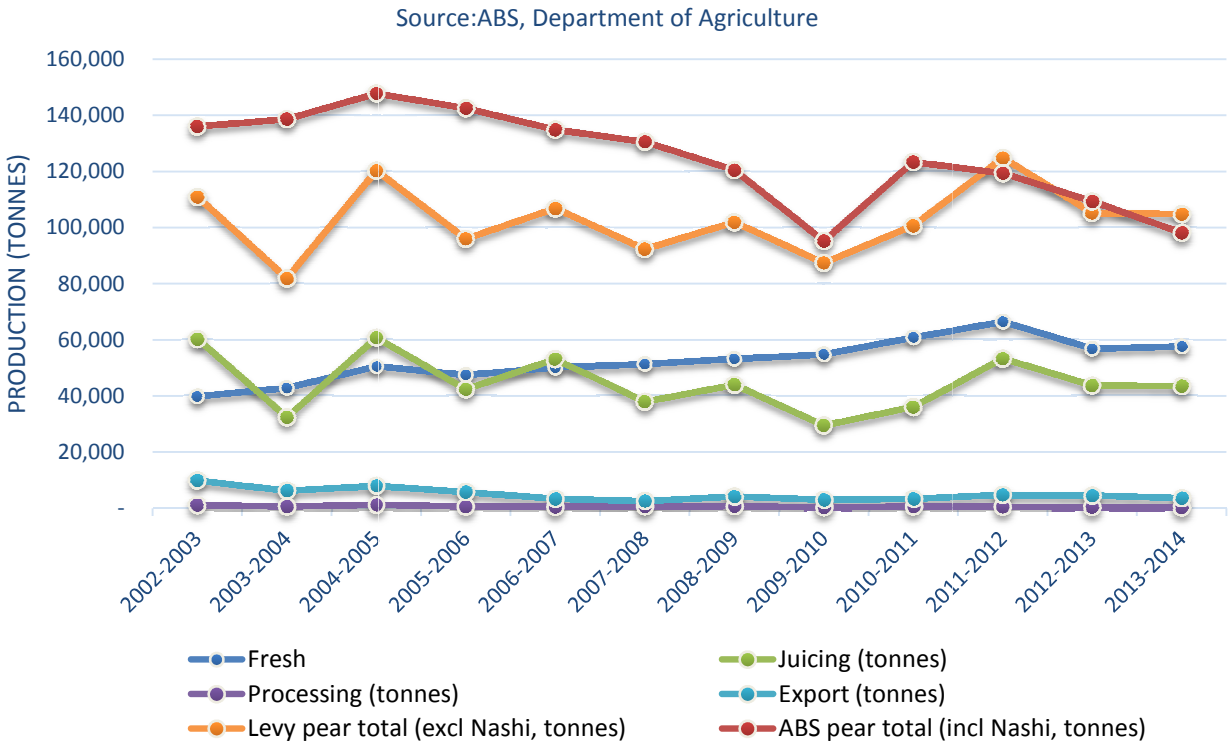
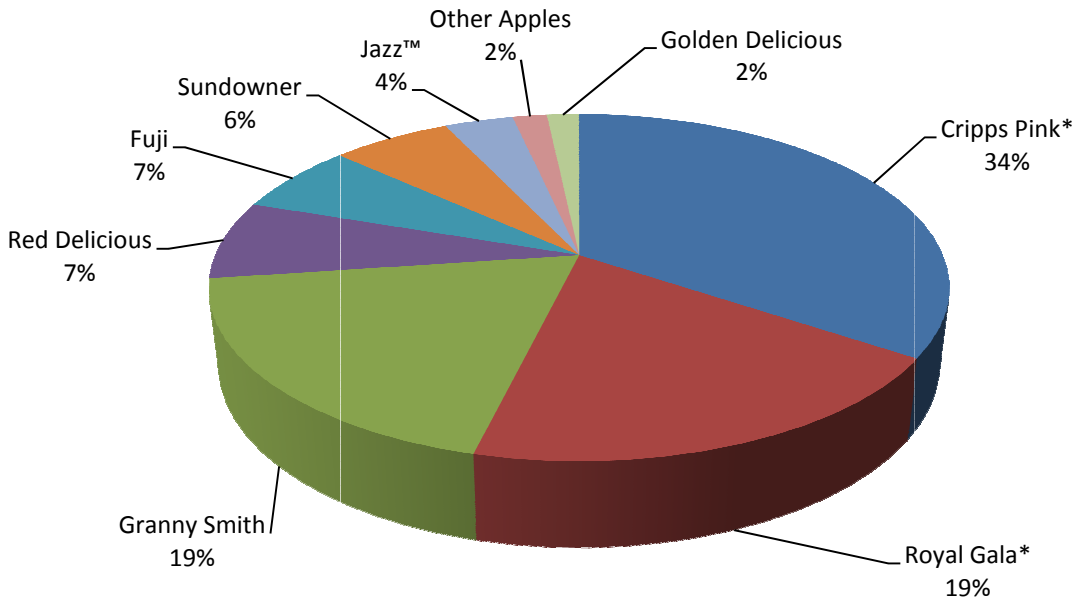


Table 3.2 Apple and Pear Variety Mix by Production (Kg)

Variety	Gross (Kg)	Variety Mix (%)
Cripps Pink	36,118,792	34%
Gala	20,456,111	19%
Granny Smith	20,005,241	19%
Fuji	6849747	7%
Golden Delicious	1,754,375	2%
Red Delicious	7,716,460	7%
Sundowner	6,562,530	6%
Jazz™	3,783,626	4%
Other Apples	1,882,833	2%
Total Apples	**105,129,715**	**82%**
Packham	13,969,555	61%
WBC	4,285,930	19%
Corella	363,274	2%
Josephine	837,652	4%
Bosc	2,738,448	12%
Other Pears	785,447	3%
Total Pears	**22,980,306**	**18%**
Survey Group Total	**128,110,021**	

Source: Industry Packhouse Survey (2014 Harvest)

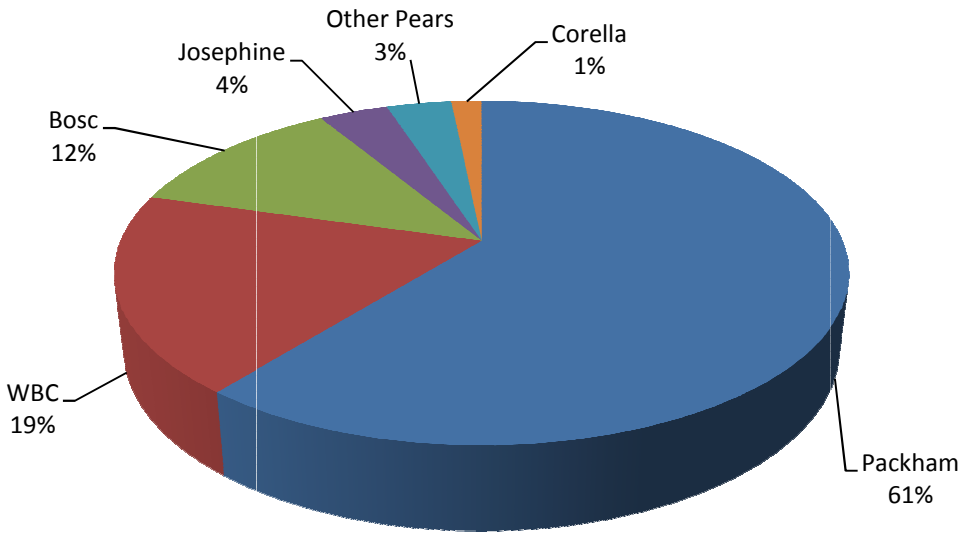
Figure 3.3 APPLE PRODUCTION BY VARIETY (%)



Source: Industry Packhouse Survey (2014

Figure 3.4 PEAR PRODUCTION BY VARIETY (%)

(Excludes crop delivered directly for processing)



Source: Industry Packhouse Survey (2014

SECTION 4: PACKOUT AND FRUIT SIZE

Table 4.1 National Packout and Fruit Size by Variety 2014

Variety	Class 1 (%)	Class 2 (%)	Process (%)	Average Size (gm)
Cripps Pink*	70%	13%	17%	172
Royal Gala*	78%	10%	12%	155
Granny Smith	67%	15%	17%	172
Fuji	69%	18%	13%	157
Early Fuji	79%	6%	15%	183
Golden Delicious	67%	11%	22%	144
Red Delicious	82%	6%	13%	155
Sundowner	64%	16%	19%	161
Jazz™	86%	5%	9%	171
Jonathan	71%	12%	17%	131
Jono Gold	77%	0%	22%	185
Braeburn	63%	22%	15%	180
Other Apples	64%	19%	17%	173
Total Apples	**72%**	**12%**	**16%**	
Packham	54%	27%	19%	208
WBC	62%	21%	17%	203
Corella	78%	10%	12%	157
Josephine	50%	30%	21%	191
Bosc	68%	12%	20%	181
Other Pears	73%	15%	12%	181
Total Pears	**64%**	**19%**	**17%**	

Source: Industry Packhouse Survey (2014 Harvest)

Table 4.2 Apple Packout by State and Variety 2014

	NSW (Batlow)			Northern Victoria			Southern Victoria		
Variety	**Class 1**	**Class 2**	**Process**	**Class 1**	**Class 2**	**Process**	**Class 1**	**Class 2**	**Process**
Cripps Pink*	46%	34%	20%	68%	16%	16%	76%	14%	10%
Royal Gala*	63%	23%	14%	69%	11%	20%	79%	14%	7%
Granny Smith	51%	35%	14%	62%	22%	17%	74%	11%	15%
Fuji	35%	38%	26%	63%	24%	13%	59%	28%	14%
Early Fuji							79%	10%	11%
Golden Delicious				61%	23%	16%	70%	8%	23%
Red Delicious	68%	20%	11%	82%	9%	8%	84%	1%	15%
Sundowner	56%	27%	17%	66%	10%	25%	78%	10%	12%
Jazz™							85%	5%	11%
Jonathan	62%	23%	15%	67%	24%	8%	65%	9%	26%
Braeburn	47%	32%	22%				79%	12%	9%
Other Apples	45%	37%	18%				83%	12%	5%
Total Apples	**53%**	**30%**	**17%**	**67%**	**17%**	**15%**	**76%**	**11%**	**13%**
	Western Australia			**South Australia**			**Tasmania**		
Variety	**Class 1**	**Class 2**	**Process**	**Class 1**	**Class 2**	**Process**	**Class 1**	**Class 2**	**Process**
Cripps Pink*	84%	8%	8%	64%	8%	28%	74%	5%	21%
Royal Gala*	64%	19%	17%	83%	7%	10%	83%	7%	10%
Granny Smith	76%	15%	9%	69%	8%	23%	75%	8%	18%
Fuji				80%	8%	12%	73%	12%	14%
Early Fuji							79%	3%	18%
Golden Delicious	86%	1%	13%	59%	10%	31%	70%	8%	21%
Red Delicious	65%	19%	16%	69%	8%	23%	87%	1%	12%
Sundowner	86%	5%	8%	61%	7%	32%	63%	24%	13%
Jazz™							88%	5%	7%
Jonathan				67%	0%	32%	83%	8%	10%
Jono Gold				77%	0%	22%	78%	0%	23%
Other Apples	66%	9%	25%	95%	5%	0%	55%	23%	22%
Total Apples	**75%**	**11%**	**14%**	**72%**	**6%**	**21%**	**76%**	**8%**	**16%**

Source: Industry Packhouse Survey

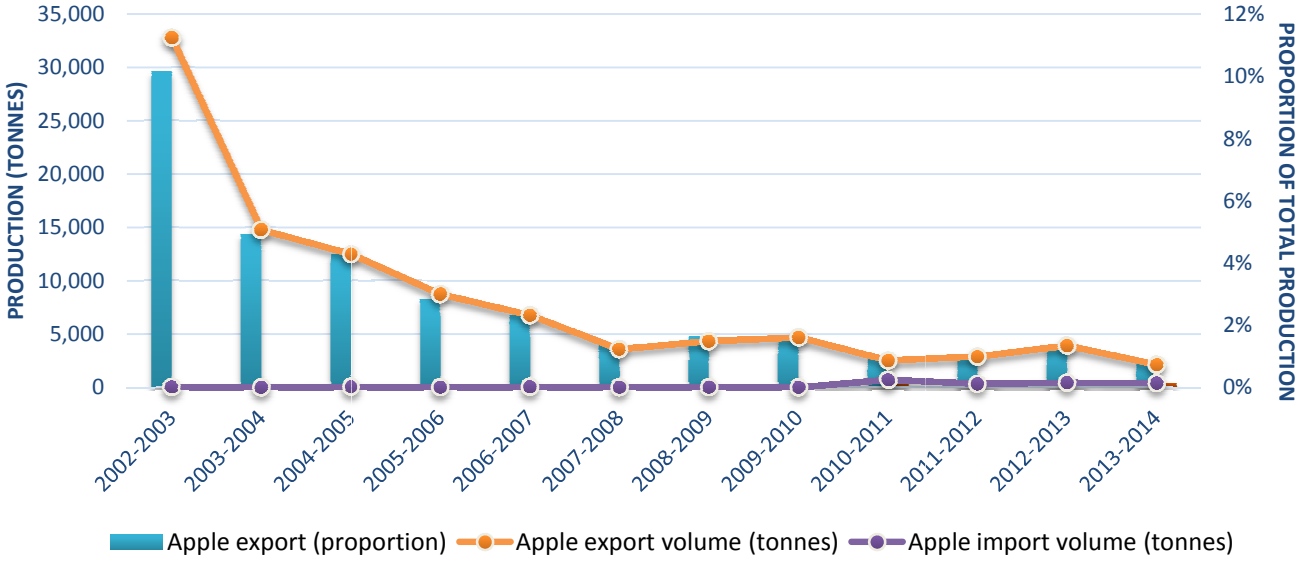
Table 4.3 Pear Packout by State and Variety 2014

	Western Australia			South Australia		
Variety	**Class 1**	**Class 2**	**Process**	**Class 1**	**Class 2**	**Process**
Packham	66%	9%	25%	66%	27%	7%
WBC	62%	20%	18%	69%	31%	0%
Corella				90%	10%	0%
Josephine	74%	0%	26%	57%	43%	0%
Bosc	58%	8%	35%	74%	11%	15%
Other Pears	68%	12%	20%	72%	22%	6%
Total Pears	**65%**	**10%**	**25%**	**71%**	**24%**	**5%**
	Tasmania			**Northern Victoria**		
Variety	**Class 1**	**Class 2**	**Process**	**Class 1**	**Class 2**	**Process**
Packham	35%	54%	11%	48%	23%	29%
WBC	75%	13%	13%	54%	17%	29%
Corella	83%	0%	17%	69%	15%	17%
Josephine				27%	24%	49%
Bosc	85%	6%	9%	62%	17%	21%
Other Pears	75%	13%	13%	85%	0%	15%
Total Pears	**71%**	**17%**	**12%**	**57%**	**16%**	**27%**

Source: Industry Packhouse Survey

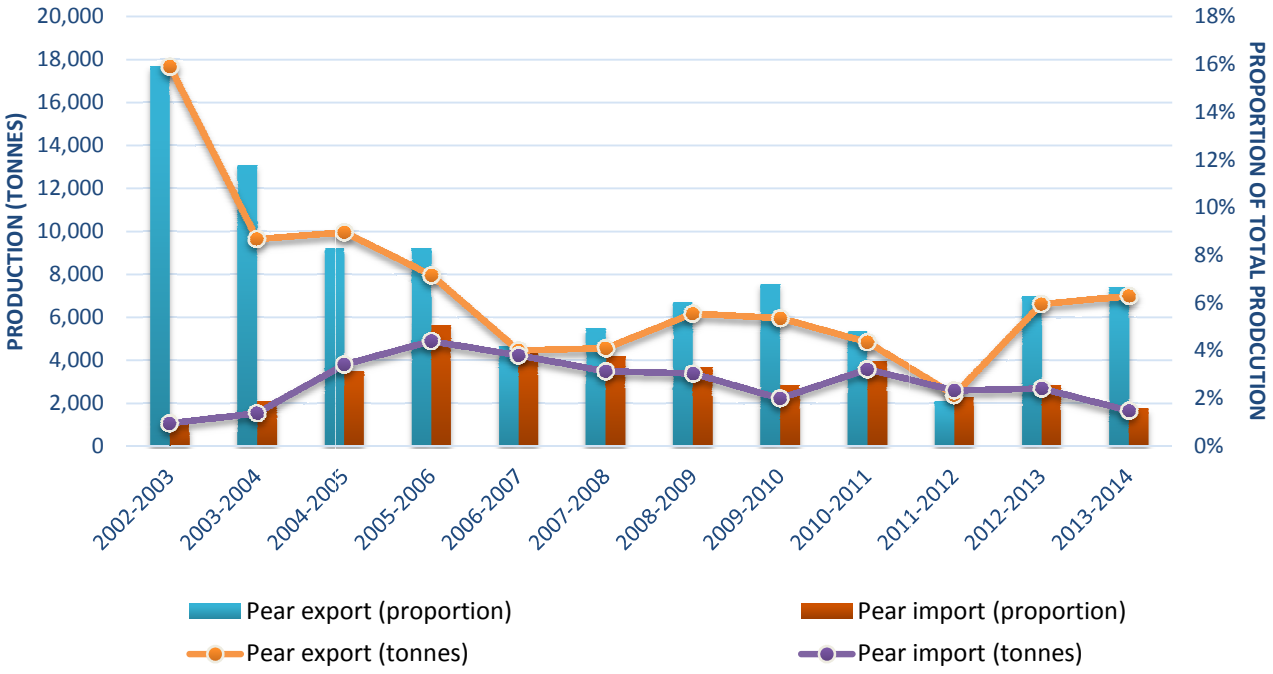
SECTION 5: CONSUMPTION, IMPORTS AND EXPORTS

Figure 5.1 AUSTRALIAN APPLE IMPORTS AND EXPORTS 2003-2014



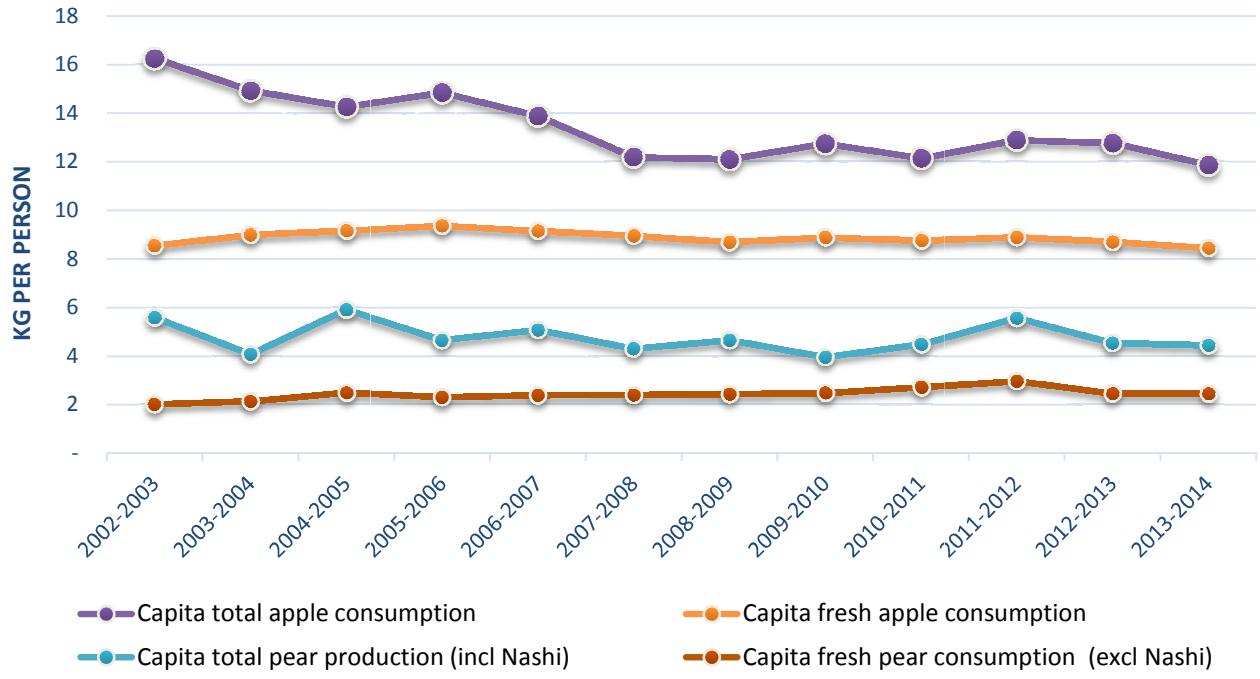
Source: GTIS, Department of Agriculture

Figure 5.2 AUSTRALIAN PEAR IMPORTS AND EXPORTS 2003-2014



Source: GTIS, Department of Agriculture

Figure 5.3 AUSTRALIAN APPLE AND PEAR CONSUMPTION PER CAPITA



Source: Department of Agriculture

Appendix E

New tree registry project starts

In a new HAL-funded project, AgFirst is going to assist the industry capture data on varieties of apples and pears planted and their productivity.

Quantifying how much of Australia's orchards are planted to each apple and pear variety and their productivity performance can help the industry make informed decisions about which variety to plant and to plan for marketing.

Knowing what proportion of Australian orchards are already planted and being planted to different varieties of apples and pears and their productivity, will help growers and the industry better plan for the future. HAL has recently approved funding for the Apple and Pear Industry Data Collection project (HAL project number AP130350) to capture data, create an online tree registry database and produce a robust industry crop estimate in 2015.

"Getting a grip on our basic tree data is fundamental to giving us the information we need to make decisions about the industry and take action to ensure its profitability long-term," says John Dollisson, CEO of APAL.

"Participating growers will get the immediate benefit of being able to benchmark their own orchard statistics against other orchards both within their own state, and Australia-wide.

"This will help growers know how their tree plantings compare to others and if their tree performance is in similar, better or worse shape than that of other growers. It may also help us discover where there might be a future under-supply or over-supply of different varieties.

"Once we know this we can better plan for the marketing of our fresh fruit – both domestically and overseas – and the overall development of the industry."

Building on existing data

The Australian Bureau of Statistics (ABS) used to conduct a broad survey on the industry that included production numbers and tree counts broken down by varieties, but the survey was cancelled after 2008 due to costs.

ABS's current data publication on the industry through their Agricultural Commodities Survey is largely inadequate for any detailed supply-side analysis. The hope is that the Tree Registry project, with participation and inputs from growers, will help to paint a clearer picture of the productive capacity in the industry.

Online Tree Registry

The project will see the development of an online system for collection of industry tree data including tree plantings by variety and state called the Tree Registry. The Tree Registry is expected to be available in September 2014 on the APAL website.

The target is to get tree statistics for 90 per cent of the Australian planted orchard area entered into the Tree Registry. Captured statistics will include variety planted, area planted, tree density, tree age and root stock.

While grower participation will be voluntary, the success of the project relies on grower involvement.

The project is paid for by growers through the apple and pear levies because it has been identified as of high importance to the industry and can provide valuable information for individual growers too. In particular it will be important that all large-scale growers participate because it is estimated that 70-80 per cent of the crop is produced by 10-20 per cent of growers in each region.

Growers will be offered assistance to enter data where it may be required.

Here to help

Most growers are already familiar with AgFirst who deliver APAL's Future Orchards® program. New Zealand's Ross Wilson from AgFirst, who was recently in Australia to present at the southern series of the Future Orchards" walks, and Richard Pentreath, another of AgFirst's horticultural experts in NZ, will manage the project. They will join forces with Jesse Reader, now with AgFirst in Australia, and a bunch of local consultants based in each growing region to facilitate the collection of data here.

The local consultants, people that you will likely already know from your growing region, will be available to help growers enter data to get a good representation of the industry.

APAL's role will be to support the project including by hosting the Tree Registry on the APAL website and facilitating broad communication with all growers about the project to encourage participation and use of the data.

Outputs

Richard explains that growers will be able to print or download a summary report for their orchard tree statistics, which will be a useful reference document for planning and orchard development purposes.

"Once entered, it will be easy to update your statistics on an annual basis by accessing the online database," says Richard. "After you enter your statistics, you will have the ability to easily compare your variety mix and tree age against both state and national averages.

"Updating your tree stats annually should be part of your annual business plan, an accurate understanding of variety mix and tree age is essential for planning future development."

Additionally, growers will be helping build a valuable and robust industry data set that will help develop the programmes needed to support future growth and development.

Other outputs of the project include a statistics annual including current plantings and production, the establishment of a grower panel to help generate industry crop estimates, an industry crop estimate for 2015 and, eventually, an industry mapping resource connected to the Tree Registry database.

Get involved

Once the Tree Registry is up online, it will be very easy to participate and enter data. Growers will just need to log onto the Tree Registry following the link provided and creating a password to access the site.

To prompt your involvement, all APAL grower members and apple and pear levy payers will be contacted by APAL to enter their own data. Growers who cannot enter data themselves for any reason can contact the local consultant and request assistance. The contact details for local consultants will be provided in the email request or you can contact APAL anytime for help.

Richard explains, "When you receive your email request, please follow the simple instructions provided

and enter your tree statistics after logging onto the Tree Registry."

Only growers on the APAL database will be set-up in the Tree Registry so please provide APAL with your contact details if APAL does not already have your details.

Find out more

Stay tuned for the announcement of the launch of the Tree Registry via APAL's Industry Juice e-newsletter. If you are not already getting Industry Juice subscribe here.

For more information on the project please contact Jesse Reader at jesse.reader@agfirst.co.nz or 0419 107 245.

This project is funded by apple and pear growers through the apple and pear levy administered by Horticulture Australia Ltd (HAL). It will be managed by AgFirst with the support of APAL.

- See more at: http://apal.org.au/new-tree-registry-project-starts/#sthash.BqT6Iu14.dpuf

Appendix F

A bumper 2015 crop forecast

By Richard Pentreath

By talking to growers and collecting data from multiple sources, AgFirst makes its forecast of Australia's apple and pear crop for 2015 – and it's looking like a bigger crop than 2013 and 2014.

Everyone has heard the saying 'information is power'. This is true for any industry that needs to renew strategic and operational plans on an annual basis and ensure the best possible outcomes are achieved for all those involved.

In 2014, the Apple and Pear Industry Advisory Council (IAC) decided to prioritise funding for the collection of industry data, resulting in the Pome Fruit Industry Collection Project that commenced in September 2014. The project has three main components including the collection of historic national crop data, collection of national tree statistics and the establishment of an effective model to estimate the current seasons' crop. In this article I will discuss the crop estimation component in a little more detail.

The value of a forecast

The Australian Bureau of Statistics (ABS) stopped collecting detailed pome fruit tree statistics in 2008 and now only report gross production and total tree numbers for each state. This means the industry has not been able to accurately calculate variety mix and productivity, nor accurately forecast the national crop from year to year.

AgFirst have been contracted to implement the Pome Fruit Industry Data Project with the support of APAL and funding from HIA. AgFirst have carried out the New Zealand pip fruit crop estimate, on behalf of PipFruit NZ for the past 12 years and we have used the same tried and tested methodology to estimate the Australian national crop in 2015. The New Zealand national crop estimate over the past 12 years has been accurate within 2 per cent and is viewed as an essential resource for helping industry optimise strategic and operational plans at the start of each new season.

The forecast is used by industry governance groups to ensure growers, marketers, supply chain participants and government are kept well informed and are prepared for change in the volume of fruit expected nationally. Marketers, for example, utilise this information to determine the total volume of fruit likely to be shipped to different markets, enabling more accurate sales forecasting. Growers also benefit from knowing the likely balance between supply and demand and how this will affect the value of their crop.

Getting the data

The 2015 crop has been calculated using the relative change in fruit numbers (crop load) and fruit size between 2013, 2014 and the current season. The accuracy of this approach depends on the quality of the baseline data on which the calculation is based.

When historic data is accurate, accurate estimates can be made by extrapolating from this baseline data and applying a percentage change in crop volume and fruit size. To calculate the percentage change for the 2015 season, the project team established a panel consisting of growers across the country that represented approximately 10 per cent of the total planted areas in all but one state.

Overall, the grower panel represented 18 per cent of the estimated national total planted area. Panel growers were asked to supply production statistics for the 2013 and 2014 season along with their production forecast for 2015. In addition, local Front Line Advisors were recruited to carry out fruit counts and fruit size measurements that could be compared against the growers' own estimates. Historic and current season fruit size data from the OrchardNet® database was also utilised when calculating change in fruit size for each region.

Baseline gross production data for each state was taken from the last ABS Agricultural Commodities Survey in 2013. The variety mix in each state was based on extrapolations carried out by APAL using 2008 ABS census data with some adjustment to reflect recent trends in orchard development.

Estimates from each region were audited and the average percentage change was calculated by variety, based on the grower panel estimates, Front Line Advisor estimates and local intelligence.

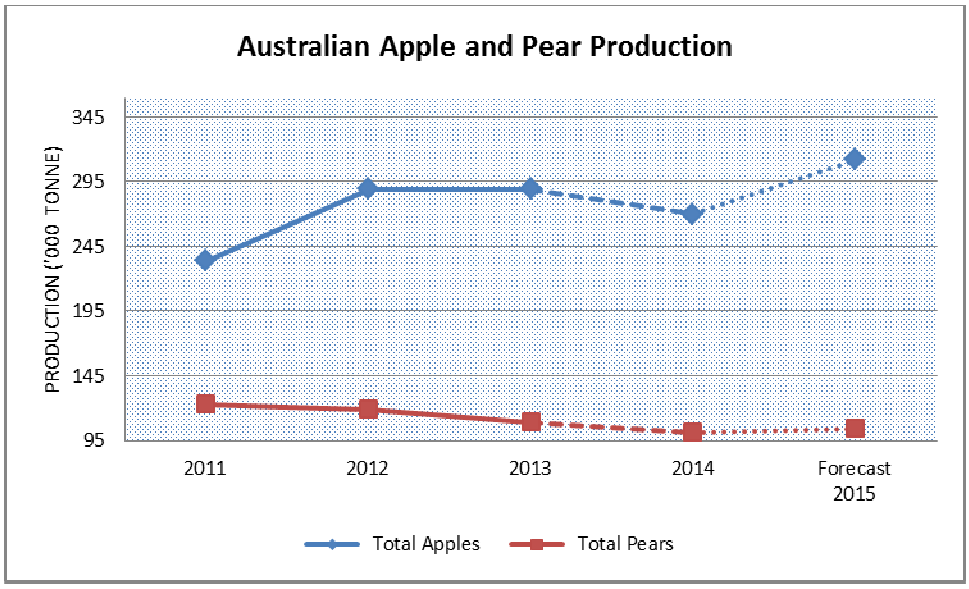
The forecast

Because no historic crop data was available, the accuracy of the baseline data used may ultimately limit the accuracy of the 2015 crop estimate. However, the best data available has been used and a thorough process has been followed to ensure that the outcome is as accurate as possible. This work will also provide a strong foundation on which future crop estimates can be built.

The final report – finalised in January 2015 – has produced gross crop and Class 1 crop estimates, by variety for all states. Because of the potentially sensitive nature of the information, APAL will be communicating more about the industry crop estimate directly with industry stakeholders. However it is safe to say that overall, the national crop in 2015 is predicted to be significantly larger than 2014 and slightly up on the 2013 crop also. At the time of writing, fruit quality and finish were looking very good across most regions and proportionately, an even greater increase in the Class 1 crop is expected this season.

Provided growing conditions remain favourable, the national apple crop is expected to be approximately 8 per cent up from 2013 and 15 per cent up from 2014. The national pear crop is expected to be slightly up from 2014 but about 5% down from 2013. The net result for apples and pears combined is a 12 per cent increase in gross yield from 29.3 tonnes per hectare in 2014 to 33.0 tonnes per hectare in 2015. Fruit finish at the time of writing was generally very good and Class 1 yield is expected to increase 21 per cent from an average of 19.9 tonnes per hectare in 2014 to 24.1 tonnes per hectare in 2015.

Figure 1. Australian gross apple and pear production 2011-2015



Note: The total 2014 crop has been estimated based on actual production data collected from a grower panel and the 2015 crop has been forecast using the methodology described above.

Royal Gala and Pink Lady apples are expected to show the biggest increase in gross production and this can be partly attributed to younger trees that are approaching full production. Conversely, Sundowner and Red Delicious apples are expected to show the biggest drop in gross production as these trees are steadily being grafted to new varieties. A significant lift in the percentage of 'other apple' varieties contributing to the national crop is expected including licensed varieties such as Jazz. The volume of WBC pears is expected to be similar to 2014 despite a reduction in the planted area and an increase in the volume of Packham pears and 'Other' pears is expected as a result of high productivity this season.

Table 1. Relative change in total apple and pear production 2013-2015

Gross Production	2013	2014	Forecast 2015	Change 2013-2014	Change 2014-2015
	(TONNE)	(TONNE)	(TONNE)		
Total Apple	288,866	270,405	311,758	-6.8%	15.3%
Total Pear	109,204	100,520	104,367	-8.0%	3.8%
Total Pome Fruit	398,071	370,925	416,126	-6.8%	12.2%

Looking across the regions, increases in the total apple crop of between 9% and 28% are expected for Victoria, New South Wales, South Australia and Queensland whilst more modest increases are expected in Western Australia and Tasmania which did not suffer a significant drop in productivity last year. The total pear crop in Victoria, which represents close to 90% of the national pear crop, is expected to be approximately 5 per cent down on 2013 due to the removal of WBC trees but slightly up from 2014 overall.

Fruit size for most of the major varieties is expected to be large or only slightly smaller than the 2014 season. Fruit growth rates across most of the country are tracking above both the 2013 and 2014 season and clearly conditions have been favourable for fruit growth this season.

Table 2. Gross yield estimates for the major apple and pear varieties 2013-2015 (Kg/Ha).

GROSS YIELD (Kg/HA)	2013	2014	Forecast 2015	Change 2013-2014	Change 2014-2015
Royal Gala	23,563	21,625	26,244	-1.3%	21.4%
Pink Lady	34,295	33,844	38,445	-1.2%	13.6%
Granny Smith	43,658	43,149	47,807	-20.2%	10.8%
Red Delicious	44,443	36,976	48,105	-3.6%	30.1%
Fuji	26,595	25,660	30,634	-8.7%	19.4%
Sundowner	31,122	28,639	34,562	-8.5%	20.7%
Golden Delicious	39,405	36,308	43,098	-10.4%	18.7%
Other Apple	11,819	10,708	13,512	-3.0%	26.2%
Total Apple	**31,862**	**29,614**	**35,301**	**-7.6%**	**19.2%**
Packham	34,861	33,854	35,826	0.1%	5.8%
WBC	34,958	33,037	36,092	-9.6%	9.2%
Pears Other	24,237	22,118	23,738	-7.1%	7.3%
Total Pear	**31,352**	**29,670**	**31,885**	**-2.8%**	**7.5%**
Total Pomefruit	**31,559**	**29,334**	**33,009**	**-6.7%**	**12.5%**

Note: Yield estimates are based on the best planted area statistics available at the time of writing.

With a bumper crop forecast for 2015, growers and marketers may want to consider whether they have appropriate outlet channels to maintain the necessary movement of fruit throughout the year, needed to optimise returns.

Next steps

To establish good industry baseline data, AgFirst, with the help of local Front Line Advisors in each region, will conduct a packhouse survey in 2015 to collect statistics on the 2014 crop, which will be mostly sold by the time the survey is completed. As with all projects of this nature, on-going success will depend on the cooperation of industry and the supply of information. Stakeholders are reminded that any information they provide to AgFirst is kept fully confidential for the sole purpose of the project and only aggregate data will be reported.

The development of an accurate crop forecasting model, along with the development of a robust tree statistics database (Australian Pome Fruit Tree Registry) represent a significant step towards improving the quality of pome fruit industry statistics in Australia. With the support of industry, these initiatives stand to benefit all those who want to be part of a prosperous and sustainable pome fruit industry for years to come.

Acknowledgements

AgFirst would like to acknowledge all those growers who contributed data and made it possible to produce an industry crop estimate for the 2015 season. We thank you for your support and trust that you have gained value from the benchmarking reports made available to you via OrchardNet.

The Australian Pome Fruit Tree Registry is funded by Horticulture Innovation Australia Ltd using the

apple and pear industry levy funds from growers and funds from the Australian Government. AgFirst implements the project with support from APAL.

About the author

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Appendix G

Make your Tree Stats Count

By now most growers will have heard about the Australian Pome Fruit Tree Registry, but many growers have not yet visited the site and entered tree statistics. In this article I would like to talk about the purpose of the Tree Registry, why it is an important initiative and why the success of project depends on all growers getting involved. Two growers who have already entered their tree data talk about their experience and why they chose to participate.

Background

The Apple and Pear Industry Advisory Committee (IAC) have the role of prioritising research and development initiatives to maximise the benefits returned to growers and the industry as a whole. Last year the IAC identified a lack of quality industry data as a major weakness for the Australian apple and pear industry, and as a result the Industry Data Collection Project was initiated. AgFirst have been commissioned by HIA to carry out the project with support from APAL. Accurate industry data on variety mix and productive capacity will empower the whole industry including individual growers, the supply chain and peak industry bodies. With good data, industry peak bodies can make more informed decisions, supporting continuous improvement of profitability and sustainability for Australian apple and pear growers.

The Pome Fruit Tree Registry has been developed by AgFirst to specifically address the need for accurate industry tree statistics, which is a major component of the Industry Data Collection Project. Other components of the project include a national packhouse survey to collect historic 2014 crop data (underway in March/April) as well as an effective crop forecasting model which was completed in January this year.

How does it work?

The Tree Registry is an online database that all Australian apple and pear growers can access with a personalised log-in. Growers have been sent an email from the 'Tree Registry' including a link that takes the grower to a personalised log-in page where they can select a password and enter the Tree Registry site. Growers can be sure that data entered in the Tree Registry can only be viewed by the grower himself and the database administrator. All individual grower data is stored for the purpose of this project alone and will not be provided to any third party.

A short video tutorial has been prepared by AgFirst to help growers get started. Just follow this link, https://www.youtube.com/watch?v=fmTr04aZ_CY and video will open in your internet browser.

If you have not yet received an email from the 'Tree Registry' or you cannot find it, please get in touch with APAL or your local project advisor who will need a few basic details including your business name and email address to get you set-up (see contact details below).

Once you have logged into the site, it will take between one and two hours to enter tree statistics for an average sized orchard, the first time around. Any subsequent updates will be relatively quick and simple meaning that you can easily update your records from year to year.

What's in it for me?

In addition to contributing to an industry resource that will benefit the entire industry, growers entering statistics receive a number of benefits including a Tree Schedule Report for their business and a number of benchmarking reports that compare an individual growers' statistics to state and national averages. All the reports can be accessed from the website at any time and either downloaded or printed for a variety of purposes.

What are growers saying?

Mark Scott is an orchardist in Western Australia with a total planted area of 20 hectares, of which 8 hectares are planted in apples and pears. As a member of the Pomewest Fruit Growers Committee, and a previous member of other fruit grower committees, Mark believes that "up to date tree statistics provide critical information to help guide industry investment in Research and Development". For this reason alone, Mark was willing to enter his tree statistics but he also valued the opportunity to update his tree planting schedule for the 2015 season. On a more personal level, Mark says that having access to information on national variety mix and average tree age will mean he can predict future supply and demand by variety, and plan development of his own orchard accordingly. Mark say's he found entering his tree statistics into the Tree Registry for the first time was "relatively easy".

Ian Armour is an orchardist in Victoria with over 36 hectares planted in pome fruit. Ian say's his main motivation for entering his tree statistics was "for the good of the industry and its' growers – it is important that we have this type of information". Ian said it was a relatively easy decision because he already had the data, which he uses for a number of reasons including productivity analysis, product traceability and spray diary requirements. Ian entered his statistics relatively early on and therefore the ability to benchmark his stats against industry was limited, however he looks forward to having access to good industry benchmarks in the future. Ian believes that if a high percentage of growers enter data, there will be good reason to continue updating his own statistics even if this requires some additional effort. Ian initially had trouble logging onto the site using an older version of Internet Explorer but this was problem was solved by using Google Chrome to access the site (up-to-date internet browsers such Google Chrome and Firefox can be downloaded for free if you encounter this problem).

Your industry needs you!

The success of the Tree Registry depends entirely on the voluntary participation of the industries growers. Ultimately all growers lose if they don't participate because grower levy funds are partially funding the entire project. Growers are busy people and often don't spend a lot of time in the office, but if every grower sets aside an hour or two (after harvest if necessary), the industry will be rewarded with a robust tree planting data base that has not been available before now. Better still, it can be easily updated from year to year with minimal investment of growers' time and industry funding.

Here to help

If you think you will have trouble entering tree statistics yourself, please contact your local project advisor or AgFirst who will be able to help. Refer to the list below for contact details.

VIC (Northern): Tony Filippi, ido@fgv.com.au, 0400 795 539
VIC (Southern): Jabbar Ali Khan, fido@fgv.com.au (03) 5825 3700
NSW: Anthony Spruce, aspruce@eem.com.au 0429 383 276
QLD: Stephen Tancred, stephen@orchardservices.com.au, 0407 762 888
WA: Susie Murphy-White, susiemurphywhite@gmail.com, 0429 413 420
SA: Susie Green, aplnpear@ozemail.com.au, 0417 451 999
TAS: Ian Cover, office@fruitgrowerstas.com.au, 0409 849 155
All States: Richard Pentreath, rpentreath@agfirst.co.nz, 0064 27 221 4835

The Industry Data Collection Project is funded by apple and pear growers through the apple and pear levy administered by Horticulture Innovation Australia (HIA). It is implemented by AgFirst with the support of APAL.