National Avocado Quality & Information Management System

John Tyas
Avocados Australia Limited (AAL)

Project Number: AV09001

AV09001

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the avocado industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of the avocado industry.

ISBN 0 7341 3087 2

Published and distributed by:
Horticulture Australia Ltd
Level 7
179 Elizabeth Street
Sydney NSW 2000
Telephone: (02) 8295 2300
Fax: (02) 8295 2399

HAL

Horticulture Australia

Avocados Australia

HAL Project

AV09001 (March 2013)

National Avocado Quality & Information Management System

Prepared by:

Julie Petty and Joanna Embry
Avocados Australia Limited
PO Box 8005
Woolloongabba QLD 4102
P: 07 3846 6566
F: 07 3846 6577
E: supplychain@avocado.org.au or j.embry@avocado.org.au

Project details

Project Name: National Avocado Quality & Information Management System

Project Number: AV09001

Date: March 2013

Project Purpose:

Expansion of the work completed through *AV06006 Scoping of a National Avocado Quality System and Management of Avocado Industry Information Systems.* This has included two key objectives:

- Ongoing coordination of the suite of supply chain projects that AV06006 managed or participated in. These and other projects have provided industry with valuable information relating to a range of issues including internal fruit quality, fruit maturity and supply chain education to improve handling. This information has enabled industry to identify and begin to rectify issues relating to fruit quality and irregular supply into the market. These factors strongly influence consumer demand and industry's ability to anticipate and meet that demand. Also through this project a quality management system was to be developed and implemented to help ensure industry could meet consumer's quality expectations.
- Ongoing management of Infocado, the avocado industry's crop forecasting system and OrchardInfo, a system which collects production and productivity information. These two systems provide the industry and individual businesses with accurate data to assist industry and business decision making. The data includes: long term production forecasts; short term crop forecasts and dispatch data; key planting statistics, and orchard productivity data. These systems require ongoing development, management and maintenance.

Project Leader: John Tyas
Avocados Australia Ltd
PO Box 8005, Woolloongabba QLD 4102
P: 07 3846 6566 F: 07 3846 6577
E: j.tyas@avocado.org.au

Team Members:

Joanna Embry
Avocados Australia Ltd
PO Box 8005, Woolloongabba QLD 4102
P: 07 3846 6566 F: 07 3846 6577
E: j.embry@avocado.org.au

Julie Petty
Avocados Australia Ltd
PO Box 8005, Woolloongabba QLD 4102
P: 07 3846 6566 F: 07 3846 6577
E: supplychain@avocado.org.au

This project has been funded by HAL using the avocado levy and matched funds from the Australian Government.

Table of Contents

1. Media Summary

This project was designed to expand on the work completed through *AV06006 Scoping of a National Avocado Quality System and Management of Avocado Industry Information Systems.* This included two key objectives:

- Ongoing coordination of the suite of supply chain projects that *AV06006* managed or participated in. These and other projects have provided industry with valuable information relating to a range of issues including internal fruit quality, fruit maturity and supply chain education to improve handling. This information has enabled industry to identify and begin to rectify issues relating to fruit quality and irregular supply into the market. These factors strongly influence consumer demand and industry's ability to anticipate and meet that demand. Also through this project a Quality Management System (QMS) was to be developed and implemented to help ensure industry could meet consumer's quality expectations.
- Ongoing management of Infocado, the avocado industry's crop forecasting system and OrchardInfo, a system which collects production and productivity information. These two systems provide the industry and individual businesses with accurate data to assist industry and business decision making. The data includes: long term production forecasts; short term crop forecasts and dispatch data; key planting statistics, and orchard productivity data. These systems require ongoing development, management and maintenance.

Throughout this project a number of activities have been undertaken:

- Ongoing staff involvement in the suite of supply chain projects established through *AV06006*.
- Collection of crop flow data from avocado wholesalers and packhouses
- Weekly, quarterly and annual crop flow reports for all contributors to the Infocado system
- Collection of planting and orchard productivity data from avocado growers
- Investigation of methods for the implementation of a QMS

The Australian avocado industry is currently experiencing an extremely large growth phase in production. Therefore, monitoring and communicating supply issues as well as ensuring a high quality product is delivered to consumers is paramount. In 2010/11 49,612 tonnes of avocados were produced, worth an estimated gross value of production (GVP) of $AUD207 million and $519 million at the retail level. Production for 2012/13 is forecast to be 59,686 tonnes of avocados.*

It is vital that these programs and tools be continued and improved into the future to help ensure sustainable growth for the avocado industry.

*Volume statistics taken from July 2011 and July 2012 Infocado quarterly report. GVP is based on actual volume of Australian avocados for 2010/11 multiplied by the average wholesale price including transport and marketing costs. Retail value based on average retail price of Hass across 2010/11.

2. Technical Summary

Two of the main issues which impact on the returns to avocado growers are related to fruit quality management and the efficiency of avocado production and marketing systems. Both of these issues were being addressed through this project.

To address the issue of fruit quality management, a suite of supply chain projects have been initiated. These and other projects have provided industry with valuable information relating to a range of issues including internal fruit quality, fruit maturity and supply chain education to improve handling. This information has enabled industry to identify and begin to rectify issues relating to fruit quality. These factors strongly influence consumer demand and industry's ability to anticipate and meet that demand.

Also through this project a Quality Management System (QMS) was to be implemented to help address fruit handling issues. Several plans were developed and industry feedback was sought. Through industry consultation it was determined that there is insufficient support from industry to warrant the implementation of a formal industry specific system involving accreditation or certification at this point in time. There is however strong support for education and training activities that assist businesses in the supply chain to improve quality. This will be the focus of the next phase of this program, should it be funded.

To improve the efficiency of avocado production and marketing systems, the Infocado and OrchardInfo systems were established. Infocado is the avocado industry's crop forecasting system and OrchardInfo is a system which collects production and productivity information. These two systems provide the industry and individual businesses with accurate production, sales and productivity data on which to make future research and development and marketing and promotion decisions. The data includes: long term production forecasts; short term crop forecasts and dispatch data, key planting statistics and orchard productivity data. Data from OrchardInfo was designed to be reported on an annual basis but unfortunately insufficient grower participation has meant that as yet this has not been achieved. To do so now would mean reporting incomplete and misleading information. Steps are in place to rectify this situation and encourage more grower participation.

Recommendations for future research and development include the development of a quality improvement and extension program (as opposed to a QMS). The program will be focused on education, training, identification of issues and continuous improvement. It will be focused on areas of the avocado supply chain which have a direct impact on fruit quality. The program will identify businesses who are committed to improving fruit quality through a continuous improvement system and will provide support mechanisms for supply chain members to identify where they can improve their systems and thus quality. Participating in this program will add value to the participants as they can promote that they have made this commitment and are participating in a continuous learning program. This will allow other members of the supply chain to make more informed decisions about sourcing and supplying fruit. The desired flow on affect is improvement of the overall quality of fruit being supplied into the market as systems are improved and businesses are recognised for their efforts.

The Infocado system will continue to collect, aggregate and publish industry crop flow data to enable industry to better understand and anticipate the needs of the market place. More simplified information will be collected through OrchardInfo which it is hoped, will help to increase grower participation.

With the Australian avocado industry currently experiencing an extremely large growth phase in production, monitoring and communicating supply issues as well as ensuring a high quality product is delivered to consumers is paramount. In 2010/11 49,612 tonnes of avocados were produced, worth an estimated gross value of production (GVP) of $AUD207 million and $519 million at the retail level. Production for 2012/13 is forecast to be 59,686 tonnes of avocados.*

It is vital that these programs and tools be continued and improved into the future to help ensure sustainable growth for the avocado industry.

*Volume statistics taken from July 2011 and July 2012 Infocado quarterly report. GVP is based on actual volume of Australian avocados for 2010/11 multiplied by the average wholesale price including transport and marketing costs. Retail value based on average retail price of Hass across 2010/11.

3. Introduction

It is recognised that a wide variety of factors affecting fruit quality, productivity and supply chain efficiency are interrelated.

In 2006 *AV06006 Scoping of a National Avocado Quality System and Management of Avocado Industry Information Systems* was developed to manage a Supply Chain Improvement Program aimed at specifically addressing fruit quality, supply chain efficiency and measuring productivity. Three distinct activities were developed to make up the overall program. They were:

- Management of Infocado (crop flow) and development of productivity data collection system
- Management of the Avocado Supply Chain Improvement Program, Phase 1
- Scoping study for a Quality Management System (QMS)

Over the life of this project the results from the three integrated components came together to create a clear path forward in terms of maintaining and further developing crop flow data systems from the orchard right through to the retail floor and in making clear improvements in the quality of fruit received by consumers.

Throughout *AV06006* and this project (*AV09001*) project officers were involved in multiple projects including:

- *AV07023: Avocado Retail Price Surveys* – funded the collection of retail price data on a weekly basis from 16 retail outlets in Perth, Sydney, Melbourne and Brisbane. These reports helped to fill industry information gaps about pricing.
- *AV08034: Avocado Retail Quality Surveys Phase 2* – facilitated the ongoing monitoring of internal fruit quality and maturity to assess if it is meeting consumer's expectations.
- *AV11015: Avocado industry fruit quality benchmarking* – a continuation of AV08034.
- *AV08017: Avocado Supply Chain Education Materials* – developed several educational materials to fill information gaps within the supply chain on how best to handle avocados.
- *AV10007: Infocado Summit October 2010 and Extension to Industry* – a conference event for all Infocado contributors.
- *AV10006: Avocado Supply Chain Education Materials Phase 2* – a continuation of AV08017.
- *AV10019: Reducing flesh bruising and skin spotting in Hass avocado* – a study of how and where within the supply chain bruising is most likely to occur.
- *AV10002: Avocado Information Delivery* – development of educational materials targeted at growers and disease and pest identification.
- *AV12007: Data Collection to Facilitate Supply Chain Transparency* – a continuation of AV07023.
- *AV12013: Implementing Improvements in the Avocado Supply Chain* – a continuation of AV10006.
- *AV11013: Review of Avocado Industry and Market Information Systems* - reviewed current industry and market information systems.

These and other projects have provided industry with information relating to:

- Critical points of quality at which consumer purchasing is affected.
- Where the industry currently sits in terms of quality and maturity and how this is tracking over time.

- Points in the supply chain where issues related to product quality arise and the development of strategies to address these issues.
- Education materials for each sector of the supply chain on how best to handle avocados.
- The identification of lessons from overseas and other industries for developing a quality standard, maintaining that standard and development of ongoing tools for monitoring quality.
- Weekly tracking of retail prices to facilitate supply chain transparency.
- Retailer training on avocado handling in four capital cities across Australia.

Through this project, a QMS plan was scoped and following industry consultation it has been determined that there is insufficient support from industry to warrant the implementation of such a system in the traditional sense of the term. There is not support for a formal industry specific system involving accreditation or certification at this point in time but there is strong support for education and training activities that assist businesses in the supply chain to improve quality.

Industry is supportive of the development of a quality improvement and extension program. The program will be focused on education, training, identification of issues and continuous improvement. It will be focused on areas of the avocado supply chain which have a direct impact on fruit quality. The program will identify businesses who are committed to improving fruit quality through a continuous improvement process.
Participating in this program will add value to the participants as they can promote that they have made this commitment and are participating in a continuous learning program. This will allow other members of the supply chain to make more informed decisions about sourcing and supplying fruit. The desired flow on affect is improvement of the overall quality of fruit being supplied into the market as systems are improved and businesses are recognised for their efforts.

To improve supply chain efficiency and collate productivity data, the Infocado and OrchardInfo systems were developed and maintained. The Infocado system has been very successful. It collects historical production and forecast data which assists in making overall industry strategic decisions. It also provides members of industry (specifically contributors to the system) with regular up to date reports to use in both their everyday marketing and their long term planning. To date, the system includes a weekly dispatch module, weekly forecast module, seasonal forecast module and wholesale module. Weekly Infocado reports have been supplemented with information from the wider supply chain improvement program including weekly retail prices (*AV07023/AV12007*) and monthly dry matter percentages (*AV08034/AV11015*).

The implementation of a productivity data collection system (OrchardInfo) was realised in the form of a system which runs parallel to Infocado and operates using the same underlying program. OrchardInfo is designed to collect productivity data and provide a productivity analysis at an enterprise, regional, State and whole of Industry level.

Through stakeholder consultation a series of recommendations have been made to improve the OrchardInfo system and thus grower uptake. These improvements are scheduled to be implemented within the next phase of this project, should it be funded. When published, reports from OrchardInfo will provide the necessary baseline information for long term crop modelling. Modelling to determine long term future crop areas, tree numbers and overall production is a natural progression for this system.

AV07023/AV12007 has linked closely with this project as it provided further clarity from the consumer end of the supply chain about the prices consumers are paying for fruit. These projects

combined enable industry to monitor returns and assess its ability to maintain a balance between supply and demand.

This program aligns with the Australian Avocado Industry Strategic Plan 2011-2016 strategies 1.1, 1.2 and 1.3:

- Strategy 1.1: Continuously improve the efficiency of avocado production and packhouse systems
- Strategy 1.2: To ensure that consumers can confidently purchase consistently high quality fresh avocados at retail level
- Strategy 1.3: Maintain supply/demand balance

4. Materials & Methods

a. Suite of supply chain projects

As mentioned previously, a wide variety of factors affecting fruit quality, productivity and supply chain efficiency are interrelated.

In 2006 project *AV06006 Scoping of a National Avocado Quality System and Management of Avocado Industry Information Systems* was developed to manage a Supply Chain Improvement Program aimed at specifically addressing fruit quality, supply chain efficiency and measuring productivity.

Over the life of *AV06006* and this project a number of projects were established to begin addressing the fruit quality, productivity and supply chain efficiency issues. Project officers have been involved in a number of these projects as shown below in Table 1.

Table 1: Suite of Supply Chain Projects

Project	**Purpose**	**Project Officers Involvement**
AV07023: Avocado Retail Price Surveys	Designed to help fill an information gap regarding retail price trends across a range of store types and what consumers are paying for fruit across the country.	Contracted eight people to undertake this work. Two people each in Perth, Sydney, Melbourne and Brisbane were contracted, one as the primary and one as a backup. Project Officers manage these people and ensure they are equipped to complete the work. Retail price data is collected on a weekly basis from 64 retail outlets across Perth, Sydney, Melbourne and Brisbane. The information is reported back to industry on a weekly basis. This is the only project of its kind where results are so quickly accessible by the target audience. This project has delivered up to date tracking of retail prices to facilitate supply chain transparency.
AV06026*:* Avocado Supply Chain mapping and Resource Audit	Highlighted numerous information gaps within the industry in terms of handling avocados.	Assisted in the desktop study.
AV08034: Avocado Retail Quality Surveys Phase 2	Monitored and tracked internal flesh quality and maturity over time against known consumer benchmarks.	Contracted four people to undertake internal quality monitoring, one each in Perth, Sydney, Melbourne and Brisbane. Arranged training for contractors and supplied equipment to facilitate the assessments. Contracted statistical analysis of results on a six monthly basis and communicated these results to industry. Contracted a third party to collect fruit from the Sydney Markets once a month for maturity monitoring. Contracted a third party to undertake the actual maturity testing. Published results to industry and individual growers. Through this project industry can track where it sits in terms of quality and how it is performing over time.
AV11015: Avocado industry fruit quality	A continuation of AV08034.	A continuation of AV08034 activities.

benchmarking		
AV08017: Avocado Supply Chain Education Materials	A response to the findings from AV06026. Developed educational materials to fill several information gaps within some parts of the supply chain.	Worked with researchers and industry experts to develop a colour and ripeness chart and handling guides for packers, wholesalers and retailers. A booklet was also developed to detail the story of the Australian avocado. Designers were contracted to complete these materials. Copies of all materials have been distributed to all relevant stakeholders.
AV10007: Infocado Summit October 2010 and Extension to Industry	Funded the third biennial Infocado Summit. Designed to discuss the Infocado system with system contributors to share information, ideas, common issues and plan for the future.	Assisted in the planning for and running of this event.
AV10006: Avocado Supply Chain Education Materials Phase 2	A continuation of AV08017 with a goal to adapt hard copy materials to an online format and establish a retailer training program.	Worked with researchers to develop an Avocado Grading Poster, Transport Guides and Harvesting Guides and distributed these to industry. Establishment of online, interactive tools for both employers and employees to use to promote best recommended practices. Established and managed an in store retailer training program.
AV10019: Reducing flesh bruising and skin spotting in Hass avocado	A study of how and where within the supply chain bruising is most likely to occur.	Assisted researchers by helping to communicate results to industry and providing skin spotting data collected through AV08034 and AV11015. Results from this project will inform the industry's training program with the sectors of the supply chain who will benefit most (ie those sectors contributing most to the bruising issue).
AV10002: Avocado Information Delivery	Development of educational materials targeted at growers including disease and pest identification.	Assisting in uploading these materials into the online system developed through AV10006 to make them as accessible as possible to industry. Arranging training for researchers so they can upload the materials. Assisting in the distribution of hard copy materials.
AV12007: Data Collection to Facilitate Supply Chain Transparency	Continuation of AV07023.	Same as AV07023.
AV12013: Implementing Improvements in the Avocado Supply Chain	A continuation of AV10006.	Continuing to upload hard copy education materials to an online forum. Continued management of the retailer training program established in AV10006.
AV12005: Evaluation of short video as a tool to communicate project outcomes in Avocados	Designed to communicate results from HAL funded projects to the designated target audience.	Assisted researchers in choosing a project to focus on for a video to communicate that project's results. Assisted throughout the production of the video. Assisting researchers to choose an additional two video topics.
AV11013: Review of Avocado Industry and Market Information Systems	Reviewed current industry and market information systems to assess usefulness and make recommendations for improvements.	Assisted researchers with study by providing examples of data currently collected for industry and how it is being used. Arranged an industry workshop to assess recommendations and get industry endorsement for recommended changes.

These and other projects have provided industry with information relating to:

- Critical points of quality at which consumer purchasing is affected
- Where the industry currently sits in terms of quality and how this is tracking over time
- Points in the supply chain where issues related to product quality arise and the development of strategies to address these issues
- Education materials for each section of the supply chain on how best to handle avocados
- The identification of lessons from overseas and other industries for developing a quality standard, maintaining that standard and developed ongoing tools for monitoring quality.
- Up to date tracking of retail prices to facilitate supply chain transparency
- Retailer training on how to handle avocados in four capital cities across Australia

b. Quality Management System (QMS)

Through this project a QMS based on accreditation/certification of members of different sectors of the supply chain was proposed. It was to be designed to guarantee that a minimum standard of quality (based on known consumer acceptances) is fulfilled.

Background research was conducted before the development of the accreditation/certification program. This included investigation of what other industries were doing, what systems exist already and what the avocado industry expected from such a plan.

i. Existing Industry Specific Systems

Several other industries have QMS or measured benchmarks in place, specific to their products. These included the Queensland table grape growers, the Australian and New Zealand wine industry, the Australian apple industry and the Australian beef and sheep meat industry. A brief overview of their programs is included below. These programs were all reviewed for possible adaption to the avocado industry.

Queensland Table Grape Industry

Queensland table grape growers were aware that they had serious fruit maturity issues at the beginning of each season and that this had a devastating impact on market throughput and prices. Research conducted in 2003-2004 showed that 90% of fruit in first week of Queensland harvest was inedible – it was too acidic and sour.

Stakeholders agreed on a vision for the category and growers and marketers established the GrapeConnect membership and charter. Members of the charter agreed to meet set quality benchmarks and in return were able to use the GrapeConnect branding on their produce as a point of difference and promise of a quality guarantee. This system was voluntary.

There were five core components of the program:

- Growers tested the sugar and acid levels of their fruit prior to and during their harvest
- In-region and in-market verification was undertaken
- Use of GrapeConnect Seal; brand promoted taste guarantee
- Public relations promoted accredited suppliers of GrapeConnect grapes to buyers
- 1300 feedback line measured 'end success'

The program ran from 2004 to 2007. During that time Woolworths and Coles had changed their specifications in line with the standard and implemented more thorough monitoring of sugar:acid

ratios at the start of the domestic harvest. All suppliers significantly improved their harvest management, regardless of GrapeConnect membership. To date GrapeConnect members still continue to voluntarily monitor their sugar:acid to manage their start of harvest.

Australian Apple Industry
An auditing procedure was developed for all packing companies supplying apples specifically branded for THE WIGGLES Applesnax to ensure the supplier was only packing fruit under this brand that met the brand's quality guidelines.

The audit report template and audit procedure are attached as Appendices 1 and 2 respectively. Auditing was carried out by Horticulture Australia (HAL) staff members.

Australian and New Zealand Wine Companies
GrapeLink is a system used by Australian and New Zealand wine companies to communicate with contracted growers and capture and report data supporting grape intake. GrapeLink functions are limited to what is critical for wine companies to manage intake and meet their customer requirements in relation to product and quality assurance.

Companies participating in GrapeLink use the ChemCheck system for all functions associated with chemicals and fertilisers. ChemCheck is an independent service designed to raise the level of verification in the correct and safe use of chemicals in agricultural produce. ChemCheck functions used in GrapeLink include but are not limited to:

- ChemCheck Spray Records - Growers record chemical and fertiliser application records for checking against label requirements and restrictions.
- Calibration Records - Most wine companies require growers to submit records of sprayer settings and calculations relating to calibration of spray rigs.
- Declarations - Wine companies may require growers to submit declarations that may cover key crop dates such as the date of the final spray before harvest or a summary of spray applications for the season.
- Maturity Data **-** Wine companies may transmit maturity data to GrapeLink for publication back to contracted growers. In some situations the wine companies request growers to submit maturity data to GrapeLink for downloading by the wine company.

More information on the GrapeLink system can be found here: http://grapelink.com.au/. More information on ChemCheck can be found here: http://www.chemcheck.com/.

Australian Beef and Sheep Meat
Meat Standards Australia (MSA) is a beef and sheep meat eating quality program designed to take the guesswork out of buying and cooking Australian red meat. MSA provides an endorsement of quality for graded cuts of red meat indicating product has met quality standards for tenderness, juiciness and flavour.

MSA involves all sectors of the supply chain from paddock to plate. A wide range of cattle and sheep management practices, processing systems, cuts, ageing periods and cooking methods have been researched to determine the impact each has on eating quality. Stakeholders that wish to use the MSA trademark must be licensed by Meat and Livestock Australia (MLA). More information on this program can be found on the MLA website: http://www.mla.com.au

Avocado Rapid Library Tray Systems
Library Tray Systems (LTS) are used in many fruit industries to provide a means of monitoring and improving overall fruit quality. Generally a sample of fruit is taken at an appropriate point in the

handling chain (most likely from the packing line) and held in the packhouse or a central location. Fruit quality of the sample is assessed on one or more occasions during storage and/or shelf life.

LTS could logically fill an important role within a QMS by establishing a uniform program for monitoring fruit quality at a certain point within the supply chain. Therefore LTS were investigated for implementation in the avocado QMS.

Two Horticulture Australia Ltd (HAL) projects have been completed to date focussing on avocado LTS. *AV08022: Avocado Quality Monitoring via Library Tray System* aimed at determining the potential for use of a LTS in the Australian industry. The LTS has been used by the New Zealand avocado industry for a number of years.

The *AV08022* final report made several conclusions relevant to the QMS:

- Instigation of a LTS has potential for improving quality of Australian fruit and an appropriate system should be considered by the Australian avocado industry.
- A LTS should exist not for its own sake, but to fulfil a clearly defined and useful role.
- One of the challenges for implementation of a LTS to the Australian industry is the very large distances between growing regions. This means that a single point of assessment is logistically difficult and costly. Therefore, greater attention to standardisation of systems will be even more important.
- Countries such as New Zealand and South Africa both have a strong export focus and legislative support of a range of systems. This makes implementation of a LTS significantly easier than a country like Australia where the vast majority of fruit are sold on the local market.

A second project *AV09028: Development of an avocado Rapid Library Tray System (RLTS) for Hass* aimed to develop a LTS for 'Hass' and 'Shepard' avocados that accurately reflected commercial reality.

LTS are most commonly used for export lines and involve long cold storage periods mimicking commercial reality. Since the Australian avocado industry is domestic market based and the cold chain is highly variable, a simple rapid ripening regime was developed to accurately reflect commercial out-turn fruit quality.

Standardization of the program is essential. If wide scale adoption is successful it would need to be managed on an industry wide basis. Over time, information gained from the RLTS could be used to identify the main causes of fruit deterioration in the industry and to direct future research and development investments.

Unfortunately to date only one packhouse is using a RLTS on a commercial scale. While their feedback on the system has been very positive, for this to have a real impact for the industry more wide spread adoption is vital.

There are a number of reasons why more widespread adoption has not already taken place. Examples include a lack of access to ripening rooms to hold the samples in, long distances preventing a central storage and testing venue being established, cost, a lack of time and in some instances an attitude of not wanting to know what the issues were.

New Zealand Avocado Industry

The New Zealand avocado industry has had a LTS in place since 2000/2001 following a series of quality issues with fruit exported to the United States of America. The LTS was made compulsory for all packhouses wishing to export fruit from 2003/2004 onwards.

The LTS was standardised to reduce anomalies and 90% of all testing is carried out by one agency. The LTS is designed to identify which growers and packers need to improve their practices and assistance is then provided. Currently approximately 50,000 pieces of fruit are sampled each year.

Quality monitoring has been conducted at a packhouse level and at arrival at Australian wholesalers. For this process to work buy in was needed from exports and wholesalers. The advantage of monitoring quality at these two stages is to identify if the quality issues being incurred are either:

- Inherent – perhaps caused through orchard management OR
- Supply chain related – caused after the fruit left the packing shed through how it was handled in the supply chain

Simply by identifying if the quality issues are likely to be inherent or supply chain related, the supply chain members can then take further action to investigate the situation and make improvements. This system provides the evidence to support further investigation.

ii. Generic Systems

Further to the above industry specific systems, other programs such as the Safe Quality Food Institute's (SQF) Code and Freshcare were investigated to assess whether the avocado industry's accreditation program could simply be 'tacked onto' one of these systems and thus their auditing programs. The advantage of this would be a cost saving as audits could be combined with existing auditing for the SQF or Freshcare programs, and not completed as standalone assessments.

Both the SQF and Freshcare manuals briefly mention food quality but obviously don't specifically focus on any one issue or fruit. Therefore many of the activities Avocados Australia may want to include in an avocado specific system would be an addition to the existing auditing process.

SQF

SQF is the Hazard Analysis Critical Control Point (HACCP) based Supplier Assurance Code for the food industry. If the avocado industry were to opt for a QMS based more on 'certification' then staff at HACCP were confident that the industry's assessments could be added onto existing SQF audits. The issue is of course that not all industry stakeholders use the SQF system so partnerships would need to be forged with other SQF equivalent programs to ensure all parties who wanted to participate in the avocado system could be captured as efficiently as possible.

More information about SQF can be found here: http://www.sqfi.com/. More information about HACCP can be found here: http://www.haccp.com.au/.

Freshcare

Freshcare is an industry owned, not-for-profit on farm assurance program, established and maintained to service the Australian fresh produce industry. Freshcare is currently the largest Australian on-farm assurance program for fresh produce. It provides on-farm food safety, quality and environmental certification services to over 5000 growers nationally. More information about Freshcare can be found here: http://www.freshcare.com.au/

iii. An avocado System

As stated earlier, through this project an accreditation/certification system for members of different sectors of the supply chain was proposed. It was to be designed to guarantee that a minimum standard of quality (based on known consumer acceptances) is fulfilled.

Members of the wholesaling sector had already expressed interest in participating in an independent avocado system which they saw as being a point of difference for their business, something which would set them apart as a key avocado handler. Given this enthusiasm it was decided that a wholesale accreditation/certification system would be rolled out first with a packhouse and grower system to follow. The objectives of the wholesaler accreditation/certification initially were to:

- Acknowledge and reward those wholesalers who follow best management practices to ensure a high quality product reaches the consumer.
- Provide avocado suppliers with an independent assessment of wholesalers so that they can make an informed decision regarding where and through whom to sell their fruit
- Provided avocado retailers with an independent assessment of wholesalers so that they can make an informed decision regarding where and through whom to buy their fruit
- Provide an incentive to wholesalers to improve their practices in order to gain accreditation/certification which in turn will mean more fruit of high quality reaching the consumer.

Surveys were distributed to wholesalers, packhouses and retailers to ask what they consider to be the most important qualities or processes a wholesaler should have in place. A summary of the wholesaler feedback is listed below:

- Need to be dedicated avocado wholesalers who stock fruit all year round
- Must have appropriate facilities and skills to ripen and store avocados
- Must have systems in place to ensure the cool chain is not broken
- Need to have systems in place to maintain quality
- Important for the wholesaler to handle a large volume of fruit – shows commitment to the industry
- Need to have maturity testing in place already or willing to put it in place
- Need to be a preferred supplier of Coles or Woolworths

A summary of feedback from packhouses is listed below:

- A wholesaler must provide prompt payment at the agreed price
- Need to have a formal and prompt notification system of any variation to the agreed prices
- Need to provide urgent communication and reporting of quality downgrades with supporting evidence
- The wholesaler should have an excellent credit rating
- Must have accurate pricing for each line item with no averaging
- The wholesaler must provide payment within the agreed terms and have accurate and timely remittance advice documentation
- Must have adequate cold room storage and ripening facilities
- Location of market stand is important
- Essential to have access to technology such as emails and internet banking
- Need to have effective procedures in place for receipt of product to safeguard against disputes with delivery quantities

Feedback from retailers included the below points:

- The wholesaler must have good quality fruit all year

- The wholesaler must supply avocados 12 months of the year
- Need to have fair prices and/or be competitive
- Good customer service is very important
- Fruit size is important and the wholesaler needs to stock the sizes preferred
- It is essential to stock a mix of ripeness levels and particularly to have access to ripe fruit
- Need to have good product knowledge, handling practices and knowledge of industry
- Need to stock range of varieties when they are available

After industry consultation two separate QMS plans were created for industry consideration.

Implementing a Quality Monitoring System Plan A - Wholesaler Certification

This system focused solely on the wholesaling sector. The purpose of this certification program was to identify and reward those wholesalers who are following industry best recommended practices and thus working to ensure the highest quality avocados are distributed to retailers and consumers. The expected benefit for participants in this program was increased demand for their fruit by customers. Increased demand would lead to increased volume of sales and more rapid turnover. This, in turn, leads to better quality fruit on offer which further enhances the wholesaler's reputation with customers.

The most important factors affecting quality were short listed and assigned points, with the most important issues given the most points. These factors and points were determined based on consultation with industry personnel and experts in the field as well as what processes realistically could be measured in an audit environment. During the audit process the wholesaler would be assigned points based on their performance against the best recommended practices listed. These points would then be totalled and the wholesaler assigned a rating level between one to three stars, three being the highest rating.

The star ratings could then be used in the wholesaler's marketing to communicate that they were participating in the industry's certification system and following best recommended practices. It was intended that this would be a point of difference for those wholesalers and fruit sold through them would be in higher demand due to the assurance that they were following best recommended practices. A full breakdown of this plan can be seen at Appendix 3 and includes information on:

- Accreditation criteria
- Auditing process
- Indicative costs
- How the program results will be communicated

Participation in the program would be voluntary and it was designed to be self-funding.

The draft plan was distributed to wholesalers and packhouses for feedback. Feedback on the plan was mixed and a summary of comments received is listed below:

- Applaud this initiative and very willing to participate.
- Good wholesalers are keen to benefit from an independent appraisal.
- The term 'ripening facilities' needs specific definition. The use of ethylene, management of CO_2, ripening capacity and demonstrable control over the ripening process when facilities are not owned by the wholesaler are all important.
- Deliveries should not be to the market stand. This fruit can remain unattended for hours depending on unloaders. The fruit should be delivered directly into the ripening facility to protect cool chain.

- At the moment the unloaders unload the fruit from the trucks and it can be several hours before it arrives at the wholesaler's site. This delay doesn't matter in winter as the core temperature doesn't change and in summer wholesalers just make allowances in their handling practices for the time delay and temperature of the fruit. The fruit heating up actually aids ripening so it's not an issue if it sits outside for a while.
- The fruit receivables time frame of 30 minutes is not long enough, particularly if large loads are received.
- The auditor needs to have some knowledge of the ripening process and avocados in particular.
- Wholesalers have no control over dry matter levels – this is purely the grower's job. If very immature fruit is supplied then the wholesaler may choose not to buy fruit from that grower anymore but the grower just moves onto a different wholesaler anyway.
- As a wholesaler we don't do any dry matter testing. We test maturity by cutting the fruit open and if the seed coat is brown then it's mature enough to ripen.
- Ripening of fruit is an evolving process that involves many judgment calls to take into account issues such as the season, the district, the grower and fruit maturity. Because of this, auditing ripening procedures will be difficult.
- As a wholesaler our ripening process is our competitive advantage. Grower sells through us because of our ripening experience. Our record keeping regarding the ripening process is not detailed but it doesn't mean we're not doing a good job.
- Contributing to Infocado has been allocated too many points.
- Not enough points are allocated for having established fruit specifications.
- Not enough focus on the cool chain. Wholesalers need to be making sure their grower and packer suppliers are precooling fruit correctly.
- The fruit age limit should be reduced.
- The fruit age limit should be increased.
- Fruit age is not solely the responsibility of the wholesaler. Packers can sometimes leave fruit sitting in their cool rooms for ages and this adds to the issue.
- When a wholesaler acts a merchant after they supply a price to the grower, the fruit is then owned by the wholesaler and they assume all risk. Given that the wholesaler owns the fruit, how can the industry tell them what to do with it and how to run their business?
- I am concerned participating in this system will infringe on my IP.
- All wholesalers operate differently. Some markets seem to hold onto fruit longer than other markets; sometimes the fruit can be between four to six weeks old. A wholesaler in that market may market fruit as 'sprung' that a wholesaler in a different market would consider ripe and ready to eat today.
- Regulating the market's price through controlling supply is one of the key responsibilities of the wholesaler. There needs to be a balance between fruit age, quality and quantity. A third party interfering with this balance will not work.
- As a wholesaler I feel I have nothing to gain from this accreditation/certification. The only people who do are ones who are just starting out in avocados and feel external validation will help kick start their business.
- I am a wholesaler not the industry police man. My business will suffer. I can't tell a grower I can't handle their fruit because it's too old or too immature. That grower will take his business elsewhere.

Implementing an Avocado Quality Management System – Plan B

Following the receival of the above feedback and further investigation of some of the issues surrounding trying to audit a wholesaler's ripening processes, a second plan was developed. Plan B was more based on a system of education rather than certification/accreditation.

Consumer research has established that consumers will only accept fruit with less than 10% internal flesh defects and it must be mature. This plan was designed to help industry to meet these goals through working closely, predominantly with packhouses and wholesalers, to promote best recommended practices and monitor quality over time.

Through this system fruit sampling at two stages was recommended – at packhouse level through a RLTS and at wholesaler level through a simple quality test. The advantage of monitoring quality at these two stages would be the same as the New Zealand system; to help identify if the quality issues being incurred are either:

- Inherent – perhaps caused through orchard management OR
- Supply chain related – caused after the fruit left the packing shed through how it was handled in the supply chain

Simply by identifying if the quality issues are likely to be inherent or supply chain related, the supply chain members can then take further action to investigate the situation and make improvements. This system would provide the evidence to support further investigation.

The system would have a two staged approach. It's important firstly to have given all the parties the opportunity to improve their practices by providing the knowledge and incentive to change. This would be achieved through a series of training sessions in the different growing regions and capital cities. The main focus of the training for packers would be how to establish a RLTS and the advantages of doing so. Other topics including how to use Infocado more effectively within their businesses, marketing training and interpreting reports would be added benefits to attract packers to the sessions.

For wholesalers the main focus would be to demonstrate:

- How having a quality monitoring and grower feedback system in place could help their business and the industry
- How to improve their ripening practices and the advantages that will give them

The second stage of this strategy is assisting the interested parties to implement the new practices they have learnt. For packers this would involve providing ongoing support in the form of supplying materials to assist in the RLTS management and investigating new technology and systems to help with this process.

For wholesalers this would take the form of a quality monitoring and the establishment of a supplier feedback system. The system would be based on the wholesaler having agreed to participate in the quality monitoring program and putting in place a real time feedback arrangement for suppliers. Elements of the packhouse RLTS would be adopted to monitor quality. The fruit would need to be independently sampled and stored. Dry Matter would also be monitored.

The goal of this feedback system would be to provide real time fruit quality feedback to suppliers to assist them in addressing issues for future consignments. Fruit quality over time, should improve.

The full plan can be seen at Appendix 4.

Both of these options were circulated to wholesalers and packhouses for their feedback. In October 2012 a workshop was held with selected stakeholders to review Plan A and Plan B in more detail. Feedback was also sought on the wider plan of having accreditation/certification for the packhouse and retail sectors of the supply chain. Feedback was as follows:

- There was agreement from all parties that they do not want a system that adds more paperwork and bureaucracy to their businesses. The system must add value.
- Growers/Packers views
    - Do not want an accreditation/certification
    - Want mechanism for continuous feedback with concentration on education
    - The focus should be: delivering better quality fruit to customers
    - Invite participation on a fee for service basis as if the service is given away it may not be valued
    - Industry acknowledgement of participation and commitment
    - Quality must be monitored
- Wholesalers views
    - Some wholesalers would like acknowledgement of their good practices at an industry level through accreditation/certification
    - Most wholesalers preferred an education/continuous learning module which could lead to accreditation/certification in the future
    - There were concerns that it is difficult to measure wholesalers on a level playing field because of the differences in experience and access to infrastructure

Quality Improvement and Extension Program
The workshop feedback was taken into account and a plan for a Quality Improvement and Extension Program was developed.

The program will focus on education, training, identification of issues and continuous improvement. It will focus on areas of the avocado supply chain which have a direct impact on fruit quality. It will identify businesses that are committed to improving fruit quality through a continuous improvement process. Participating in this program will add value to the participants as they can promote that they have made this commitment. The system will provide support mechanisms for supply chain members to identify where they can improve their systems and thus quality. This will allow other members of the supply chain to make more informed decisions about supplying and sourcing fruit. The desired flow on affect will be improvement of the overall quality of fruit being supplied into the market as systems are improved and businesses are recognised for their efforts.

Avocado businesses will sign up to this system knowing that this requires real commitment to continual improvement. Four separate supply chain sectors will be targeted:

- Wholesalers/ripeners
- Packers
- Growers
- Transporters

A mechanism will be established to recognise participants in the program. Avocados Australia will collaborate with Queensland DAFF to draw on their expertise in supply chain improvement when developing and delivering this program. Industry experts from other organisations will also be identified and engaged where needed as part of an Expert Panel. Experts will be selected based on a range of factors including experience (and field of experience), availability and rapport within industry, to name a few.

This program will focus heavily on training and skill development. Common training needs and information gaps will be identified and actioned. This might include arranging a training workshop in a growing region on a particular subject.

A system for reporting quality issues will be established. The goal of this system is to over time establish a comprehensive database of quality issues for each growing region at certain times of the year. This would allow program administrators to identify common problems and take steps to address them through training, regional workshops or one on one phone support.

Capacity from the retail price (*AV12007*), quality assessors (*AV11015*) and the retail trainers (*AV12013*) will be incorporated. They will be able to take photos of poor quality avocados spotted in retail stores and make a note of the sticker on the fruit (if there is one), type of issue and any comments from the retailer.

This program is proposed to be funded and rolled out through the next phase of this project, *AV12012: Coordination of Data Management and Avocado Quality Improvement and Extension Program*. For more information please refer to the HAL application.

c. Data collection and reporting

i. Infocado

Infocado was already well established when this program began but ongoing management and maintenance has been required. There are currently four modules in Infocado – the seasonal forecasts, the weekly forecasts, the dispatch and the wholesale modules. Ongoing maintenance has entailed to following:

- Detailed user instructions have been developed and distributed to contributors.
- A weekly reminder email has been sent to all those packhouses and wholesalers who should be contributing data for that particular week (based on the time of the year) on the last day of the Infocado week (Friday).
- Every week, follow up phone calls have been made to those packhouses/wholesalers that had not entered their weekly data into the system as of 11am Monday.
- Every week, once all the data has been entered by those packhouses and wholesalers who have fruit that week, an activity report has been generated to compare each packhouse's dispatch data against what they had forecast. If there is a large discrepancy that packhouse is contacted to determine whether there is an error or whether there was a reason for the discrepancy. This reason can then been reported in the weekly report if necessary. An example copy of the dispatch form and the four weekly forecast form can be seen at Appendices 5 and 6.
- On a weekly basis a report is published to all contributors showing the aggregated dispatch for the week just gone and forecast data for the coming four weeks. Wholesale data is also included in this report.
- A guide on how businesses can use the weekly report and what each of the graphs and tables mean has also been developed. This is available to download from the Avocados Australia website: http://industry.avocado.org.au/Growers/Infocado.aspx
- Annual reviews of each region have been conducted to check whether there were new packhouses in the region who need to be included in the system. If so, then the following process is undertaken:
    - Introduction phone call to potential participants to provide information about Infocado and encourage their participation where eligible – ideally just prior to commencement of their season.
    - Follow up email to businesses to provide additional information, including a more detailed overview of Infocado, instructions, and passwords for accessing the system
    - Introduction phone call to administration contact (if different person from manager)

    - Follow up phone call/email to manager or administration contact after first few weeks entering data to address any issues of concern
- At the start of each grower region's season follow up phone calls have been made to all those packhouses who have been existing contributors to the weekly reports. This is to ensure they are set up and ready to start contributing again.
- Follow up calls were also made to packhouses who were already contributing to the weekly system to provide them with the information they needed to start entering their seasonal forecast data.
- Seasonal forecast forms are emailed to all packhouses on a monthly basis for review. An example of the seasonal forecast form can be seen at Appendix 7.
- In the lead up to each quarterly report being published all packhouses are contacted to ensure they have reviewed and resubmitted their forecast for the season.
- Articles have been included in all editions of Talking Avocados (the avocado industry quarterly magazine) during the life of the project.
- Old Infocado reports have been uploaded to the Avocados Australia website after a suitable time lapse to retain the value contributor's gain from submitting their data. They can be viewed here: http://industry.avocado.org.au/Growers/Infocado.aspx

Regular communication and reporting is required to ensure that the system maintains its relevance to contributors and therefore the level of contribution to the system remains high. Consequently, a number of tools and reports have been developed which need to be maintained and adjusted as needed.

- Weekly, quarterly and individual annual reports have been produced throughout this project and sent to all contributors.
    - The Weekly Report includes the weekly retail prices collected as a part of *AV12007* and once a month the dry matter report is also included (collected as a part of *AV11015*). An example of this report has been included as Appendix 8.
    - The Quarterly Report is produced and emailed to contributors by the middle of January, April, July and October each year. An example of this report has been included as Appendix 9. As of the beginning of 2013 Avocado Australia has had the capacity to publish these reports more frequently.
    - The individual annual reports have been produced for each individual packhouse at the conclusion of their season and are posted to that enterprise. An example of this report has been included as Appendix 10.

An ongoing process of feedback collection from the contributors has been developed to further expand the system to include information deemed important by contributors. Contributors have been encouraged to contact Avocados Australia with any ideas they have for changes or expansions of the system. These ideas are then communicated to the rest of the Infocado contributors to determine whether or not they should be implemented. Based on this feedback and the feasibility of the idea, changes may or may not then be made.

ii. OrchardInfo

The OrchardInfo program also needed ongoing management. This included the following activities:

- Orchard Profile forms have been sent annually to all growers. A staggered approach was taken with each region's forms being sent shortly after their season finished. An example of the form along with instructions for completing it is included as Appendix 11.
- Forms were both emailed and posted to growers to encourage higher return rates
- Where possible growers were visited in person to go through and complete the forms

- Growers were given approximately 6 weeks to complete and return their forms. Those that had not been returned were contacted after that six week period was finished. Table 2 illustrates the approximate timing for each region.

Table 2: OrchardInfo Timings

Growing Region	**Forms Sent**	**Forms Due Back**	**Follow Up**
North Queensland	August	September	October
Central Queensland	October	November	December
Sunshine Coast	December	January	February
South Queensland	March	April	May
Tamborine/Northern Rivers	December	January	February
Central NSW	March	April	May
Tristate	March	April	May
Western Australia	April	May	June

- Reports were designed to send to contributors detailing tree numbers and productivity by region, state and total Industry.
- Reports were to be communicated to all contributors via email and post as sufficient data became available for their region.

In order to make the system more flexible, changes were made to the software to include the functionality to group trees by age. This is important in the reporting of the data as trees under six years old are not necessarily at full production. Given this distinction, it is important to note the percentage of trees over six years old when comparing tree numbers with tonnes produced.

Tree ages and groups will be broken up using the following references: 0Yr, 1Yr, 2Yr, 3Yr, 4Yr, 5Yr, 6Yr, 7Yr, 8Yr, 9Yr & 10+Yr.

In the software, menu options under “Orchard Reports” have been changed to:

- View Orchard Report by Grower (Season Range)
- View Orchard Report by Region (Season Range)
- View Orchard Report by State (Season Range)
- View Orchard Report by Total Industry (Season Range)

Several new selections are also available:

- View Tree Age Orchard Report by Grower
- View Tree Age Orchard Report by Region
- View Tree Age Orchard Report by State
- View Tree Age Orchard Report by Total Industry

This allows information to be quickly and easily collated by year planted or by tree age. An example of the data entered for one variety in one region between 2005 and 2010 is shown in the following tables.

Table 3: Example of OrchardInfo data for one region and one variety for 2005 and 2006

	2005					2006				
Year Planted	Number of trees	Hectares	Trees per Hectare	Marketable Yield	Yield per Hectare (Tonnes)	Number of trees	Hectares	Trees per Hectare	Marketable Yield	Yield per Hectare (Tonnes)
1986						41	0.2	205	2.4	12
1987										
2000	88	0.43	205	10	23.26	88	0.43	205		
2005	860	1.45	593			860	1.45	593		
2006						1,400	7	200		
Total	**948**	**1.88**	**504**	**10**	**5.32**	**2,389**	**9.08**	**263**	**2.4**	**0.26**

Table 4: Example of OrchardInfo data for one region and one variety for 2007 and 2008

	2007					2008				
Year Planted	Number of trees	Hectares	Trees per Hectare	Marketable Yield	Yield per Hectare (Tonnes)	Number of trees	Hectares	Trees per Hectare	Marketable Yield	Yield per Hectare (Tonnes)
1986	41	0.2	205	2.4	12	41	0.2	205		
1987	40	0.2	200	0.4	2	40	0.2	200	0.5	2.5
2000	88	0.43	205			88	0.43	205		
2005	5,372	10.51	511			5,372	10.51	511		
2006	1,400	7	200			1,400	7	200		
2007	50	0.05	1,000			50	0.05	1,000		
Total	**6,991**	**18.39**	**380**	**2.8**	**0.15**	**6,991**	**18.39**	**380**	**0.5**	**0.03**

Table 5: Example of OrchardInfo data for one region and one variety for 2009 and 2010

	2009					2010				
Year Planted	Number of trees	Hectares	Trees per Hectare	Marketable Yield	Yield per Hectare (Tonnes)	Number of trees	Hectares	Trees per Hectare	Marketable Yield	Yield per Hectare (Tonnes)
1986	41	0.2	205			60	0.21	286	0.5	2.38
1987	40	0.2	200	1	5	40	0.2	200	0.2	1
2000	88	0.43	205			88	0.43	205	4.3	10
2005	4,663	9.36	498	1	0.11	4,671	9.4	497	6.5	0.69
2006	1,400	7	200	8	1.14	1,400	7	200		
2007	50	0.05	1,000			50	0.05	1,000	0.1	2
2009	231	0.41	563							
Total	**6,513**	**17.65**	**369**	**10**	**0.59**	**6,309**	**17.29**	**365**	**11.6**	**1.13**

Unfortunately throughout this project grower uptake and contributions to the system have been low. Without higher contribution levels the aggregated data is incomplete and reports are highly misleading. Plans are in place to rectify this issue through *AV12012*, should it be funded. More information is included in the below section.

iii. AV11013: Review of Avocado Industry and Market Information Systems

OrchardInfo and Infocado were reviewed as a part of *AV11013: Review of Avocado Industry and Market Information Systems.* This project was undertaken with the objective of:

Reviewing current industry and market information systems, to understand how information is used; identify the benefits different information provides to growers and the broader avocado industry, and to develop recommendations on how various data sets can be better managed to provide more valuable information about supply/demand relationships in the Australian avocado market.

Overall, the review concluded that the available industry data is being used as it was intended and all segments of the supply chain place value in the current reports provided, albeit with some qualifications around accuracy of the Infocado data.

It was recommended that the Australian avocado industry should continue to invest in all current data sources and there should be greater project resourcing to allow the time required to focus on improving accuracy and verifying data so the confidence is restored in Infocado reports. Additionally there should be investment in educating growers and packers in how to analyse industry information to maximise business development opportunities.

Other recommendations are centred on improving reporting, communications and risk management. These recommendations are detailed below. This was an independent review undertaken by Jenny Margetts of p2p business solutions Pty Ltd.

These recommendations were reviewed at the same October 2012 workshop where the QMS was reviewed. In relation to Infocado, the following recommendations from AV11013 were validated by industry. Some items have already been actioned and others are scheduled to be implemented/continued through *AV12012* should it be funded:

Improve accuracy of Infocado data:

- Identify and seek to gain greater participation by those that are eligible to provide data (growers, packers and wholesalers)
    - This is ongoing
- Encourage and assist eligible participants to provide more accurate data
    - This is ongoing
- Develop crop forecasting methodologies: guidelines and processes should be developed to assist growers and packers in developing crop forecasting figures taking account of fruit numbers and size (count) throughout the season.
    - This item is scheduled to be undertaken through *AV12012*.
- Continue to monitor data coming into the system (i.e. crop forecasts vs dispatches; wholesale data) and address issues as they are identified.
    - This is ongoing.
- Develop Regional Reference Groups, made up of local growers, packers and knowledgeable independent consultants/extension officers to inform the reporting process.
    - These reference groups were established in 2012 and their advice was used in the development of the January 2013 Quarterly Report.
- Strengthen the 'Comments' section of Infocado Weekly Report by providing informed comment from the wholesaling sector and directing users to other complementary reports available through the Avocados Australia website.
    - This is ongoing.
- If greater contribution cannot be achieved from the wholesaling sector consider withdrawing this information from the Infocado Weekly Report and limit the reports distribution.
    - This is scheduled to be reviewed as a part of *AV12012*.

Verify Infocado data

- Seek to verify Infocado data. In particular consider investment in remote sensing technology (satellite mapping) to validate plantings and potentially yield forecasting. This will assist in generating more accurate data for inclusion in OrchardInfo.
    - This item is scheduled to be undertaken through *AV12012*.
- Provide qualifications to users around the accuracy of data i.e. provide an assessment of the representation based on data from other (verification) sources and include appropriate comments in the Infocado Reports to highlight discrepancies in reported data
    - This item is scheduled to be undertaken through *AV12012*.
- Continue to explain difference between data in the Infocado Weekly and Quarterly Reports.
    - This is ongoing.

Improve reporting

- Introduce minor format improvements and changes to improve clarity and to acknowledge discrepancies in the data
    - This is ongoing.
- With regard to crop forecasting, when there are known changes in regional crop performance which may have an impact on supply chain performance then interim (monthly) reports should be released e.g. instead of releasing Infocado Quarterly Reports in January, April, July and October only, it may be required to release interim reports in other months also.
    - This functionality has been established.
- Continue to focus on developing OrchardInfo as this will provide important information to support longer term strategic planning at a business and industry level
    - This is ongoing. The recommendation from the October 2012 workshop was to simplify the data being collected to make it easier for growers to contribute. These changes are scheduled to be incorporated into *AV12012*.
- Consider investing in weekly wholesale price reports as an incentive to encourage growers to provide data for OrchardInfo.
    - This is being investigated through *AV12012*.
- Publish the quarterly export/import report on the Avocados Australia website (under log-in)
    - This is ongoing and old reports have been uploaded already.
- Seek to introduce a Brisbane Price Index and evaluate for usefulness
    - This is being investigated through *AV12012*.
- Consider introduction of a fee-for-service offering around customised reporting to support businesses.
    - This is being investigated through *AV12012*.

Communication and grower education

- Develop and resource a comprehensive communication program, building on the existing program, to support industry's objectives around data collection and industry development
    - This is ongoing.
- Encourage and educate users in how historical data could be used to inform business development processes
    - This is ongoing. An article was published in the Spring 2012 edition in Talking Avocados (the industry's quarterly magazine).
- Develop a more comprehensive marketing education program for the industry
    - This is ongoing and is not solely the responsibility of this project or *AV12012* to deliver.
- Continue to hold Infocado Summits, where possible, every two years.

- This will be reviewed in *AV12012* pending advice from the Avocados Australia Board and the Avocado Industry Advisory Committee (IAC)

Risk Management – Infocado system

- Mitigate risk associated with Infocado system management by developing a comprehensive process manual and ensuring sufficient staff have a full working knowledge of Infocado and other industry information systems and processes.
  - This is ongoing.

In relation to OrchardInfo, the following recommendations from *AV11013* were discussed and validated by industry for implementation:

- There should be greater project resourcing to allow investment in the time and tools required to improve data accuracy, verify data, and educate users
  - This is scheduled to be investigated in *AV12012*.
- Seek to verify data. In particular consider investment in remote sensing technology to validate plantings and potentially yield forecasting.
  - This is scheduled to be investigated in *AV12012*.
- Continue to focus on developing OrchardInfo as this will provide important information to support longer term strategic planning at a business and industry level.
  - This is ongoing.

Several further recommendations came from the October 2012 workshop:

- Simplify OrchardInfo: reduce the level of detail collected to number of trees, number of hectares, variety and age of trees. This will make contributing easier for growers.
  - This is scheduled to be investigated in *AV12012*.
- To get productivity information, to use a sub sample of growers for each growing region and do an annual productivity check.
  - This is scheduled to be investigated in *AV12012*.
- Investigate providing incentives for contributing data.
  - This is scheduled to be investigated in *AV12012*.
- Investigate verifying data using different technologies. A small scoping study should be completed looking at the technologies available to monitor tree plantings such as satellite imagery and the use of aerial drones. GoogleEarth should also be investigated for use.
  - This is scheduled to be investigated in *AV12012*.
- Compare avocado system with what other industries are doing.
  - This is scheduled to be investigated in *AV12012*.

AV11013 also recommended that established and proven grower and packhouse forecasting practices and techniques be documented. Accurate long and short term forecasting has been an ongoing issue for many growers and packhouses and this lack of clarity greatly impacts on the reliability of data being entered into the Infocado system, particularly for longer term forecasts. By improving the accuracy of forecasts being entered into the system the industry will be able to more accurately predict levy income and thus levy investment. This activity has been indorsed by industry at the October 2012 workshop and is proposed to be implemented in *AV12012*. This process will include:

- Desktop study of *AV01013: Developing crop estimates for the avocado industry* which undertook a review of crop forecasting systems used by other industries and other avocado producing countries.

- Identifying through past Infocado data which packhouses have been consistent, accurate forecasters and liaising with large packhouses to determine which growers of theirs are accurate forecasters.
- In consultation with industry experts, consult with up to two of those packers or growers in each region about their methodology and practices and how they have overcome common forecasting issues. This will involve travel to each of the regional growing areas in the first full year of the project to learn and document more about the forecasting processes different businesses use.
- From this documentation and scoping study an independent project may be developed for the 2014/15 year to trial the different forecasting methodologies to determine how effective they are in each of the growing regions and then communicate those results to wider industry.

5. Results

a. Suite of supply chain projects

As mentioned previously, a wide variety of factors affecting fruit quality, productivity and supply chain efficiency are interrelated.

Over the life of *AV06006 Scoping of a National Avocado Quality System and Management of Avocado Industry Information Systems* and AV09001, a number of projects were established to begin addressing the fruit quality, productivity and supply chain efficiency issues. Project officers have been involved in a number of these projects and they are listed in the method section, along with details of how the project officers have been involved.

These and other projects have provided industry with information relating to:

- Critical points of quality at which consumer purchasing is affected
- Points in the supply chain where issues related to product quality arise and the development of strategies to address these issues
- The identification of lessons from overseas and other industries for developing a quality standard, maintaining that standard and developed ongoing tools for monitoring quality.
- This project has delivered up to date tracking of retail prices to facilitate supply chain transparency.
- Established a retailer training program.
- Development of a range of education materials for each sector of the supply chain with recommendations for improved handling practices.
- Development of a comprehensive online database of best recommended practice materials with training modules for staff and employers.

Without the project officer's ongoing involvement in these programs they would not be so well linked and integrated. For example internal quality assessments and analysis of this data has informed industry about what its biggest issues are in terms of internal quality. This has then spawned research projects to understand these issues better and create solutions for them. One example is *AV10019: Reducing flesh bruising and skin spotting in Hass avocado* which is studying bruising and skin spotting.

b. Quality Management System (QMS)

The key result from this project has been the development of a Quality Improvement and Extension Program and the abandonment of a QMS in the traditional sense of the term. Throughout this project several accreditation plans were researched and developed. However through industry consultation it has been determined that there is insufficient support from industry to warrant the implementation of a formal industry specific system involving accreditation or certification at this point in time. There is strong support for education and training activities that assist businesses in the supply chain to improve quality. This will be the focus of the next phase of this program *AV12012*, should it be funded.

With substantial industry consultation now having been completed the new plan for a Quality Improvement and Extension Program is extremely promising. Industry has been able to take

ownership of this concept and because of this it is far more likely to succeed than an unwanted accreditation program.

c. Data collection and reporting

i. Infocado

Participation

To date, the system includes a weekly dispatch module, weekly forecast module, seasonal forecast module and wholesale module. Presently 71 packhouses from across Australian and New Zealand contribute to Infocado in some form or another, whether it be submitting seasonal forecasts or weekly information or both. The level of contribution represents approximately 85% of all fresh avocado marketed in Australia. There are a number of packhouses currently not contributing to the system and this is for a range of reasons including:

- Lack of time
- Ongoing computer/internet issues
- Suspicion of the system
- An opinion that they don't pack enough avocados to warrant being involved

Many smaller packhouses do not contribute to the system because the entity they pack for who controls their marketing and distribution is already an Infocado contributor.

Packhouses submit their weekly dispatches (by variety, size and pack type), forecasts of how much they will dispatch over the coming four weeks (by variety and pack type) and monthly forecasts on how much they forecast they will produce in the next 15 months by month and variety.

Presently there are approximately 38 wholesalers registered in the system including all significant avocado wholesalers in all capital cities. Again for various reasons some wholesalers are not interested in contributing to the system. Wholesalers are asked to contribute their opening stock, receivals, sales and closing stock on hand information by variety and pack type on a weekly basis.

Communication

The following reports have been generated through this system and published to contributors:

- Infocado Weekly Report
    - Published on a weekly basis
    - The reports consist of:
        - Comments from the Infocado Team on trends and points of interest in the report for that week. See page one of the report example in Appendix 8.
        - Links to helpful documents such as instructions on contributing to the system and how to conduct Dry Matter tests at home. See page one of the report example in Appendix 8.
        - An explanation of the difference between the weekly and quarterly reports: *The monthly forecast and dispatch figures in the Infocado Quarterly Report incorporate an allowance (which varies by region) to allow for the production forecasts and dispatches that are not inputted into the Infocado system. This production (dispatch and forecast) data is not inputted for various reasons including some packhouse's unwillingness to engage with industry and/or lack of computer access. For this reason it is not possible to extrapolate the figures from the Infocado Weekly Report to come up with either the dispatch and/or forecast figures in the Infocado Quarterly Report.*

At any time the Infocado Weekly Report incorporates around 85% of total production and forecasts however this does vary depending on time of year (as a result of the fruit coming from different regions with different levels of packhouse input). It is not functionally possible to incorporate allowances for missing data into the Infocado Weekly Report hence the variance between it and the Infocado Quarterly Report.

- Aggregated dispatch data from packhouses – volumes are broken up by fruit size, variety and destination state (see pages two and three of the report example in Appendix 8).
- Aggregated four weekly forecast data from packhouses – see page three of the report example in Appendix 8. The data is reported both as a graph to show trends over the last 52 weeks and in a table to show the forecasts by variety.
- Aggregated wholesaler sales and stock on hand data – see page five of the report example in Appendix 8.
- Seasonal forecast for New Zealand imports – see page three of the report example in Appendix 8.
- Actual import volumes - see page three of the report example in Appendix 8.
- A list of all packhouses who contributed data to the report see page four of the report example in Appendix 8.
- The retail prices report for that week (generated as a part of *AV12007*).
- On a monthly basis the Dry Matter report generated through *AV11015* is also included.

- Infocado Quarterly Report
  - Up until 2013, the report has been published four times a year in January, April, July and October. Since 2013 the system has been altered to ensure the reports can be produced more frequently if needed. For example after the extreme weather conditions in some parts of the country in January 2013, consideration was given to producing another report in February.
  - An example report is included as Appendix 9. The report includes:
    - A forecast for the last 12 month period for the whole of industry by month and variety.
    - Actual dispatches for the last 12 month period for the whole of industry by month and variety to compare against the most recent forecast.
    - A forecast for the coming 12 month period by month and variety for the whole of industry.
    - An explanation of the difference between the weekly and quarterly reports.
    - Combined Australia and New Zealand dispatches for the last 12 months and forecasts for the next 12 months by variety and growing region.
    - Dispatches for the last 12 months and forecasts for the coming 12 months by growing region.
    - Comments from the Infocado Team on trends and noteworthy information contained in the report.
    - Dispatches for the last 15 months and forecasts for the coming 15 months for New Zealand exports.
    - A list of all packhouses who contributed data to the report.
- Infocado Annual Report
  - The report is produced annually for all packhouses who contribute data to the system. It is usually produced immediately following the conclusion of each growing region's season. An example copy of the report is included as Appendix 10. It includes:

- Weekly forecasts vs dispatches for the season to show the packer how accurate their forecasts had been over the season.
- Seasonal forecasts vs dispatches for the season to show the packer how accurate their forecasts had been over the season.
- Packhouse dispatches vs the total for that growing region vs the total for the Australian industry.

Most past Infocado Weekly and Quarterly Reports can be viewed at the Avocados Australia website: http://industry.avocado.org.au/Growers/Infocado.aspx. To protect the value of these reports for contributors, the Infocado Weekly Reports are uploaded to the website on a six week delay. The Infocado Quarterly Reports are uploaded with a 12 month delay.

An Infocado Summit has traditionally been held on a biennial basis. The most recent of these was held in October 2010. Another was scheduled to be held in 2012 but the industry agreed to suspend the summits until further notice as there were a number of large events scheduled for the industry from 2011 onwards including the World Avocado Congress. It was felt there were ample opportunities for two way communication about the Infocado program.

The Infocado Summit held in 2010 was used as a conduit to pass on the developments in the Infocado system, to get feedback on the system itself, discuss potential updates and present to packhouses information to help them improve their individual businesses. All contributors to the Infocado system were invited to attend.

System Summary
The system is quite flexible and allows for data to be searched and interrogated to produce a range of reports. Seasonal forecast information has been particularly useful and used in longer term industry planning at the Avocado IAC level. Individual businesses have also been using this information to plan their harvesting times and marketing plans.

ii. OrchardInfo

There are now 294 growers contributing their orchard profile information to the OrchardInfo system. A summary of contributing growers by growing region is illustrated in Table 6 below.

Table 6: OrchardInfo Contributors

Region	Number of Growers Contributing Data (as of 12/02/13)
North Queensland	43
Central Queensland	23
Sunshine Coast	21
South Queensland	29
Tamborine/Northern Rivers	32
Central New South Wales	35
Tri-State	34
Western Australia	77
Total	**294**

For the purposes of this report data has been accessed from the system to provide a summary of 2011 data for growing regions one to eight. The report is attached as Appendix 12.

6. Discussion

The outcomes from this project include:

- Ongoing involvement in suite of supply chain projects
    - This has been achieved and is ongoing.
    - Without the project officer's ongoing involvement in these programs they would not be so well linked and integrated with each other. For example internal quality assessments and analysis of this data has informed industry about what its biggest issues are in terms of internal quality. This has spawned research projects to understand these issues better and create solutions for them. One example is *AV10019: Reducing flesh bruising and skin spotting in Hass avocado* which is studying bruising and skin spotting.
- Development of a QMS for wholesalers, retailers and packhouses
    - Not achieved. There was insufficient support from industry for the development of such a plan. However, options were thoroughly analysed through this project.
    - A rollout plan and industry endorsement for a Quality Improvement and Extension Program has been developed instead with industry support and input.
- Ongoing management of Infocado
    - This has been achieved.
    - Weekly, quarterly and annual reports have been developed and published as per the contract. There is ongoing interaction with packhouses and wholesalers to encourage data contributions to the program.
- Ongoing management of OrchardInfo
    - This has been achieved in part.
    - Promotion of the program to encourage grower involvement has been ongoing. This has involved individual contact with all growers in the Avocados Australia database at least once a year to explain the program and how they can contribute data. Information has also been published in all editions of Talking Avocados the industry's quarterly magazine.
    - Unfortunately grower take up of the program has been insufficient for aggregated reports to be published to date despite many attempts to increase grower involvement.

7. Technology Transfer

A multitude of presentations have been made at industry meetings over the time of this project to communicate the findings and encourage adoption of solutions presented. Below is a list of those meetings:

- 12 October 2012: Avocado Program Review workshop: aimed at gathering feedback about the proposed plans/options for a QMS as well as proposed changes and improvements to Infocado and OrchardInfo.
- 4 September 2012: Avocado Researcher Workshop: aimed at communicating the objectives and results of this program to other researchers in the avocado industry.
- 29 February 2012: Presentation to Avocado IAC on the program
- September 2011: 7th World Avocado Congress: targeting delegates from across the world. A full paper was written for the congress which can be found on the congress website along with the power point presentation: http://worldavocadocongress2011.com To locate the paper and power point presentation, click on program, program and presentations, Thursday and Friday, Joanna Embry: Joanna Embry Infocado gathers essential avocado crop flow data.
- 10 August 2011: Avocado Researcher Workshop: aimed at communicating the objectives and results of this program to other researchers in the avocado industry.
- 27 July 2011: Stanthorpe Young Grower's Meeting: aimed at communicating the objectives and results of this program to members of other industries.
- October 2010: Infocado Summit (*AV10007: Infocado Summit October 2010 and Extension to Industry*): aimed at communicating the objectives and results of this program to industry stakeholders.

As detailed in the Method of this report, copies of most Infocado reports are available to download for free from the Avocados Australia website:
http://industry.avocado.org.au/Growers/Infocado.aspx

Furthermore, in all editions of Talking Avocados (Avocados Australia's quarterly magazine), information about Infocado and OrchardInfo has been included. Multiple articles have been published in the industry's fortnightly e-newsletter 'Guacamole' regarding Infocado, OrchardInfo and the establishment of a QMS. Multiple surveys have been distributed to industry regarding the establishment of a QMS. Numerous one on one meetings have been held with various stakeholders and industry experts about the establishment of a QMS.

In terms of future activities, it is strongly recommended that the Infocado and OrchardInfo programs be continued and this recommendation is supported by independent evaluation *AV11013: Review of Avocado Industry and Market Information Systems*. Infocado has over time provided valuable information in terms of industry statistics and forecasts for seasons ahead. This information has been used both at an industry planning level at Avocado IAC meetings and at an individual business level in planning harvest times and marketing programs.

It is also vital for someone to act as the 'lynch pin' or central point of contact for the suite of ongoing supply chain projects. Not only has this project funded the project officer's time in establishing multiple projects aimed at monitoring quality and improving handling practices but it has funded the ongoing liaison with researchers and industry stakeholders. This is important as it has meant all parties are collaborating and sharing knowledge. This in turn helps to ensure there is minimum duplication in project research and helps to achieve synergies.

As detailed in the method section of this report, the QMS approach has been abandoned due to a lack of industry support. Project Officers throughout this project have been working to develop a rollout plan for a Quality Improvement and Extension Program. This system has strong industry support and is scheduled to be implemented through the successor to this project, *AV12012: Coordination of Data Management and Avocado Quality Improvement and Extension Program*, should it be funded. This work is crucial to the continued growth and profitability of the Australian Avocado industry as it will continue to help in addressing the issue of avocado fruit quality and crop flow issues.

8. Recommendations

- It is strongly recommended that the Infocado program be continued and this recommendation is supported by *AV11013: Review of Avocado Industry and Market Information Systems*. Infocado has over time provided valuable information in terms of industry statistics and forecasts for seasons ahead. This information has been used both at an industry planning level at Avocado IAC meetings and at an individual business level in planning harvest times and marketing programs.
- It is strongly recommended that tools be developed to assist growers and packhouses to more accurately forecast their crop loads. Forecasting has been an ongoing issue for industry and greatly impacts on the accuracy of the Infocado reports. One way to help address this issue is to document case studies of known forecasting techniques and circulate these forecasting options to industry for adoption.
- *AV11013* also recommended the continuation of the OrchardInfo program with several improvements. Data collected directly from growers should be simplified to make it as easy as possible to contribute. A prize or reward should be offered for growers who participate. Remote sensing technology should be investigated to gather information about tree numbers. This information would be used to cross check grower input and account for those growers who had not contributed at all. These improvements are scheduled to implemented and or investigated through this project's successor; *AV12012: Coordination of Data Management and Avocado Quality Improvement and Extension Program*.
- It is vital for someone to act as the 'lynch pin' or central point of contact for the suite of ongoing supply chain projects. Not only has this project funded the Project Officer's time in establishing multiple projects aimed at monitoring quality and improving handling practices but it has funded the ongoing liaison with researchers and industry stakeholders. This is important as it has meant all parties are collaborating and sharing knowledge. This in turn helps to ensure there is minimum duplication in project research and helps to achieve synergies.
- Given industry did not support the adoption of a QMS but preferred a system more based on education and continuous improvement this is a high priority for further investment. Again this system is scheduled to be implemented through the successor to this project, *AV12012: Coordination of Data Management and Avocado Quality Improvement and Extension Program*, should it be funded. This work is crucial to the continued growth and profitability of the Australian Avocado industry. The expected flow on benefits of this system include:
    - Improved engagement between industry and researchers
    - Improved handling practices by growers, packers, wholesalers, ripeners and transporters
    - New researcher priorities and programs identified through this system with industry input and buy in
    - An expanded database of industry best recommended practice tools like videos, research papers and case studies

9. Acknowledgments

Avocados Australia would like to acknowledge the input from:

The growers, packhouses and wholesalers who have consistently and as accurately as possible contributed to the Infocado system.

The growers who have contributed to the OrchardInfo system.

All parties who were involved in the development of the QMS plans and the Quality Improvement and Extension Program. Your feedback into this process has informed many of the recommendations made in this report and in the application for further funding through *AV12012: Coordination of Data Management and Avocado Quality Improvement and Extension Program*.

10.Appendix 1 – Apple Audit Report Template

Wiggles Applesnax Audit Report

	Packhouse		**Report No**
	Audit report version	02: 25.02.05	**Date of Audit**
	Number of packs		**Surveyor**

Fruit assessed before packing? Y/N	Inspection records show specifications met? Y/N

Packing Code/grower							
Variety							
Count							
Stickers (Y/N)							
Shape (% within style)							
Colour (% within style)							
Size (57 – 62 mm dia)							
Number of apples, net wt							
Firmness (KGF)							
TSS (˚Brix)							
Temperature (Max 4.0°C)							
Average Temperature (Max 2.5C)							

Condition and Major Defects

Rots & moulds							
Wounds / Pest Damage							
Bruising							
Soft							
Total major defects (Max 3.0%)							%

Minor Defects

Misshape							
Skin Marks							
Russet							
Sunburn							
Hail							
Blush							
Light bruising							
Total major and minor defects (Max 10.0%)							%

Packing: Packing Instruction followed? **Yes** **No**

General Comments:

Recommendation: Consignment should proceed? **Yes** **No** Signed : ……..

11.Appendix 2 – Apple Audit Procedure

Wiggles Applesnax Audit Procedure 2005

1.0 PURPOSE AND SCOPE

1.1 To give consumers and retail customers confidence that apples meet the Wiggles Applesnax Specification(s).

1.2 This procedure applies to apples packed in specially identified Wiggles Applesnax packaging.

1.3 This procedure is to be carried out by a representative of Horticulture Australia Ltd (HAL) at the location where Wiggles Applesnax are packed.

1.4 Audits are best scheduled to allow stock to be replaced in the event of a rejection.

2.0 ACTIONS

2.1 The HAL representative will provide at least 24 hours notice before conducting an audit. Audits should be conducted at a mutually convenient time.

2.2 The HAL representative shall clearly identify the consignment to be assessed and the number of grower lots to be assessed. This will determine the number of samples to be drawn.

2.3 Take at least 7 temperature readings from representative places in the consignment. Average pulp temperature is to be at or below that set in the appropriate Wiggles Applesnax Specification, if any.

2.4 Sample at least 1 punnet from each of 7 cartons per consignment and at least 3 cartons per identifiable grower.

2.5 Record findings from each sample in a separate column of the Wiggles Applesnax Audit Report

2.6 Check that packaging is in good condition and that those cartons and punnets inspected provide the required trade description information. Punnets must be packed according to the Packing Guide.

2.7 Unpack each sample carton/punnet and closely examine each sample fruit. Ensure that lighting is adequate to undertake this task.

2.8 Take a digital photograph to represent the colour and quality of fruit in each sample carton.

2.9 Take two firmness readings from each of two representative fruit. Use a calibrated penetrometer with an 11mm head. Use flesh from the same fruit to measure Brix levels.

2.10

Variety	Minimum TSS (˚Brix)	Av Firmness (Kg)
Pink Lady	14.0	6.3
Royal Gala	13.0	6.3
Sundowner	13.0	6.5

2.11 Record the lowest readings for each sample fruit on the Wiggles Applesnax Audit Report.

2.12 Compare the level of defect on each fruit with the applicable Wiggles Applesnax

Specification.

2.13 Record the number of fruit out of specification against the defects named on the Wiggles Applesnax Audit Report.

2.14 Add up the number of major defects and the number of total defects (major plus minor). Express these as percentages of the total number of fruit sampled per grower/packer lot.

2.15 If there are more than 3% major defects or more than 10% out of specification, sample another 3 cartons.

2.16 Advise HAL immediately if after the second sample:

- there are more than 3% major defects or
- more than 10% out of specification, or
- average firmness reading for all sample fruit is less than that listed in 2.15.
- Brix readings of more than one fruit are less than those listed in 2.15.
- other Wiggles Applesnax Specification requirements are not met.

2.17 In the event of 2.16 occurring, HAL is to refer to the Wiggles Applesnax Default Procedure for further action.

2.18 Fax or e-mail the completed Wiggles Applesnax Audit Report along with digital photographs to HAL within 24 hours of survey.

2.19 HAL and the HAL representative are to maintain a file of all information collected for at least 12 months.

3.0 RECORDS

3.1 Wiggles Applesnax Audit Report

4.0 PACKAGING

3.1 See Wiggles Applesnax Packing Instructions.

12. Appendix 3 – Implementing a Quality Monitoring System Plan A - Wholesaler Certification

Implementing a Quality Monitoring System Plan A - Wholesaler Certification

The purpose of this certification program is to identify and reward those wholesalers who are following Industry Best Recommended Practices and thus ensure the highest quality avocados are distributed to retailers and consumers. The expected benefit for participants in this program is increased demand for their fruit by customers. Increased demand would lead to increased volume of sales and more rapid turnover. This, in turn, leads to better quality fruit on offer which further enhances the wholesaler's reputation with customers.

Fruit quality is particularly important as it is known from past consumer research that consumers prefer:

- Ripe and ready fruit they can eat today or tomorrow
- Mature fruit
    - 23% Dry Matter for Hass
    - 21% Dry Matter for Shepard
- Fruit with less than 10% internal flesh defects

Participation in this program is voluntary.

The following Certification Points will be used to monitor and assess wholesaler participants in the program. There are three main sections:

- Practices which impact on overall fruit quality
- Maturity of avocados in the market place
- Avocado focus – how valued are avocados within the wholesaler's business

Certification Point	Criteria	Mandatory	Points
Established Produce Specifications	Wholesaler has agreed product specifications with grower/packhouse suppliers covering issues such as maturity and quality. Examples of these agreed specifications will be produced during random audits. This could also be checked through grower/packhouse suppliers.	Y	10
Ripening	Record of ripening procedures followed and monitoring undertaken. For monitoring checklist refer to page 14 of Avocado Ripening Manual.	Y	10
	Evidence that ripening rooms are maintained/serviced regularly as per SQF regulations.	Y	10
Fruit Receivals	Documented protocol/procedure for maintaining the cool chain. Fruit should preferably be delivered directly to the wholesaler's facilities and placed in cool storage or ripening rooms. If using market unloading service fruit should be transferred to the wholesaler's site as soon as possible. Records should be produced to show how this process is managed.		5
Fruit Age	Documented protocol for limiting fruit age. Monitored by auditors recording date packed stamps on trays. Fruit should be no older than 4 weeks from the picked date. If picked date is unknown the pack date will be used.		5
Maturity	Wholesaler participates (ie has no objection to selling fruit) in random Dry Matter (DM) tests at beginning of each growing region's season. DM tests are undertaken at	Y	10

	random through the central markets by contracted staff and independently assessed. Aggregated results are published to industry as per the established Avocados Australia monitoring system. High risk periods (start of each growing region's Shepard and Hass seasons) will be focused on.		
	Wholesalers provide evidence of issues and corrective action taken when immature fruit has been received.	Y	10
Infocado	Consistent contributor to Infocado – minimum of 45 weeks/year	Y	20
Avocado Focus	Wholesaler supplies avocados for minimum of ¾ of Australian season – known through Infocado		5
	Dedicated avocado staff member – known through Infocado		5
	Supplies range of sizes, variety and grades – known through Infocado and audits		10

Total points possible = 100

Accreditation Levels	Criteria
3 star	Must fulfil all mandatory criteria listed above and have between 85-100 points
2 star	Must fulfil all mandatory criteria listed above and have between 66–84 points
1 star	Must fulfil all mandatory criteria listed above and have between 55-65 points

Audits

- Wholesalers audited annually. Wholesalers would need to produce records demonstrating compliance with all criteria for the entire period since the previous audit.
- Cost of audits:
    - $150-200 per hour of auditor time. This includes travel time. Invoices issued from Avocados Australia based off auditor time sheets.
    - Additional cost will include fees to cover DM testing. Up to 4 trays of fruit (from different growers) may be purchased for DM testing from the wholesaler's stand at an average cost of $20 per tray in Brisbane and Sydney and up to $27 per tray in Melbourne and Adelaide. DM testing would be conducted from late January through to June. Collection fees of $500 per day incurred. Courier costs of $300 on average to transport fruit from Sydney, Melbourne, Adelaide and Brisbane to a testing facility. Testing fees of $1500 per month. These costs would be shared between the certification partners.
- Audits are conducted by an independent assessor.
- Results from DM testing will be used in the auditing process.
- Any changes to the participant's business as it affects this certification must be made known to Avocados Australia within 30 days of the change (ie no longer having access to ripening facilities).

Two Strikes

- Any participant who is found to be not following recommended best practice will, depending on the situation either have:
    - Their rating revised down or
    - Be given advice to rectify the situation within a certain time period or have their rating revised down. A follow up audit may be undertaken to check the required improvements have been made.
- Two serious breaches within 12 months will result in the accreditation rating being removed or revised down.
- Any fruit found to be below standard (ie older than 4 weeks from the picked date (or packed date if picked date is unknown)) should be marked and sold as such – second grade.

Communication

- Star ratings will be displayed on the Avocados Australia website for all retailers and grower/packers to view. Ratings will be updated as needed.
- Signage will be provided to participants to use at their stand.
- Issued with a certificate of compliance.

13. Appendix 4 – Implementing an Avocado Quality Management System – Plan B

Implementing an Avocado Quality Management System – Plan B

Why does industry need a QMS?
Over the last few years industry has been working towards addressing recognized quality issues in order to meet consumer demands. This involves ensuring only mature fruit is supplied to the market and that fruit should have less than 10% internal flesh defects.

Implementing an industry QMS will help to meet these goals through working closely predominantly with packhouses and wholesalers to promote best recommended practices and monitor quality over time.

Through this system we are recommending fruit sampling at two stages – at packhouse level through a rapid library tray system and at wholesaler level through a simple quality test. The advantage of monitoring quality at these two stages would be to help identify if the quality issues being incurred are either:

- Inherent – perhaps caused through orchard management OR
- Supply chain related – caused after the fruit left the packing shed through how it was handled in the supply chain

Simply by identifying if the quality issues are likely to be inherent or supply chain related, the supply chain members can then take further action to investigate the situation and make improvements. This system would provide the evidence to support further investigation.

How will this work?
The QMS would be a two staged approach. It's important firstly to have given all the parties the opportunity to improve their practices by providing the knowledge and incentive to change. This would be achieved through a series of training sessions in the different growing regions and capital cities. The main focus of the training for packers would be how to establish a rapid library tray system and the advantages of doing so. Other topics including using Infocado better, marketing and interpreting reports will be added benefits to attract packers to the sessions.

For wholesalers there will be two main focuses:

- How having a quality monitoring and grower feedback system in place can help their business and the industry
- How to improve their ripening practices and the advantages that will give them

It may be worthwhile, as a separate project, having the resources for qualified DAFF staff to complete independent ripening audits to pin point the improvements the wholesaler could/should make. This should be a fee for service arrangement which could be promoted widely in the training sessions.

The second stage of this strategy is assisting the interested parties to implement the new practices they have learnt. For packers this would involve providing ongoing support in the form of supplying materials and investigating new technology and systems to help with this process.

For wholesalers this would take the form of a quality monitoring and supplier feedback system. The system would be based on the wholesaler having agreed to participate in the quality monitoring program and putting in place a real time feedback arrangement for suppliers. Elements of the packhouse library tray system would be adopted to monitor quality. The fruit would need to be independently sampled and stored. Dry Matter would also be monitored.

The goal of this feedback system is to provide real time fruit quality feedback to suppliers to assist them in addressing issues for future consignments. Fruit quality over time, should improve.

1 **Training for packhouses and wholesalers**

- Packhouses
    - Use of education materials with focus on the online Best Practice Resource (BPR)
    - How to implement a library tray system
        - Investigate if packers are willing to undertake this themselves or should an independently run, local facility be used to collect, store and monitor the fruit?
    - Discuss the principles of marketing
    - How to use Infocado to better manage crop flow
    - How to interpret Nielsen reports
- Wholesalers
    - Use of education materials with focus on BPR
    - How the industry quality monitoring and reporting system will work and the advantages of being involved
    - How to improve ripening procedures (refer Ripening Manual)
    - How to use Infocado to better manage crop flow

2 **Implementation of a library tray system at various points in the supply chain**

- Packhouse
    - Assist packhouses to implement library tray system
        - Provide spread sheets and feedback forms for recording their data when testing for internal quality ie the documents developed through the library tray project
        - Sell copies of the International Avocado Quality Manual
        - Develop a system for providing feedback to wholesalers and sellers
        - Investigate the value of developing self-funded, independently run, regional library tray systems
    - Investigate the availability of dry matter testing technology (non-invasive scanning machines that can test in the paddock or in the packing shed)

- Wholesale market
    - Implement a quality monitoring and reporting system
        - Sample fruit quarterly from wholesalers who agree to be involved
            - Purchase 2-3 trays from each of the growers/packers present on their stand
        - Remove a number of fruit for dry matter testing
        - Take note of date packed
            - If it is greater than 18 days old (maximum age chain stores will take Australian fruit) then check what has happened –does this older fruit get sold in certain markets? Check the quality of this fruit.
        - Test fruit once at firm ripe (stage 4 ripeness) for internal quality
        - Test fruit again at soft ripe (stage 5-6)
        - Use library tray guidelines and International Avocado Quality Manual to determine acceptability of sample
        - Photos taken of sampled fruit once cut
        - Establish a feedback system to growers
        - Fruit quality pass or fail

        - Will need to have tolerance for some quality issues as per supermarket specifications or library tray system (eg. At least 60% of fruit sampled should have no internal damage)
- There has to be a timely feedback system to packhouse regarding the issues that have been identified (if there were any). This should be linked with their (the packhouse) library tray system if they have one. This should help to identify if the issues are inherent or supply chain caused. This feedback should not only identify what the issues were with the fruit but will help the parties to develop a plan of how this might be improved for next time.
- The wholesaler needs to be recognised for their efforts. Recognition might include a seal of participation similar to the GrapeConnect system. It should represent that the wholesaler has signed up to have fruit tested on a regular basis and has agreed that there will be a specified feedback system to growers/packhouses in relation to issues with the fruit.
- Three strikes and you're out of the system for a period of 6 months. The wholesaler can then reapply to be involved. The issues that resulted in them being removed from the system would need to have been addressed prior to reapplying.

Library Tray System – Packers

Why should I use a rapid ripe library tray system?

- It can serve as an insurance policy against poor out-turn quality
- It can be used to provide growers with fruit quality feedback
- It can be used to feed information forward to marketers and retailers

The first two functions are common to most other existing library tray systems. The third function is unique to the rapid ripe system. Because the fruit quality results are available within seven days of sampling, out-turn quality data would be available before the fruit reach the retailers and often before the fruit reach the markets. This rapid information turnover provides a unique opportunity to feed information forward to the fruit handlers in the cold chain.

Development of the Library Tray System

Eight trays of fruit should be taken from the end of the pack line per block. All eight trays should be of the same fruit count but varied from block to block depending on the count that typified the block and harvest. Two trays per block should be stored under each of the following regimes:

- 22^0C with 10ppm ethylene (Ripegas) till ready to assess
- 22^0C without ethylene till ready to assess
- 24^0C without ethylene till ready to assess

Assessing the fruit

One tray of fruit per block should be assessed at firm ripe, stage 4, and the remaining tray assessed two days later at soft ripe, stages 5-6, using the International Avocado Quality Manual scale (White et al. 2009). The second assessment, at soft ripe, represents a simplistic shelf life test.

Fruit firmness should be determined using gentle hand pressure and confirmed using a fruit densimeter. All defects should be monitored in terms of severity (percentage of fruit flesh affected) and incidence (percentage of the fruit in the sample affected). Photographic records should be kept of both external and internal fruit quality.

External and internal fruit quality should be assessed. External issues could include skin spotting and external colour development (for Hass only).

Internal monitoring should be conducted at the firm ripe stage. The correct fruit firmness is essential. The following flesh disorder should be assessed:

- Stem end rot
- Body rots
- Vascular browning
- Seed cavity browning
- Flesh bruising
- Diffuse flesh discolouration
- Stones in the flesh
- Other, e.g. seed germination, pink staining, etc.

Rots and vascular browning should be used as parameters to determine the fruit marketability. Other defects should be noted and used for grower feedback. Based on the severity (percentage of fruit flesh affected) of rots and vascular browning fruit should be categorised as:

- Fruit with 0% defects (with no rots or vascular browning)

- Fruit with up to 5% flesh defects (rots and/or vascular browning)
- Fruit with up to 10% flesh defects

Fruit with more than 10% internal flesh defects should be regarded as unmarketable.

The fruit quality can be expressed as the percentage of the fruit in each of those categories in a tray. For example, Block XX may have produced:

- 85% clean fruit (0% defects),
- 10% fruit with up to 5% defects,
- 4% fruit with up to 10% defects and
- 1% unmarketable fruit (more than 10% defects).

Limitations of this system:

- Not all packing sheds have access to a ripening room close at hand
- The library tray system cannot accurately reflect fruit ripening under commercial conditions due to the vastly different conditions fruit are stored and ripened at
- The system cannot anticipate handling injuries after packing. This includes bruising, internal cold injury and skin spotting

Supporting documents:

- Ripe Fruit Inspection Guide
- Ripe Fruit Report Card
- International Avocado Quality Manual

Quality Monitoring and Reporting – Wholesalers

Why should I monitor quality and provide feedback to suppliers?

- It can serve as an insurance policy against poor out-turn quality
- It can be used to provide growers with fruit quality feedback
- Depending on timing it can be used to feed information forward to retailers
- If you encourage your suppliers to implement a rapid ripe library tray system then they will have the tools to provide you with early warnings about potential fruit shelf life

Purpose of this system

The purpose of this system is to improve communication channels between wholesaler/marketers and the suppliers regarding quality. Regular quality monitoring is essential to pick up emerging issues and this feedback good, bad or otherwise needs to be passed back to the grower/packer. Quality is everyone's responsibility and as such supply chain partners need to work closely to minimise issues and ensure potential shelf life and quality issues can be detected earlier and corrective action taken.

This in turn should allow for a higher quality avocado to be supplied to consumers with the long term effect of sustained consumption growth for industry. This will benefit all members of the supply chain.

Development of the Quality Monitoring and Feedback System

Fruit should be sampled from each grower on the wholesaler's stand. A minimum of 2-3 trays from each grower should be bought. All trays should be of the same fruit count and grade/class if possible. Class 1 or Grade A should be purchased. Only Hass or Shepard fruit should be purchased. If one grower has supplied both Hass and Shepard to the wholesaler then collect and test both varieties. The fruit should only be purchased if it is clearly marked as either Hass or Shepard.

It is assumed that this fruit would have already been held at a packhouse or in transport in cold storage for a number of days and would have already been through a ripener. The fruit sampled should be representative of all the fruit that wholesaler has at that time.

One tray per grower of hard green fruit should be used for Dry Matter testing.

The remaining trays should be stored at 20^0C until ready to assess.

The fruit should be stored off site in an independent facility for independent handling and testing.

Feedback on fruit quality will be provided to wholesalers within 48 hours of the completion of testing.

Wholesalers will be expected to review and pass on this feedback to the supplier within the next 48 hours. This feedback may also include other issues they may have noticed or other news worthy items. A discussion of the issue (if there was one) should be had to try and better understand how it happened and what action can be taken in the future to prevent or minimise it.

14.Appendix 5 – Infocado Weekly Dispatch Form

Infocado Weekly Dispatch Form

Please complete the form below, and when finished, forward the form to the form server by clicking Send.

VERSION: 0 Next Page Form Locked ☐ Form Sent ☐

Weekly Hass Avocado Dispatches From WA Dummy

												Week End Date	11/01/13	Ref No	IND130013
Hass	**MOD6 Tray (Counts)**													
Dispatched To	<17	17	20	22	24	26	28	30	32	35	> 35			
QLD Traders														
QLD Direct														
QLD Total														
NSW Traders														
NSW Direct														
NSW Total														
VIC Traders														
VIC Direct														
VIC Total														
SA/NT Traders														
SA/NT Direct														
SA/NT Total														
WA Traders														
WA Direct														
WA Total														
TAS Traders														
TAS Direct														
TAS Total														
Total Traders														
Total Direct														
Consolidators														
Export														
Overall Total														
	MOD6 Tray (Counts) Total :													

Version No: 0 Date/Time: 10.04/8/11021

Please complete the form below, and when finished, forward the form to the form server by clicking Send.

VERSION: 0 Prev Page Form Locked ☐ Form Sent ☐ Send

Weekly Hass Avocado Dispatches From WA Dummy

	Week End Date	11/01/13	Ref No	IND130013

Hass	5.5Kg Tray (Counts)								Bulk	P/Pk	Oil	Proc	Other
Dispatched To	< 16	16	18	20	22	23	25	28	> 28	10Kg	Kg	Kg	Kg	Kg
QLD Traders														
QLD Direct														
QLD Total														
NSW Traders														
NSW Direct														
NSW Total														
VIC Traders														
VIC Direct														
VIC Total														
SA/NT Traders														
SA/NT Direct														
SA/NT Total														
WA Traders														
WA Direct														
WA Total														
TAS Traders														
TAS Direct														
TAS Total														
Total Traders														
Total Direct														
Consolidators														
Export														
Overall Total														
Grand Total	5.5Kg Tray (Counts) Total :									Remaining Kg Total :				

Comments	☒ No dispatches this week ☐ Final dispatch for season

Delete Version 0 Date/Time: Send

MAC Users Only, Click to Email Form

15.Appendix 6 – Infocado Four Weekly Forecast Form

Infocado Weekly Forecast Form

Please complete the form below, and when finished, forward the form to the form server by clicking Send.

VERSION: 1 These columns allow data entry. Form Locked ☐ Form Sent ☐ Send

Weekly Avocado Forecasts	Form Date	12/01/13	Ref No	SPE130016

Trading Name: WA Dummy
Address:
WA 6000
Australia

Contact: WA Dummy
Phone: 07 3846 6566 Mobile:
Fax:
Email: infocado@avocado.org.au

Week Commencing Saturday		Variety	Hass						
		4Kg Tray	MOD6 Tray	5.5Kg Tray	Bulk 10Kg	P/Pk Kg	Oil Kg	Proc Kg	Other Kg
05/01/13	Forecast								
05/01/13	Dispatch								
(1) 12/01/13	Forecast								
(2) 19/01/13	Forecast								
(3) 26/01/13	Forecast								
(4) 02/02/13	Forecast								
Comments									

Instructions:
(1) Data entered in last weeks Estimate displays in weeks 1 to 3.
(2) Amend as necessary and enter new data in week 4.
(3) Complete a separate form for each variety.

☐ No Forecast this week
Clicking the 'No forecast this week' checkbox clears all data displayed above.
☐ Final forecast for season

Delete | MAC Users Only, Click to Email Form | Version No: 1 | Date: | 10.04/8/11023 | Send

16.Appendix 7 – Infocado Seasonal Forecast Form

VERSION: 1

Seasonal Avocado Forecast

Pack House	WA Dummy	Forecast Done In	Jan 2006	Ref No	SAF130001

Trading Name: WA Dummy
Address:

WA 6000
Australia

Contact: WA Dummy
Phone: 07 3846 6566 **Mobile:**
Fax:
Email: infocado@avocado.org.au

Month	Hass (5.5 Kg Eqv)			Shepard (5.5 Kg Eqv)			Other Varieties (5.5 Kg Eqv)		Total (5.5 Kg Eqv)
	(1) New Forecast	(2) Prev Forecast	Last Year Forecast / Last Year Actual	(3) New Forecast	(4) Prev Forecast	Last Year Forecast / Last Year Actual	(5) New Forecast	(6) Prev Forecast	New Forecast
Feb 2006									
Mar 2006									
Apr 2006									
May 2006									
Jun 2006									
Jul 2006									
Aug 2006									
Sep 2006									
Oct 2006									
Nov 2006									
Dec 2006									
Jan 2007									
12 Month Total									
Feb 2007									
Mar 2007									
Apr 2007									
15 Month Total									
Comment									

Instructions:

(1) Data from latest Forecast received is displayed in columns 2, 4 and 6. These forecasts are retained as the default values in columns 1,3 and 5.
(2) Amend, as necessary, the default forecasts in columns 1,3 and 5, enter forecasts in 5.5 Kg Equivalents.
(3) Enter new forecast in the final month row at the bottom of the form.

17.Appendix 8 - Infocado Weekly Report

INFOCADO WEEKLY REPORT: 2nd February —8th February 2013 (Wk 6)

Click here to learn How to conduct Dry Matter tests at home

Click here to for a refresher on how to contribute to Infocado

Click here for tips for using and interpreting Infocado Reports

Click here to download avocado supply chain education materials

Comments

- If you have not done so already please review and submit your seasonal forecast forms as soon as possible! We are publishing another 'quarterly report' this month to try and capture fruit loss information due to the extreme weather conditions experienced in the last few weeks. The forecast will range from February 2013 to January 2014. The sooner we get your data the sooner we can publish the new report.
- NQ Shepard harvesting is ramping up with volumes increase each week. Forecasts for the next four weeks can be seen on page three of this report.
- Retail prices peaked this week in Sydney at $4.49. All other states peaked at $3.99. Sydney and Melbourne Coles stores have catalogue specials in place this week which should draw through larger volumes of fruit. There a number of store specials in place in Brisbane this week.
- NSW attracted the most trays in week six with 70,278 5.5kg eqv trays. VIC followed with 43,794 5.5kg eqv trays.
- The January Dry Matter report is attached. All Hass fruit tested were mature. This week fruit were purchased for the February testing. Some Shepard fruit were included in this sample and we should have the results in time for next week's Infocado report.
- Please note that when entering your dispatch data if you are supplying another packhouse with fruit and that packhouse also contributes to Infocado then to avoid your data being counted twice in this report please include those volumes in the consolidators row. For a list of report contributors for this week please see page four or contact the Avocado Australia office for clarification.

What you need to be aware of for next month

- Growers about to start their 2013 season are reminded to ensure their fruit is mature before harvest. The Shepard benchmark is 21% Dry Matter and the Hass benchmark is 23%.
- According to the January 2013 Quarterly Report 959,693 5.5kg eqv trays are expected in the market place for March. 232,825 5.5kg eqv trays are Hass, 722,700 5.5kg eqv trays are expected for Shepard with the remainder being other varieties. This will of course change once the February report is published in the coming weeks.
- Growers in flood affected areas will be monitoring their trees for signs of stress from water logging and related issues.
- Western Australian growers will be scaling down their harvesting. New Zealand imports will be all but finished in the coming weeks.
- Some Central Queensland growers will begin harvesting Shepard's.

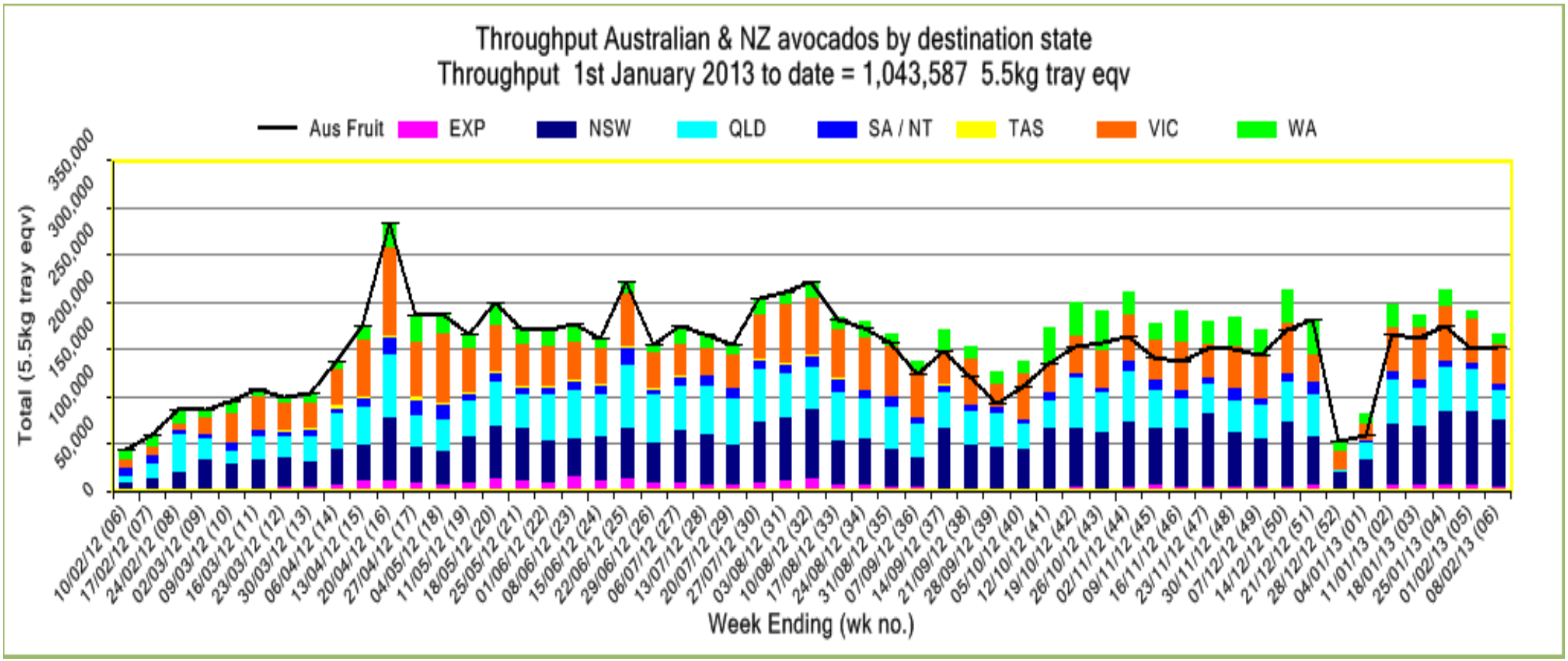
Upcoming Holidays

4th March | Labour Day WA

Report Index

IMPORTANT and PLEASE NOTE:
The monthly forecast and dispatch figures in the Quarterly Infocado Report incorporate an allowance (which varies by region) to allow for the production forecasts and dispatches that are not inputted into the Infocado system. This production (dispatch and forecast) data is not inputted for various reasons including some packhouse's unwillingness to engage with industry and/or lack of computer access. For this reason it is not possible to extrapolate the figures from the Weekly Infocado Report to come up with either the dispatch and/or forecast figures in the Quarterly Infocado Report. At any time the Weekly Infocado Report incorporates around 85% of total production and forecasts however this does vary depending on time of year (as a result of the fruit coming from different regions with different levels of packhouse input). It is not functionally possible to incorporate allowances for missing data into the Weekly Infocado Report hence the variance between it and the Quarterly Infocado Report.

Industry Dispatches By Destination State and Count Size : 2nd February - 8th February 2013 (Wk 6)															
Dest. State	**5.5kg**	**5.5kg**	**5.5kg**	**5.5kg**	**5.5kg**	**5.5kg**	**5.5kg**	**5.5kg**	**5.5kg**	**Trays - Total**	**Bulk**	**P/PK**	**Oil**	**Other**	**5.5Kg Eqv Trays All**
	<16	**16**	**18**	**20**	**22**	**23**	**25**	**28**	**28+**	**5.5Kg Eqv**	**10Kg**	**Kg**	**Kg**	**Kg**	**Total**
EXP								1,620	3,040	**4,660**	195	1,760			**5,335**
NSW	3,468	2,955	10,901	23,179	4	16,057	5,319	2,563	1,372	**65,818**	2,123	3,300			**70,278**
QLD	798	8,927	5,071	4,883		2,527	3,086	3,831	371	**29,494**	719			7,980	**32,252**
SA / NT	320		642	798		160	1,600	1,280		**4,800**	192				**5,149**
VIC	2,372	1,881	4,516	11,302	149	7,795	12,162	1,327	159	**41,663**	1,172				**43,794**
WA	184	521	588	785		1,040	2,946	294	71	**6,429**	2,670		40		**11,291**
Total	**7,142**	**14,284**	**21,718**	**40,947**	**153**	**27,579**	**25,113**	**10,915**	**5,013**	**152,864**	**7,071**	**5,060**	**40**	**7,980**	**168,098**



Forecast Data (Week 6 - 10)

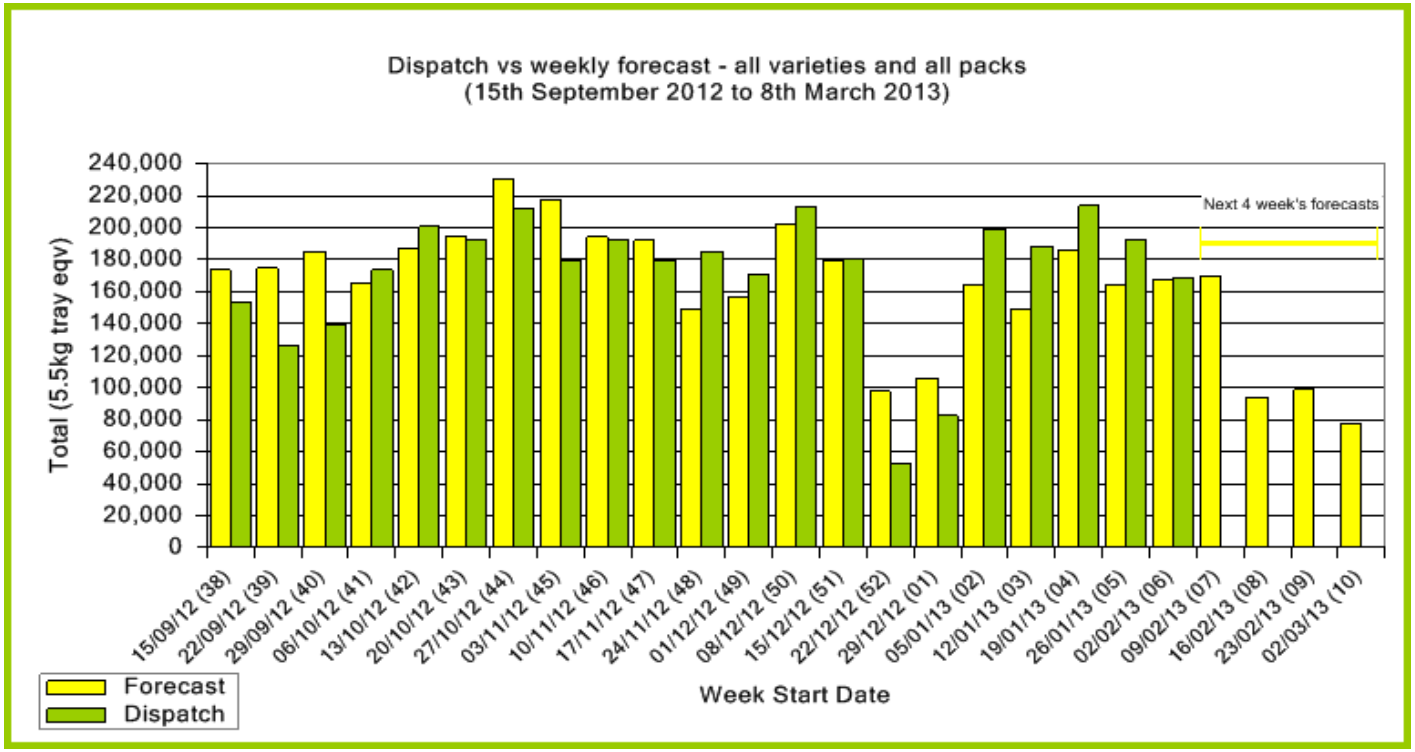
Variety	Trays - Total	Bulk	P/Pk	Oil	Proc	All - Total
	5.5Kg Eqv	10Kg	Kg	Kg	Kg	5.5Kg Eqv
Week 6 - begin 02/02/2013						
Hass	133,434	5,831	1,000	50	5,000	**145,136**
Lamb Hass	1					**1**
Reed	10,000					**10,000**
Shepard	11,600	690				**12,855**
Week Total	**155,035**	**6,521**	**1,000**	**50**	**5,000**	**167,991**
Week 7 - begin 09/02/2013						
Hass	128,307	6,046	1,000	50	5,000	**140,400**
Reed	6,000					**6,000**
Shepard	21,800	1,020				**23,655**
Week Total	**156,107**	**7,066**	**1,000**	**50**	**5,000**	**170,054**
Week 8 - begin 16/02/2013						
Hass	48,739	2,771	1,000	50		**53,968**
Shepard	36,050	2,140				**39,941**
Week Total	**84,789**	**4,911**	**1,000**	**50**		**93,909**
Week 9 - begin 23/02/2013						
Hass	28,642	1,203		50	500	**30,929**
Shepard	63,550	2,440				**67,986**
Week Total	**92,192**	**3,643**		**50**	**500**	**98,916**
Week 10 - begin 02/03/2013						
Hass	6,520	330		50		**7,129**
Shepard	65,900	2,690				**70,791**
Week Total	**72,420**	**3,020**		**50**		**77,920**

Green shading indicates dispatch data

Yellow shading indicates forecast data

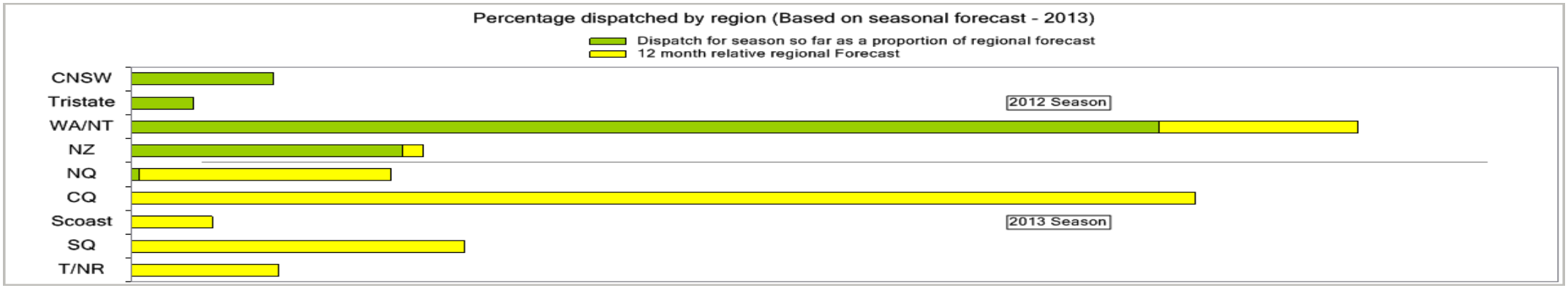
Dispatch Data (Week 6 - begin 2/02/2013)

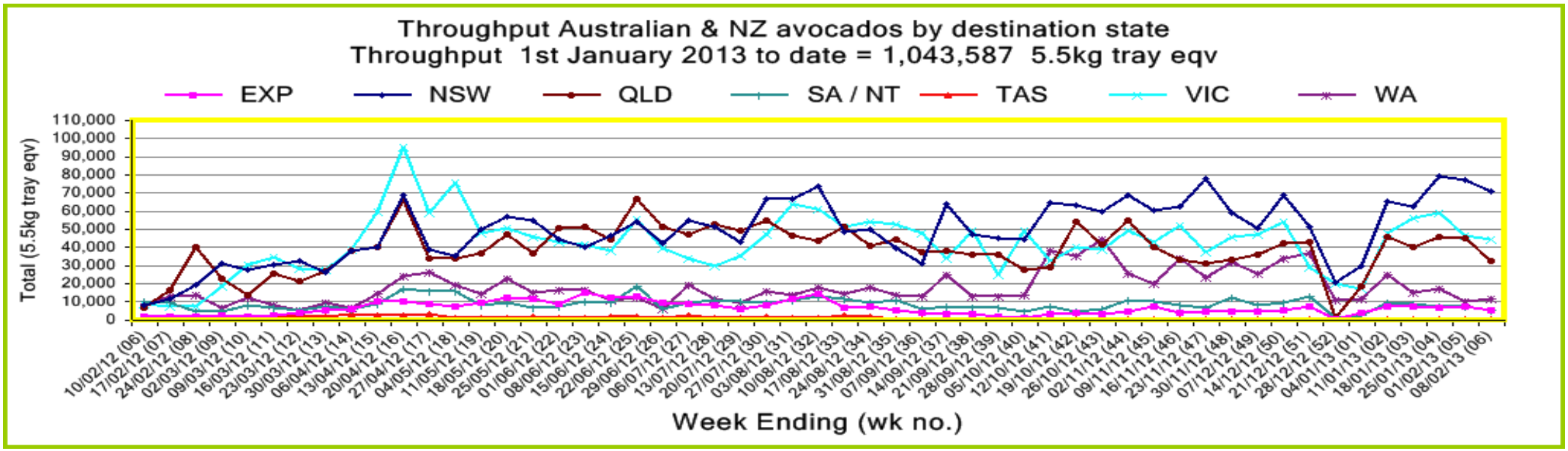
Variety	Trays	Bulk	P/PK	Oil	Other	5.5Kg Eqv
	5.5Kg Eqv	10Kg	Kg	Kg	Kg	Total Trays
Hass	**134,166**	6,472	5,060	40	7,980	**148,311**
Reed	**8,750**					**8,750**
Shepard	**9,948**	599				**11,037**
Total	**152,864**	**7,071**	**5,060**	**40**	**7,980**	**168,098**



New Zealand Avocado Exports—Forecast v Import Statistics (5.5kg eqv trays) August 2012-April 2013

Export Dest'n	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total to date
NZ Export to Australia Forecast	0	100,000	163,165	200,288	221,573	201,354	75,000	5,000	0	**933,459**
Australia	27,768	106,347	156,090	211,721	71,661	126,478	59,495			**759,560**
USA			7							
Japan	374	9,797	38,653							
Total	**28,142**	**116,144**	**194,750**	**211,721**	**71,661**	**126,478**	**59,495**			**808,391**





Week 6 contributors - Packhouses

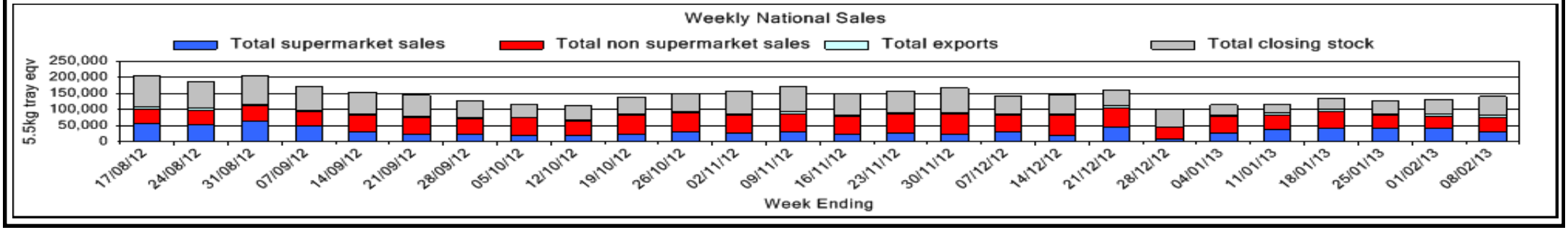
Advance Packing & Marketing Services P/L
Aussie Orchards Growers & Packers
Avocado Estates
Avocado Industry Council (NZAGA)
Bellview Orchards Pty Ltd
Blushing Acres Pty Ltd
Box Organics
Delroy Orchards
Gunnado Farm
Hilltop Mareeba
ID & AM Leighton
Lavers Orchards
Mariners Rest
Natures Fruit Company
R & M Waterman
Sunfresh
VP & EA Farrell

Week 6 contributors - Wholesalers

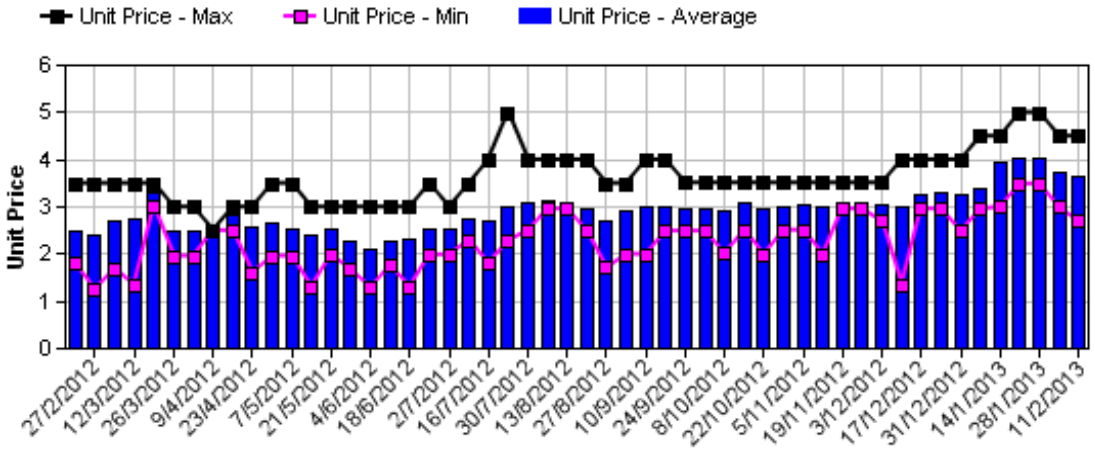
Allcrops Pty Ltd (Sydney)
C & S Ponte Produce Pty Ltd (Melbourne)
Costa Farms (Adelaide)
Costa Farms (Brisbane)
Costa Farms (Melbourne)
Costa Farms (Perth)
Dykes Bros (Melbourne)
Etherington (Perth)
Exotic Fruit Traders (Sydney)
Fresh Choice WA Pty Ltd (Perth)
Fresh Express Produce Pty Ltd (Perth)
Kelly's Citrus (Melbourne)
Murray Bros (Brisbane)
Sculli & Co Pty Ltd (Melbourne)
Sinclair & Antico (Aust) Pty Ltd (Sydney)
The La Manna Group (Adelaide)
The La Manna Group (Brisbane)
The La Manna Group (Melbourne)
United Fresh (Adelaide)

Sales Report including Direct Sales from Packhouses, Wholesale Sales and Stock on Hand at Wholesale Level

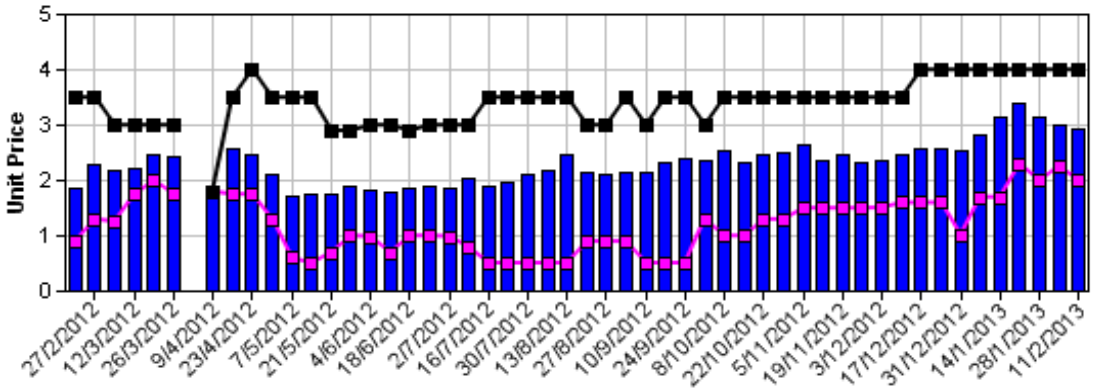
	Trays 5.5kg eqv (incl. Mod6 & P84)				Bulk 10Kg Cartons					Pre-Pack Kg					Total (5.5Kg Eqv)			
	Hass	Shepard	Other	Total	Hass	Shepard	Other	Total	5.5Kg Eqv	Hass	Shepard	Other	Total	5.5Kg Eqv	Hass	Shepard	Other	Total
NSW																		
Total supermarket sales		456		**456**												456		**456**
Total non supermarket sales	3,242		974	**4,216**	965		59	1,024	**1,862**						4,997		1,081	**6,078**
Total exports																		
Total sales	**3,242**	**456**	**974**	**4,672**	**965**		**59**	**1,024**	**1,862**						**4,997**	**456**	**1,081**	**6,534**
Total Stock on Hand	**2,335**		**242**	**2,577**	**384**			**384**	**698**						**3,033**		**242**	**3,275**
QLD																		
Total supermarket sales	19,648		1,280	**20,928**		96		96	**175**						19,648	175	1,280	**21,103**
Total non supermarket sales	11,249	1,250		**12,499**	91	44		135	**245**						11,414	1,330		**12,744**
Total exports																		
Total sales	**30,897**	**1,250**	**1,280**	**33,427**	**91**	**140**		**231**	**420**						**31,062**	**1,505**	**1,280**	**33,847**
Total Stock on Hand	**15,563**	**1,094**		**16,657**											**15,563**	**1,094**		**16,657**
SA & TAS																		
Total supermarket sales	3,212			**3,212**	230			230	**418**						3,630			**3,630**
Total non supermarket sales	5,662		559	**6,221**	688		53	741	**1,347**						6,913		655	**7,568**
Total exports																		
Total sales	**8,874**		**559**	**9,433**	**918**		**53**	**971**	**1,765**						**10,543**		**655**	**11,198**
Total Stock on Hand	**11,962**		**2,778**	**14,740**	**894**		**60**	**954**	**1,735**						**13,587**		**2,887**	**16,475**
VIC																		
Total supermarket sales	6,720			**6,720**											6,720			**6,720**
Total non supermarket sales	8,180	647	1,225	**10,052**	1,033	96	96	1,225	**2,227**						10,059	822	1,400	**12,280**
Total exports																		
Total sales	**14,900**	**647**	**1,225**	**16,772**	**1,033**	**96**	**96**	**1,225**	**2,227**						**16,779**	**822**	**1,400**	**19,000**
Total Stock on Hand	**10,435**	**844**	**1,430**	**12,710**	**388**			**388**	**705**						**11,141**	**844**	**1,430**	**13,415**
WA																		
Total supermarket sales	573			**573**											573			**573**
Total non supermarket sales	4,049		938	**4,987**	558			558	**1,015**						5,064		938	**6,002**
Total exports	4,660			**4,660**	195			195	**355**	1,760			1,760	320	5,335			**5,335**
Total sales	**9,282**		**938**	**10,220**	**753**			**753**	**1,369**	**1,760**			**1,760**	**320**	**10,971**		**938**	**11,909**
Total Stock on Hand	**7,438**		**198**	**7,636**	**603**			**603**	**1,096**						**8,534**		**198**	**8,732**
Total																		
Total supermarket sales	30,153	456	1,280	**31,889**	230	96		326	**593**						30,571	631	1,280	**32,482**
Total non supermarket sales	32,382	1,897	3,696	**37,975**	3,335	140	208	3,683	**6,696**						38,446	2,152	4,074	**44,671**
Total exports	4,660			**4,660**	195			195	**355**	1,760			1,760	320	5,335			**5,335**
Total sales	**67,195**	**2,353**	**4,976**	**74,524**	**3,760**	**236**	**208**	**4,204**	**7,644**	**1,760**			**1,760**	**320**	**74,352**	**2,782**	**5,354**	**82,488**
Total Stock on Hand	**47,733**	**1,938**	**4,648**	**54,320**	**2,269**		**60**	**2,329**	**4,235**						**51,859**	**1,938**	**4,757**	**58,554**



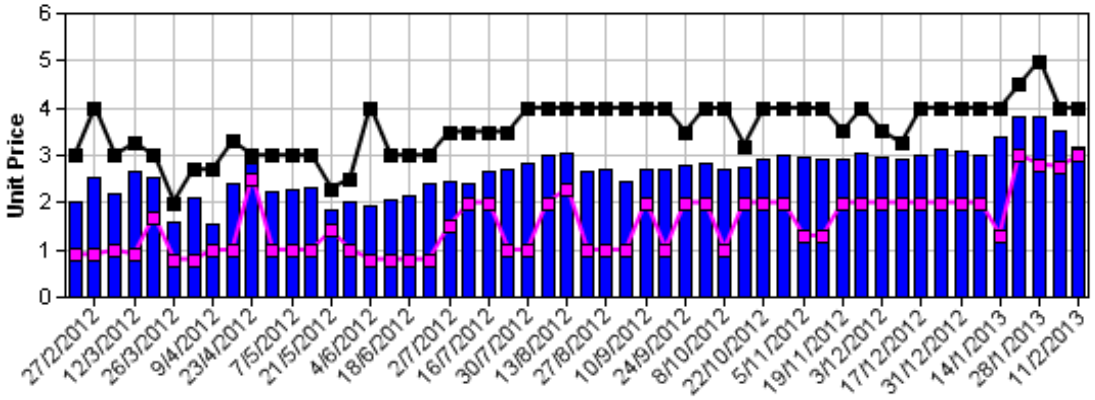
Hass Avocado Average Retail Prices - Sydney



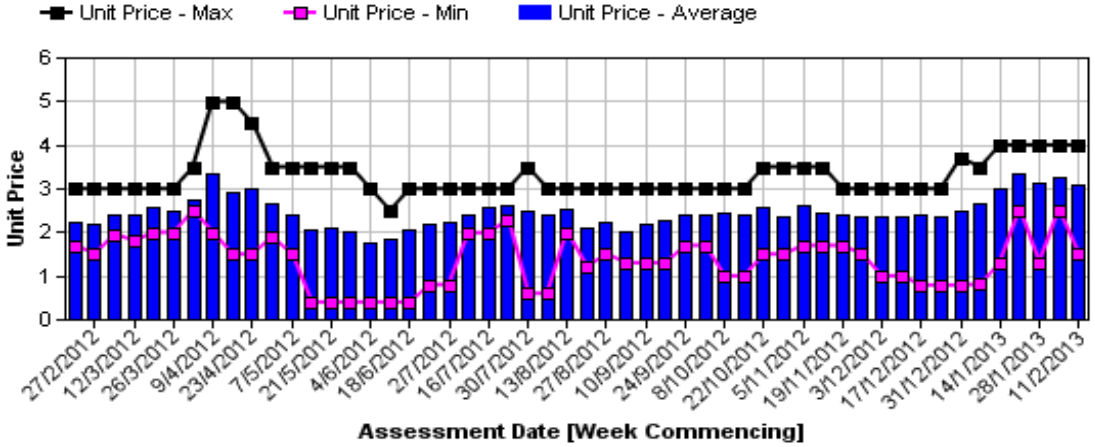
Hass Avocado Average Retail Prices - Brisbane



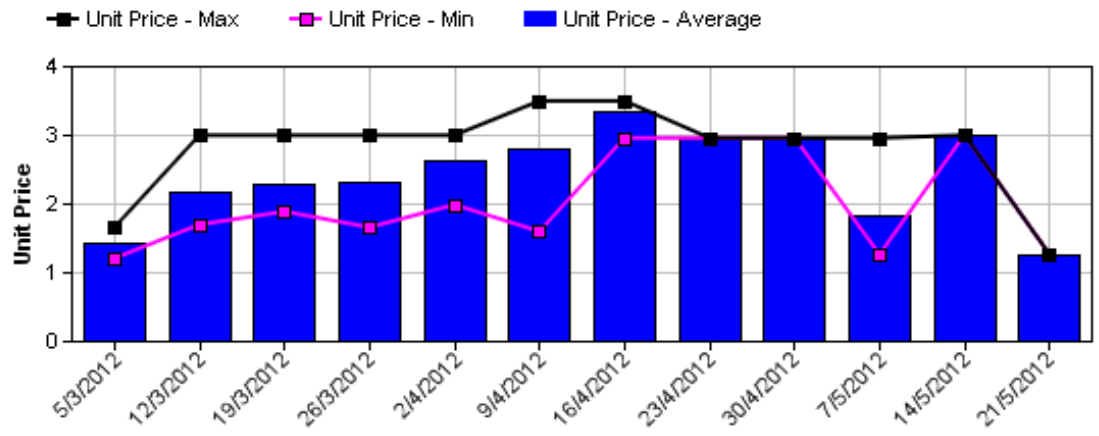
Hass Avocado Average Retail Prices - Melbourne



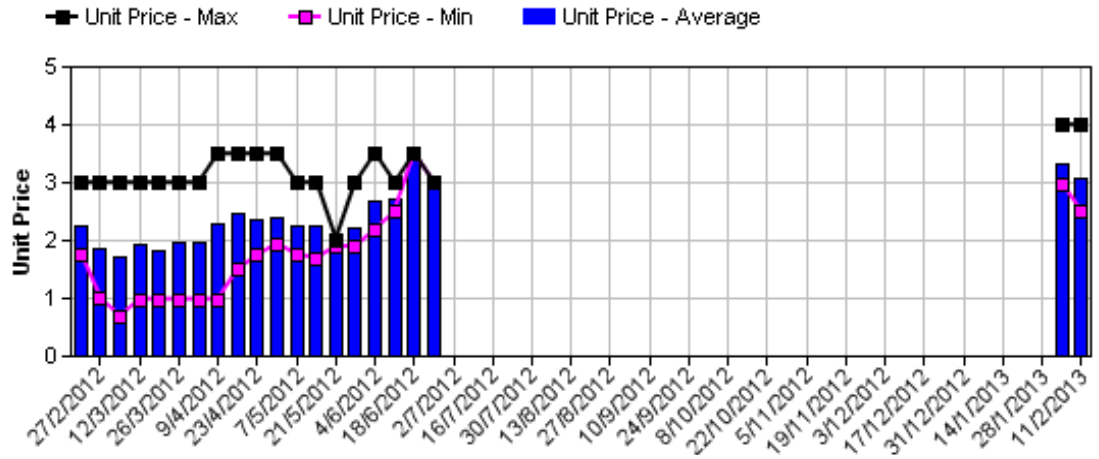
Hass Avocado Average Retail Prices - Perth



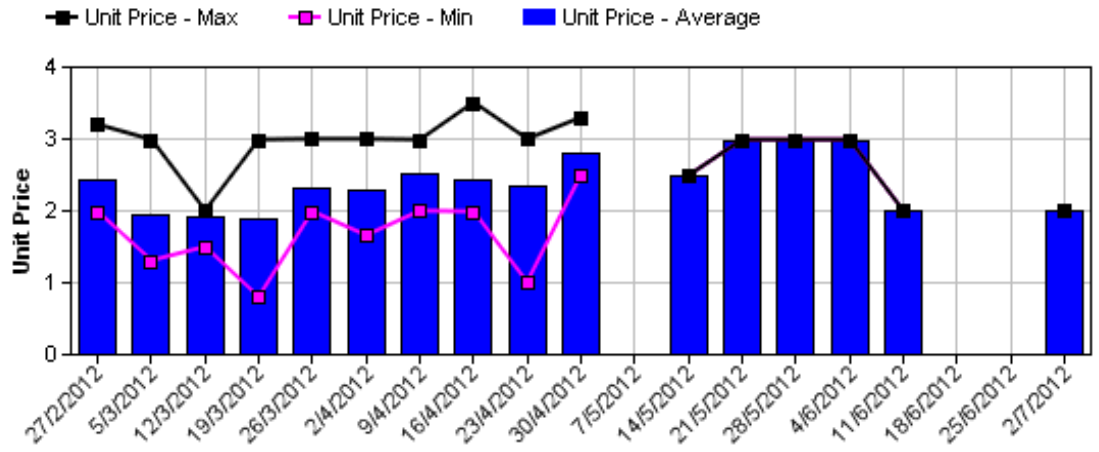
Shepard Avocado Average Retail Prices - Sydney



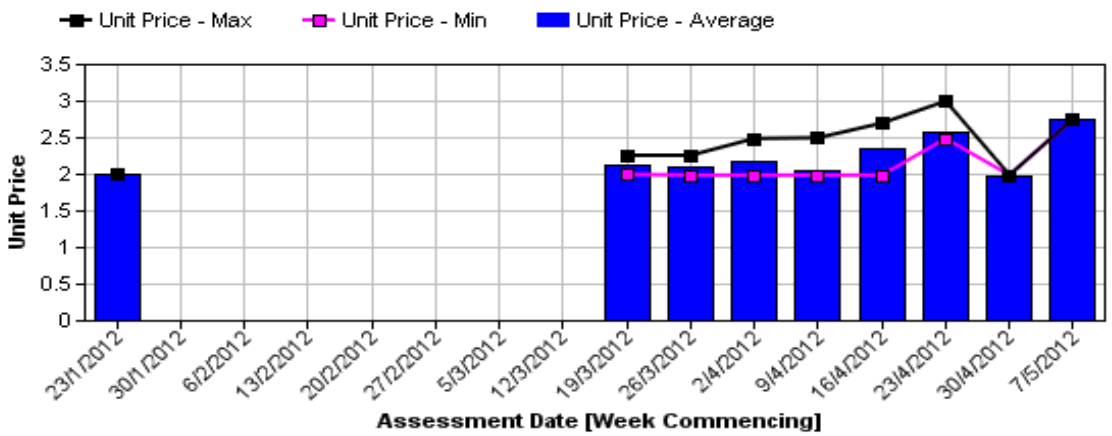
Shepard Avocado Average Retail Prices - Brisbane



Shepard Avocado Average Retail Prices - Melbourne



Shepard Avocado Average Retail Prices - Perth



Retail Prices by City, Store and Variety - 11th February 2013

Store	Var	Av Wt (g)	Unit Price	Special	Country of Origin
SYDNEY					
I	Reed	500	2.49	No	Aus
I	Reed	470	2.50	Store	Aus
Woolworths	Hass	300	2.68	No	Aus
Woolworths	Hass	265	2.68	No	Aus
Woolworths	Hass	290	2.68	Store	Aus
Coles	Hass	255	3.48	Cat	Aus
Coles	Hass	240	3.48	Cat	Aus
I	Hass	230	3.49	No	Aus
IGA	Hass	290	3.95	No	Mixed
Foodworks	Hass	290	3.99	No	Aus
I	Reed	480	3.99	No	Aus
I	Hass	340	3.99	No	Aus
I	Hass	240	3.99	No	Aus
I	Hass	340	3.99	No	Aus
I	Hass	260	3.99	No	Aus
IGA	Hass	200	3.99	No	NZ
I	Reed	520	3.99	No	Aus
I	Reed	500	3.99	No	Aus
I	Reed	470	3.99	No	Aus
I	Hass	320	3.99	No	Aus
I	Hass	290	4.49	No	Aus
BRISBANE					
I	Hass	195	1.99	Store	Aus
I	Hass	210	2.25	Store	NZ
I	Shepard	215	2.50	Store	Aus
Woolworths	Hass	180	2.74	Cat	Aus
Woolworths	Hass	195	2.88	No	Aus
Woolworths	Hass	280	2.88	Cat	Aus
Coles	Hass	195	2.98	Store	Aus
Coles	Hass	200	2.98	Store	Aus
Coles	Shepard	200	2.98	Store	Aus
Coles	Hass	200	2.98	Store	Aus
I	Hass	220	2.99	No	Aus
I	Shepard	205	2.99	No	Aus
I	Shepard	190	2.99	No	Aus
IGA	Hass	189	2.99	No	NZ
I	Shepard	195	3.00	Store	Aus
I	Hass	240	3.00	Store	Aus
IGA	Hass	220	3.48	No	NZ
I	Shepard	310	3.99	Store	Aus
I	Hass	260	3.99	Store	Aus

Store	Var	Av Wt (g)	Unit Price	Special	Country of Origin
MELBOURNE					
I	Hass	260	2.49	No	Aus
I	Hass	247	2.80	No	Aus
Coles	Hass	255	2.98	Cat	Aus
Safeway	Hass	225	2.98	No	Aus
Coles	Hass	245	2.98	Cat	Aus
I	Hass	270	2.98	No	Aus
Safeway	Hass	240	2.98	No	Aus
Safeway	Hass	230	2.98	No	Aus
Coles	Hass	210	2.98	Cat	Aus
I	Hass	270	2.99	No	NZ
I	Hass	255	2.99	No	Aus
I	Hass	255	3.79	No	Aus
I	Hass	270	3.79	No	Aus
I	Hass	265	3.99	No	Aus
IGA	Hass	265	3.99	No	Aus
IS	Hass	240	3.99	No	NZ
PERTH					
I	Hass	130	1.49	No	Aus
IS	Hass	200	1.99	Store	Aus
Coles	Hass	210	2.98	No	Aus
Woolworths	Hass	255	2.98	No	Aus
Coles	Hass	200	2.98	No	Aus
Woolworths	Hass	220	2.98	No	Aus
Coles	Hass	275	2.98	No	Aus
Woolworths	Hass	220	2.98	No	Aus
I	Hass	230	2.99	No	Aus
I	Hass	230	2.99	No	Aus
IGA	Hass	240	2.99	No	Aus
IGA	Hass	240	3.49	No	Aus
I	Hass	295	3.69	No	Aus
IGA	Hass	240	3.99	No	Aus
IGA	Hass	275	3.99	No	Aus
I	Hass	275	3.99	No	Aus

Size ranges based on 5.5kg trays	
Size	**Weight Range**
28	185 - 208g
25	208 - 230g
23	230 - 245g
22	245 - 263g
20	263 - 290g
18	290 - 325g
16	325 - 363g

Special Codes
Cat = fruit is on catalogue special for that city this week
Store = fruit is on special in that store only this week

Country of Origin Codes
Aus = display sign indicates fruit is from Australia
NZ = display sign indicates fruit is from New Zealand
NS = display sign doesn't say where fruit is from

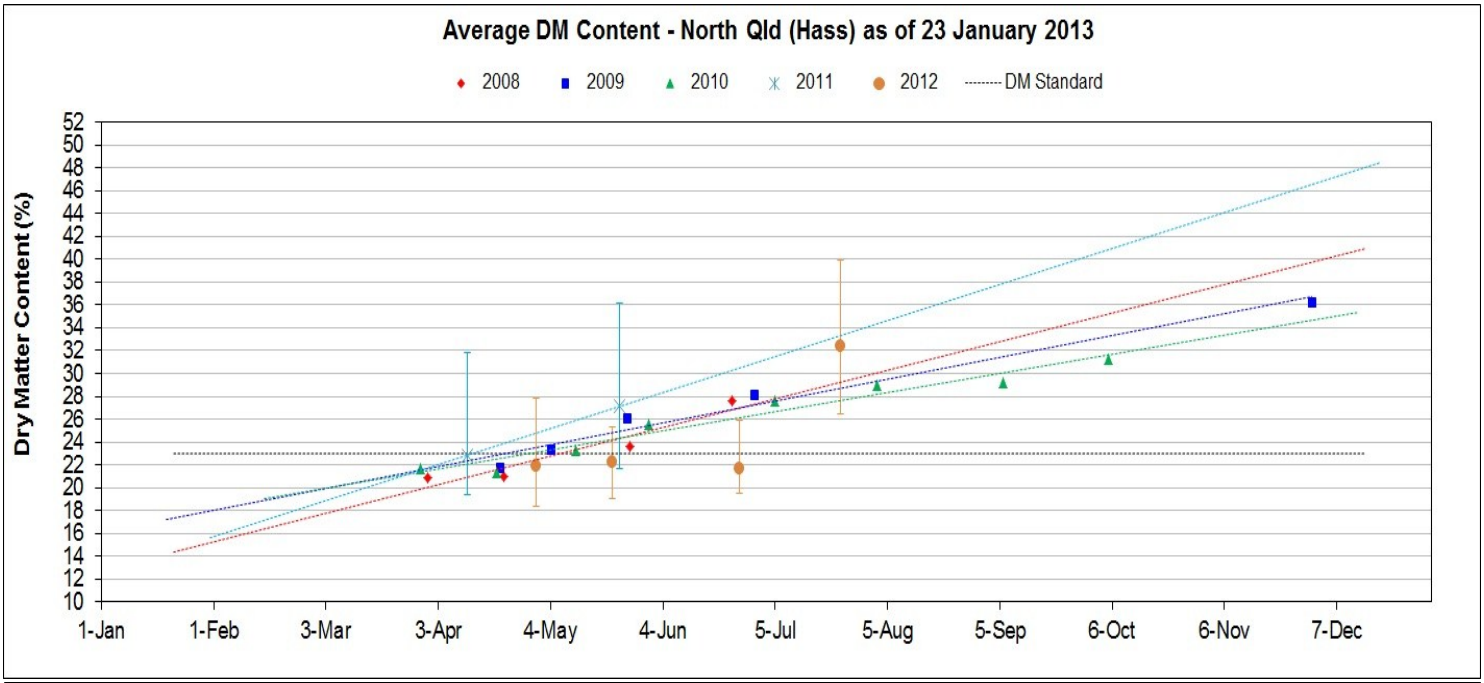
Store Codes
I = Independent Fruit and Vegetable stores
IC = Independent Fruit and Vegetable store Chains
IS = Independent Supermarkets

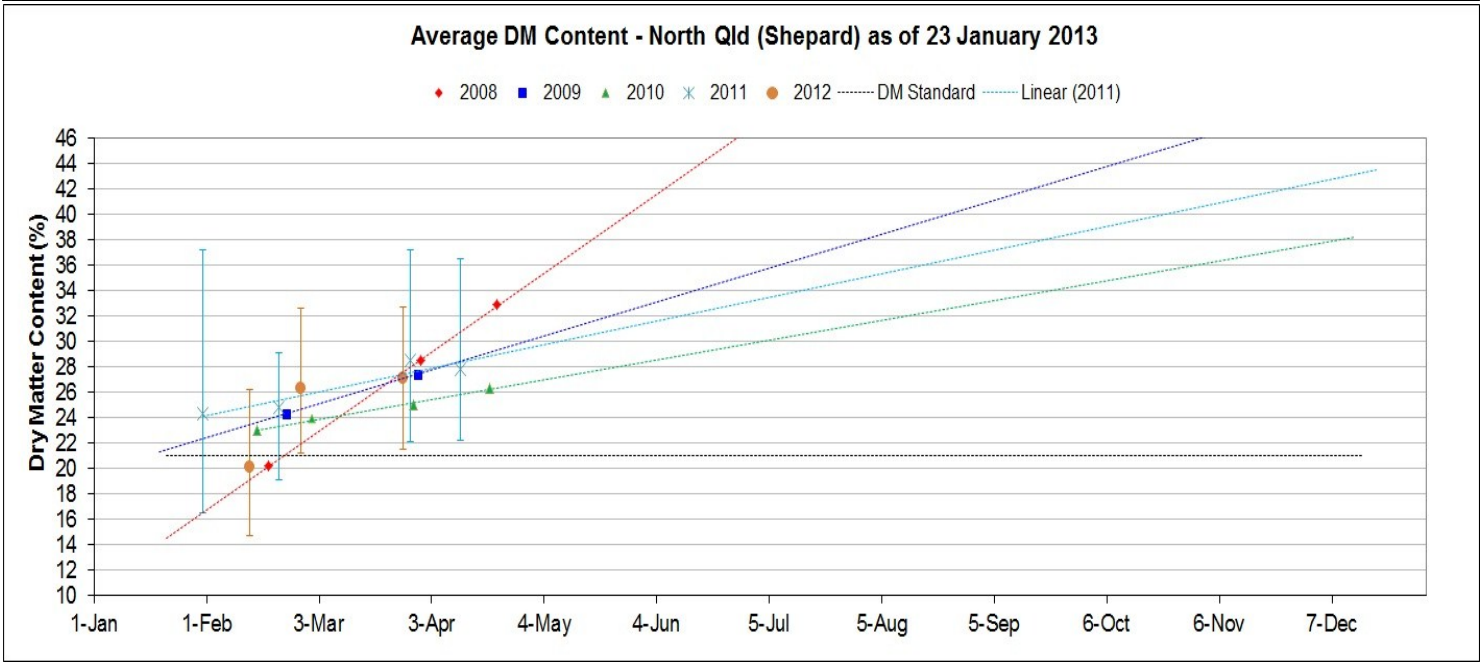
Avocado DM Content Report

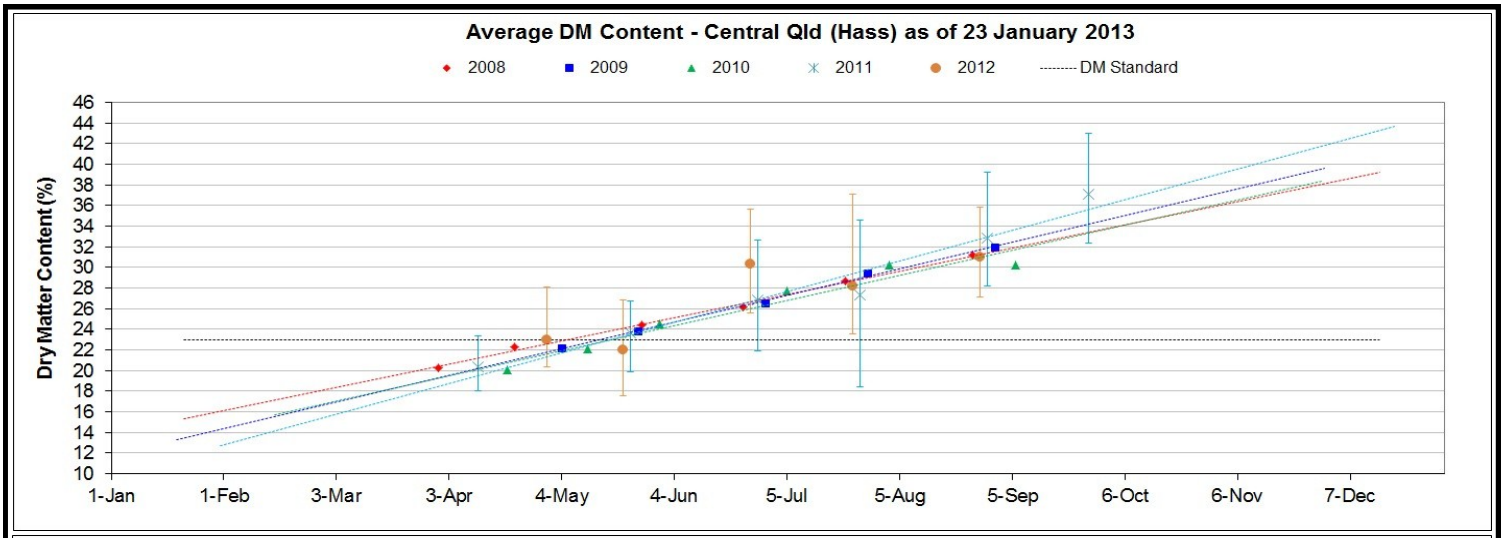
Fruit collected 21 January 2013

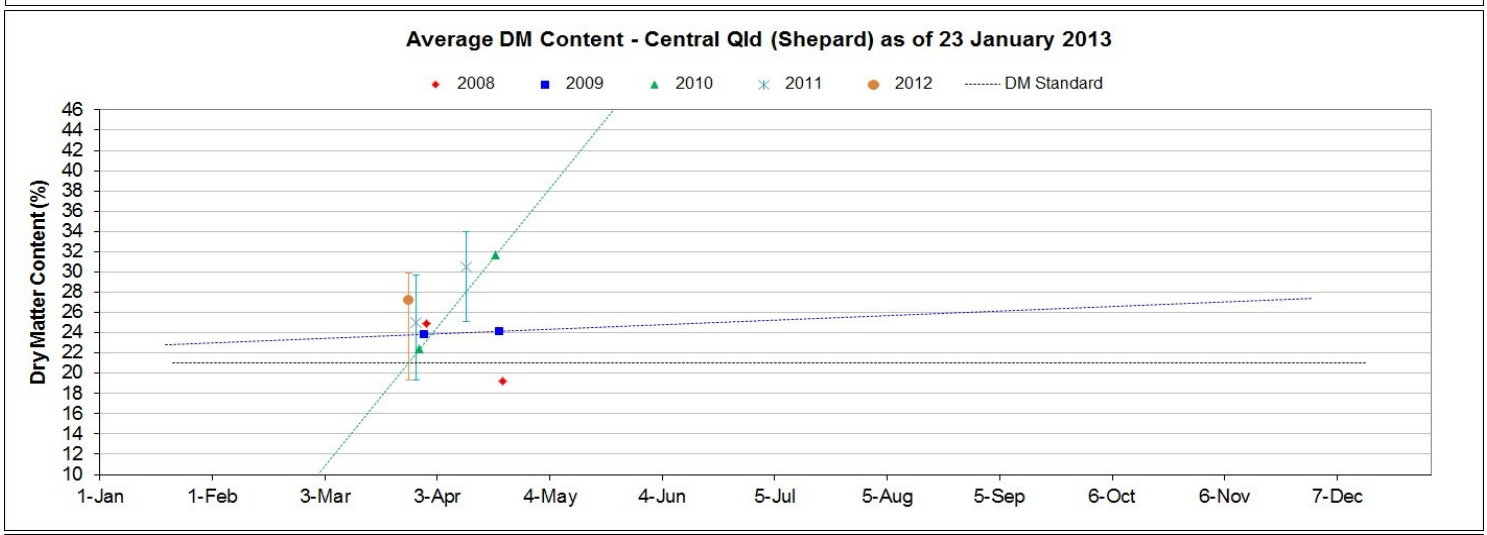
Dry Matter Intervals	Proportion of fruit tested for each dry matter interval 23 January 2013									
	NQ		CQ		SC	SQ	Tam/NR	CNSW	Tri	WA
	Hass	Shepard	Hass	Shepard	Hass	Hass	Hass	Hass	Hass	Hass
<=18%						0%				0%
18.1%-20.9%						0%				0%
21%-22.9%						0%				0%
23%-28%						0%				14%
28.1%-40%						90%				86%
>40%						10%				0%

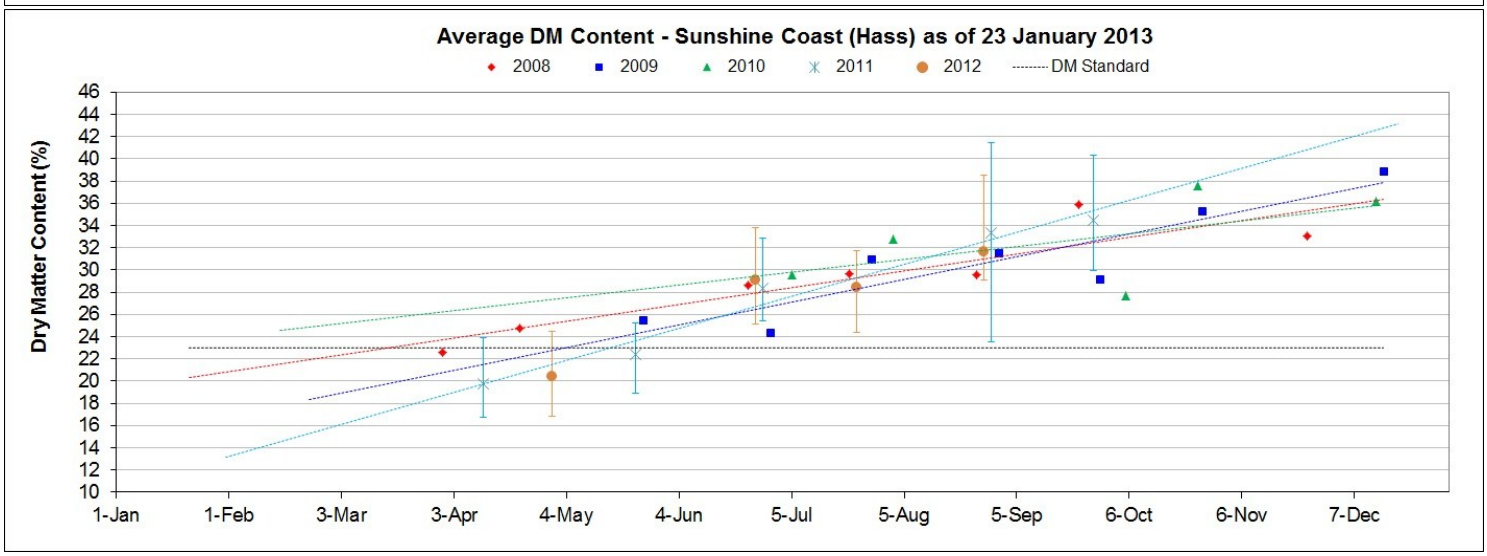
From Date Packed	Proportion of fruit tested by age 23 January 2013									
	NQ		CQ		SC	SQ	Tam/NR	CNSW	Tri	WA
	Hass	Shepard	Hass	Shepard	Hass	Hass	Hass	Hass	Hass	Hass
<= 7 days										
8-14 days										45%
15 - 21 days										10%
22 - 29 days										
> 29 days										
No date recorded						100%				45%

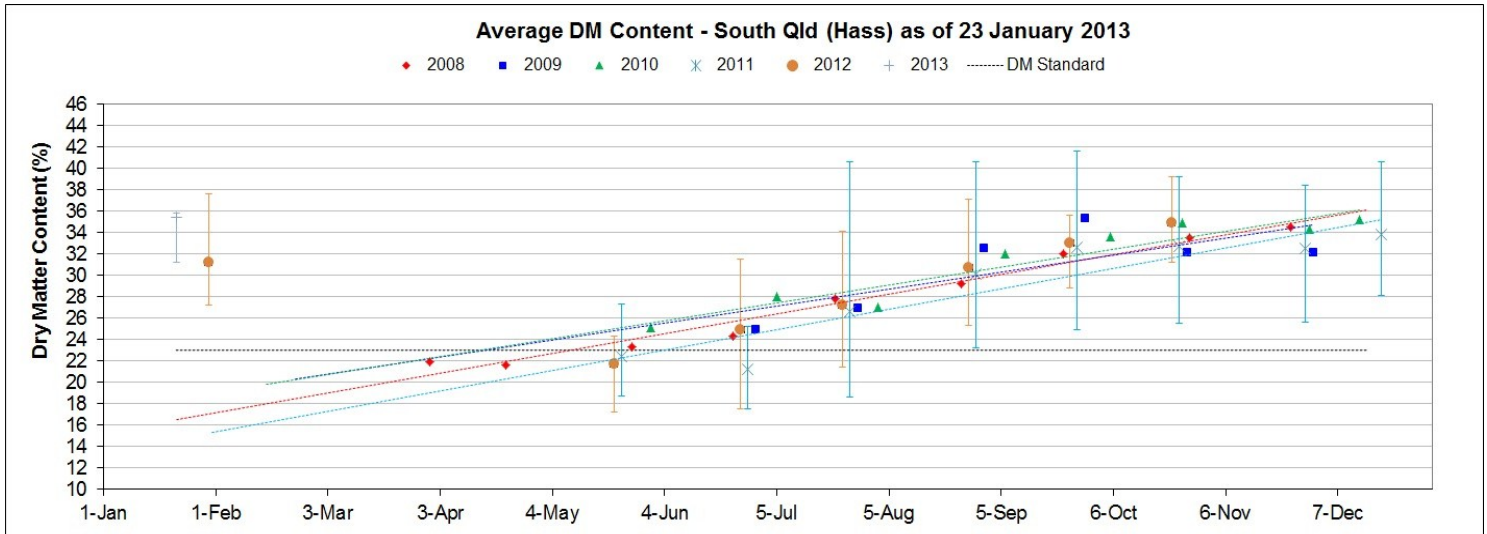


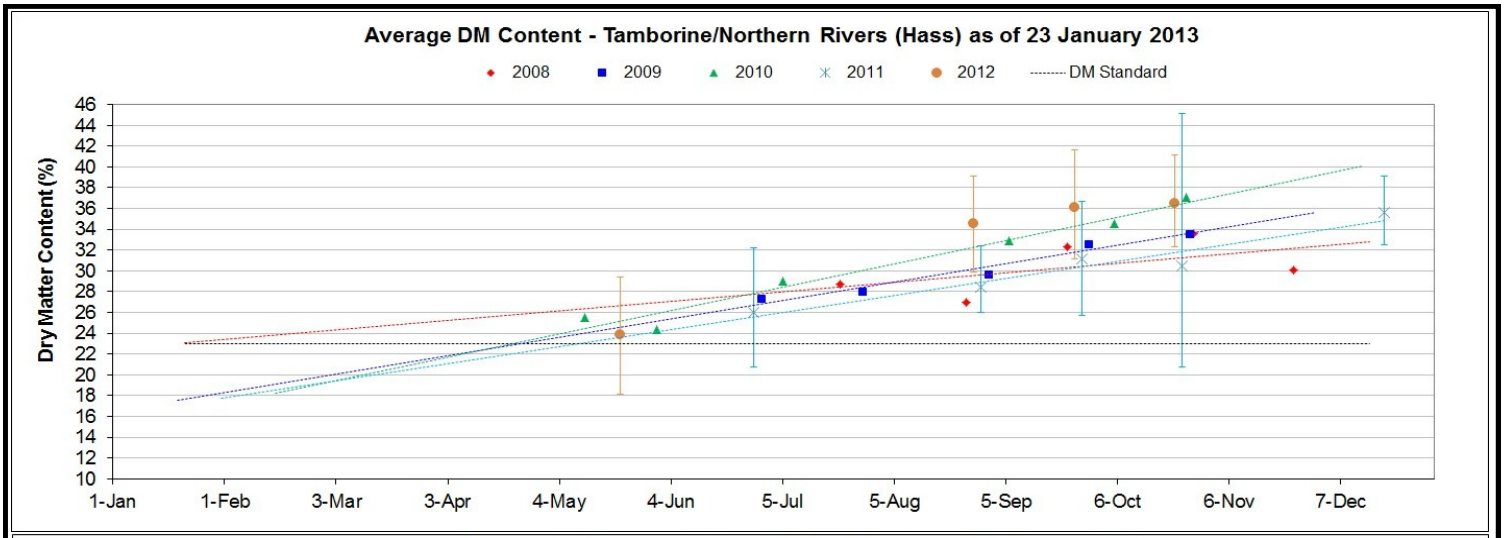


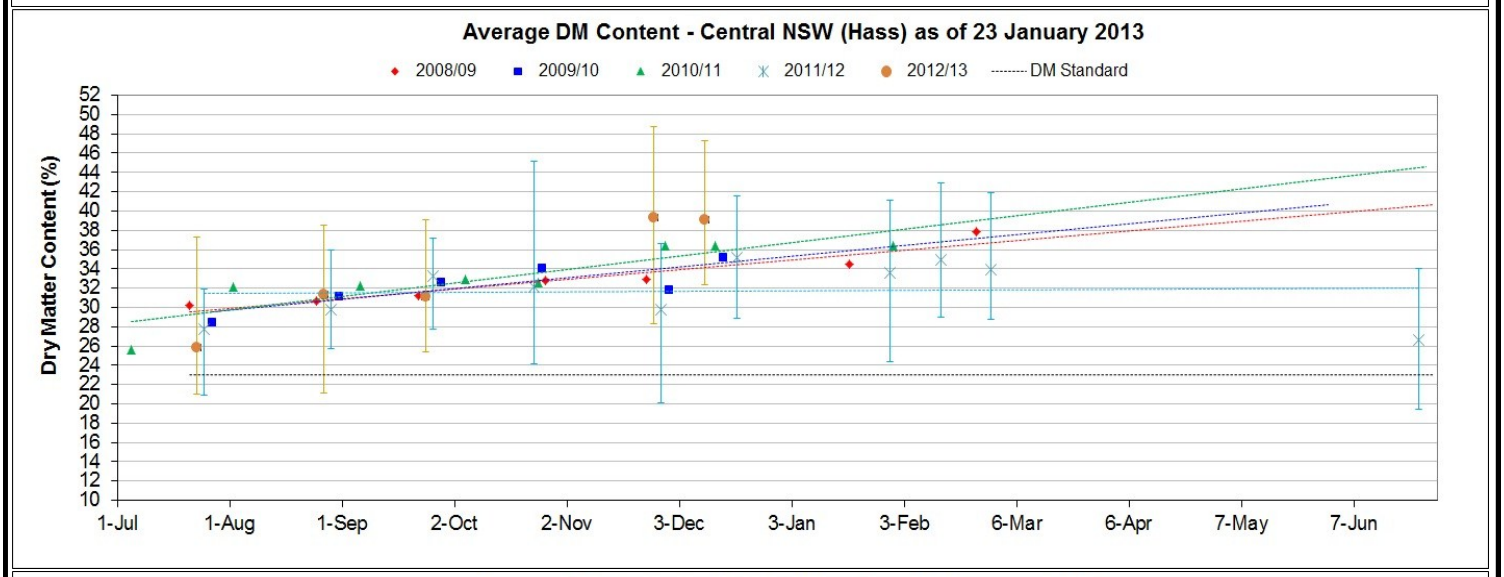

Average DM Content - Central Qld (Hass) as of 23 January 2013
2008
2009
2010
2011
2012
DM Standard
Dry Matter Content (%)
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
1-Jan
1-Feb
3-Mar
3-Apr
4-May
4-Jun
5-Jul
5-Aug
5-Sep
6-Oct
6-Nov
7-Dec

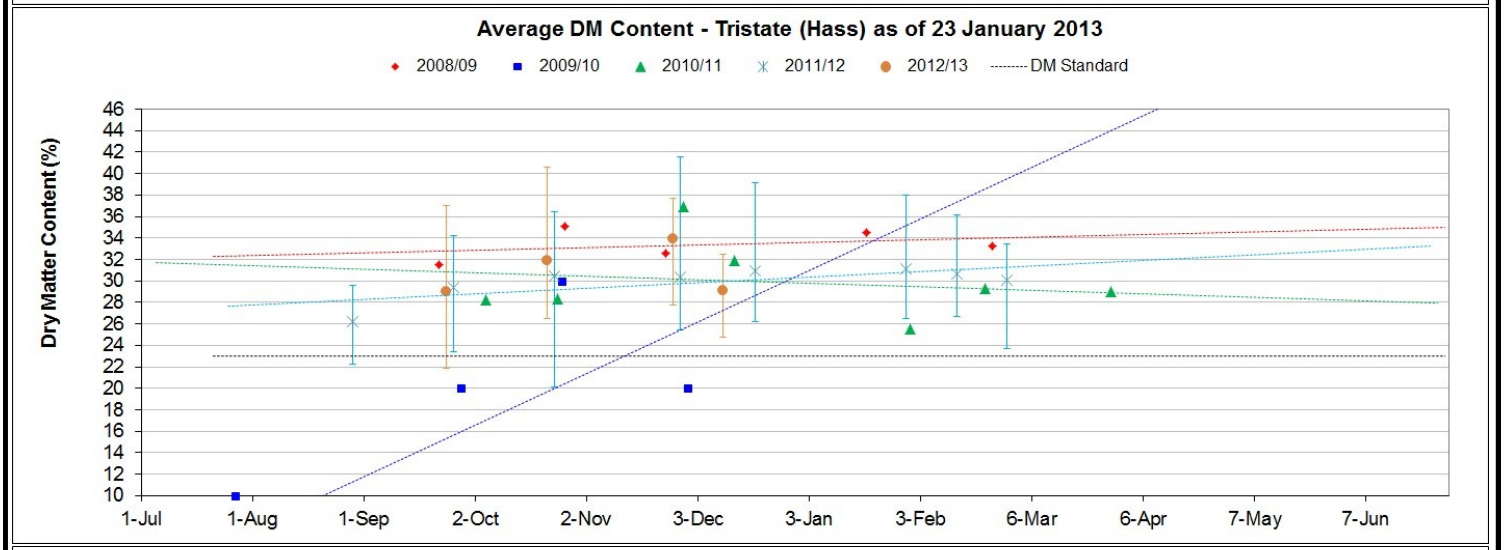

Average DM Content - Central Qld (Shepard) as of 23 January 2013
2008
2009
2010
2011
2012
DM Standard
Dry Matter Content (%)
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
1-Jan
1-Feb
3-Mar
3-Apr
4-May
4-Jun
5-Jul
5-Aug
5-Sep
6-Oct
6-Nov
7-Dec

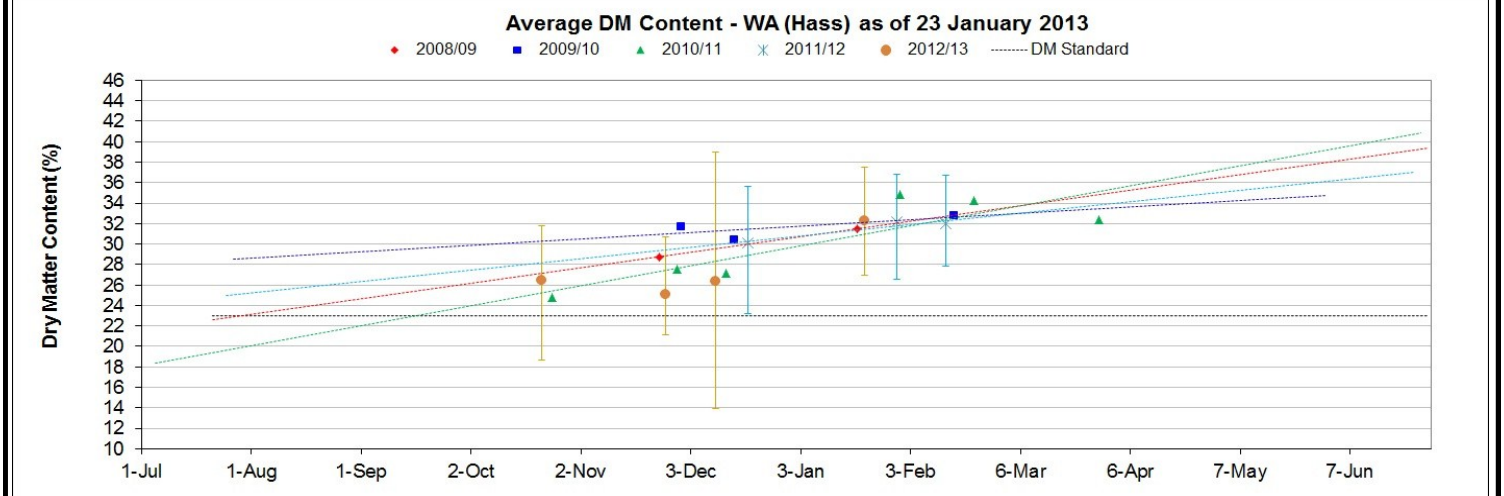

Average DM Content - Sunshine Coast (Hass) as of 23 January 2013
2008
2009
2010
2011
2012
DM Standard
Dry Matter Content (%)
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
1-Jan
1-Feb
3-Mar
3-Apr
4-May
4-Jun
5-Jul
5-Aug
5-Sep
6-Oct
6-Nov
7-Dec


Average DM Content - South Qld (Hass) as of 23 January 2013
2008
2009
2010
2011
2012
2013
DM Standard
Dry Matter Content (%)
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
1-Jan
1-Feb
3-Mar
3-Apr
4-May
4-Jun
5-Jul
5-Aug
5-Sep
6-Oct
6-Nov
7-Dec


Average DM Content - Tamborine/Northern Rivers (Hass) as of 23 January 2013
2008
2009
2010
2011
2012
DM Standard
Dry Matter Content (%)
1-Jan
1-Feb
3-Mar
3-Apr
4-May
4-Jun
5-Jul
5-Aug
5-Sep
6-Oct
6-Nov
7-Dec


Average DM Content - Central NSW (Hass) as of 23 January 2013
2008/09
2009/10
2010/11
2011/12
2012/13
DM Standard
Dry Matter Content (%)
1-Jul
1-Aug
1-Sep
2-Oct
2-Nov
3-Dec
3-Jan
3-Feb
6-Mar
6-Apr
7-May
7-Jun


Average DM Content - Tristate (Hass) as of 23 January 2013
2008/09
2009/10
2010/11
2011/12
2012/13
DM Standard
Dry Matter Content (%)
1-Jul
1-Aug
1-Sep
2-Oct
2-Nov
3-Dec
3-Jan
3-Feb
6-Mar
6-Apr
7-May
7-Jun


Average DM Content - WA (Hass) as of 23 January 2013
2008/09
2009/10
2010/11
2011/12
2012/13
DM Standard
Dry Matter Content (%)
1-Jul
1-Aug
1-Sep
2-Oct
2-Nov
3-Dec
3-Jan
3-Feb
6-Mar
6-Apr
7-May
7-Jun

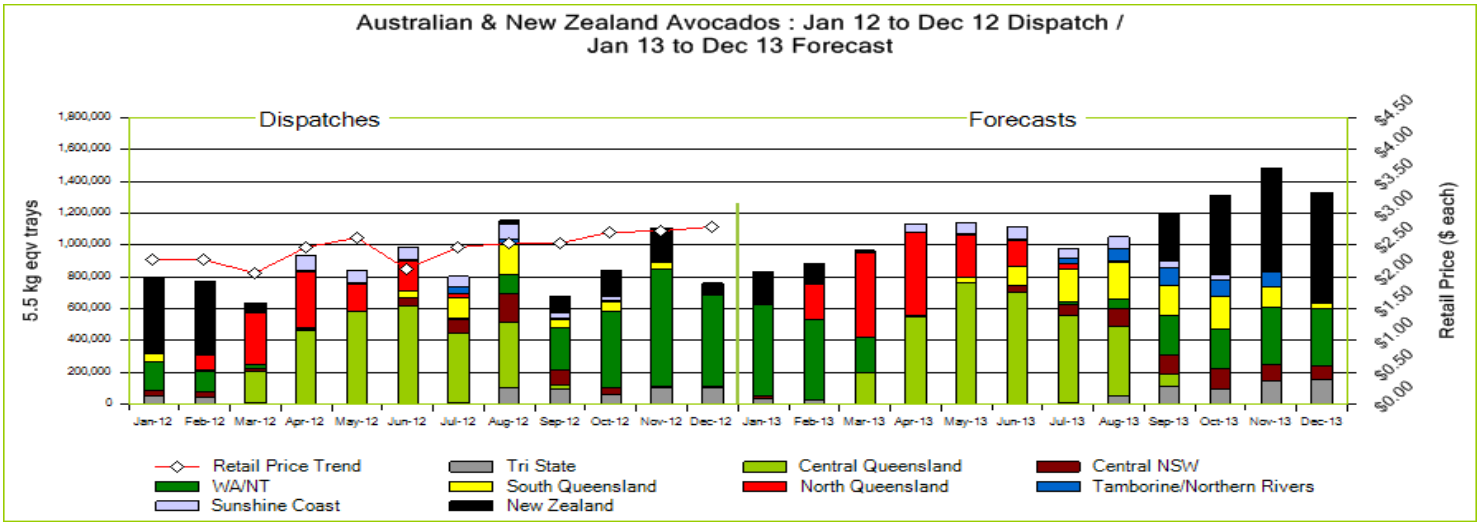
18.Appendix 9 – Infocado Quarterly Report

INFOCADO CROP FORECAST

Quarterly Report— January 2013

Welcome to the quarterly Infocado report. This report is released in the months January, April, July and October. Each report shows the previous 12 month's dispatch figures and the future 12 month's forecast figures including both Australian and New Zealand data.

Australian Avocados Forecast Jan 12 to Dec 12 (5.5 kg eqv trays) - from quarterly report January 12													
	Jan 12	Feb 12	Mar 12	Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	12 Mth Total
Hass	382,907	259,509	169,021	462,697	1,242,795	1,068,864	753,137	791,481	720,572	698,792	691,914	801,291	**8,042,980**
Shepard	13,059	277,404	704,569	414,251	34,113	1,235	0	1	0	4,706	4,000	4,706	**1,458,044**
Other	18,404	9,882	25,000	36,014	68,259	53,941	108,166	118,952	25,759	10,921	11,000	9,765	**496,063**
Total	**414,370**	**546,795**	**898,590**	**912,962**	**1,345,167**	**1,124,040**	**861,303**	**910,434**	**746,331**	**714,419**	**706,914**	**815,762**	**9,997,087**
Australian Avocados Dispatches Jan 12 to Dec 12 (5.5 kg eqv trays)													
Hass	294,001	168,434	49,334	596,028	796,255	947,227	684,332	1,032,604	537,466	653,460	844,362	604,070	**7,207,573**
Shepard	2,939	96,431	515,525	267,177	12,880	190	0	0	0	0	0	0	**895,142**
Other	31,271	50,747	13,160	71,228	29,993	36,902	118,719	93,772	36,717	26,088	51,276	83,386	**643,259**
Total	**328,211**	**315,612**	**578,019**	**934,433**	**839,128**	**984,319**	**803,051**	**1,126,376**	**574,183**	**679,548**	**895,638**	**687,456**	**8,745,974**
Australian Avocados Forecast Jan 13 to Dec 13 (5.5 kg eqv trays)													
	Jan 13	Feb 13	Mar 13	Apr 13	May 13	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	12 Mth Total
Hass	571,188	486,736	232,825	788,086	1,115,080	1,061,960	834,263	935,762	873,547	804,156	810,797	609,002	9,123,402
Shepard	6,553	216,802	722,700	359,428	-	-	-	-	-	-	-	-	1,305,483
Other	53,850	49,282	4,168	25,413	40,425	42,180	120,979	94,783	24,484	9,247	16,749	37,265	518,825
Total	**631,591**	**752,820**	**959,693**	**1,172,927**	**1,155,505**	**1,104,140**	**955,242**	**1,030,545**	**898,031**	**813,403**	**827,546**	**646,267**	**10,947,710**



Please note: New Zealand dispatch figures for Jan to Mar 2012 in the graph above are taken from Customs statistics.

Jan 12 to Dec 12 Dispatches & Jan 13 to Dec 13 Avocado Production Estimates 5.5kg eqv trays		
Region	**Jan to Dec12**	**Jan to Dec13**
North Queensland	**1,162,115**	**1,761,431**
Central Queensland	**2,742,509**	**3,292,948**
Sunshine Coast	**485,841**	**413,101**
Southern Queensland	**595,764**	**1,154,958**
Tamborine/Northern Rivers	**115,325**	**439,188**
Central NSW	**554,454**	**667,716**
Tri State	**555,729**	**615,224**
WA	**2,534,237**	**2,603,144**
Total	**8,745,974**	**10,947,710**

Please Note: The monthly forecast and dispatch figures in the Quarterly Infocado Report incorporate an allowance (which varies by region) to allow for the production forecasts and dispatches that are not inputted into the Infocado system. This production (dispatch and forecast) data is not inputted for various reasons including some packhouse's unwillingness to engage with industry and/or lack of computer access. For this reason it is not possible to extrapolate the figures from the Weekly Infocado Report to come up with either the dispatch and/or forecast figures in the Quarterly Infocado Report. At any time the Weekly Infocado Report incorporates around 85% of total production and forecasts however this does vary depending on time of year (as a result of the fruit coming from different regions with different levels of packhouse input). It is not functionally possible to incorporate allowances for missing data into the Weekly Infocado Report hence the variance between it and the Quarterly Infocado Report.

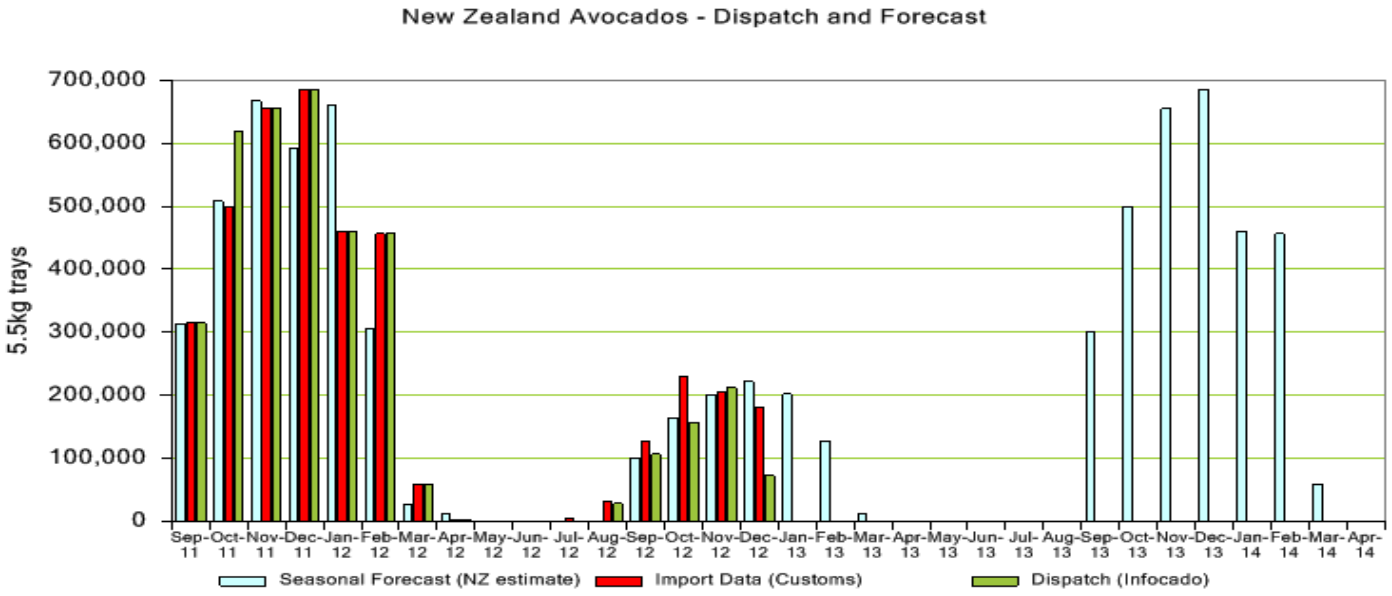
Comments from the Infocado Team

As everyone would be aware there have been extreme weather events directly affecting some major avocado growing regions over the last week. We have been talking to growers across the affected regions and early reports indicate that there has certainly been some fruit loss with considerable variability within and between regions. The areas that appear to be worst affected generally are Central Queensland and Mount Tamborine. We are unable to provide accurate estimates at this point but average fruit losses across the affected regions could be in the order of about 15% and fruit remaining on the trees have suffered some skin damage. We will be contacting growers over the next few days and weeks to get a better understanding of how these events will effect the overall national crop for 2013.

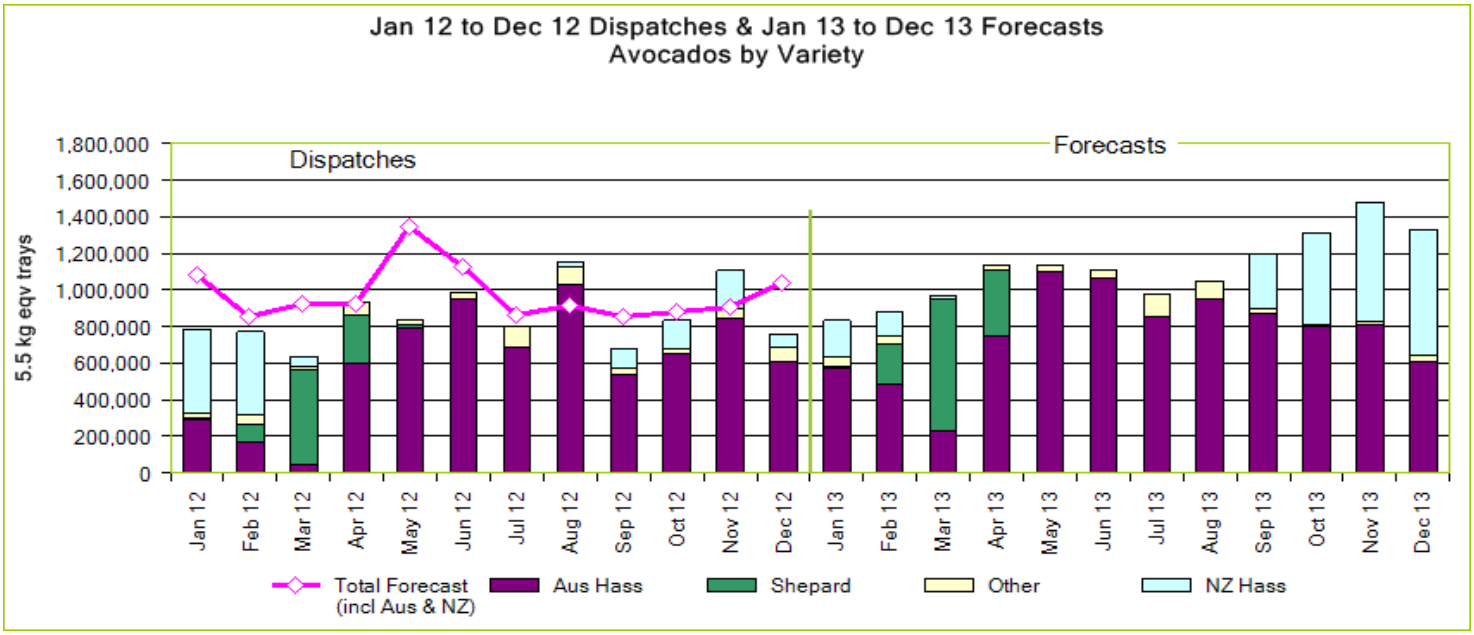
Furthermore, given that we are unable to account for the affects of recent events in this report we will be releasing another "quarterly report" in February with updated forecasts for 2013. As such the new forms were emailed to you yesterday. We would ask that you please update the form as soon as possible, keeping in mind that it will span from February 2013 to January 2014, so that we can promptly provide you with an updated forecast.

As discussed in the Weekly Reports, this is the first Quarterly Report we have produced using the regional committees to make estimates for non-contributing packhouses to replace the factor system. This means that on a 6 monthly basis these committees will be reviewing estimates of volumes from packhouses not contributing to the Infocado System. To assist with this process could you please review the contributors list on the second page of this report and email us any packhouses you know of that are not listed. That way we can first make every effort to get them to contribute their data and if that is not successful we can add them to our non-contributors list (if not already there) and include an estimate of their volumes in the quarterly report.

The new avocado marketing strategy will be finalised in the next few months and will be rolled out from July.



NB: NZ Dispatch (Infocado data) in the graph above were not available for Nov 11 to Apr 12 therefore Customs data has been inserted in its place for this report



NB: NZ Dispatch figures in this graph are from Infocado and Customs data. The total forecast line (pink line) in the chart above illustrates the most up to date forecasts. ie. The Oct 11 figure comes from the forecast made in Sep 11 and the Nov 11 figure comes from the forecast made in Oct 11.

Seasonal Forecast Contributors

Central NSW
Coastal Avocados
I & A Tolson
Kulnura Ambrosia Avocados
Midcoast Avocados

Central Qld
Avocado Ridge
BT & RG Pegg
Chris and Sue Allan
Donovan Family Investment Trust
Lava Valley Produce
Simpson Farms Pty Ltd
Sunny Bluff Produce Pty Ltd
SuperPak
The I & R Philpott Family Trust

NZ
Avocado Industry Council (NZAGA)

North Qld
Avocado Estates
Avocados With Altitude
Aussie Orchards Growers & Packers
B & F Sanderson Farming
Battistin Orchards Pty Ltd
Bellview Orchards Pty Ltd
Blushing Acres Pty Ltd
Golden Triangle Avocados
Gunnado Farm
Hilltop Mareeba
ID & AM Leighton
Lavers Orchards
Lone Gum Avocados
R & M Waterman
Tinaroo Falls Avocado Trust
Tropicado Avocados

South Qld
Wepac Avocados
Balmoral Orchard
Googa Farms
G&J Krenske
Green Nugget Orchards
Mountain Fresh
One Harvest
Perseverance Farming Co
Sunnyspot Packhouse Pty Ltd
Touchwood Farming

Sunshine Coast
G & C Christensen
Natures Fruit Company
Sunfresh

Tamborine Northern Rivers
Aussie Orchards Growers & Packers
JB & CM Culross
Jirel Holdings
Summerland House With No Steps
WJ Row

Tristate
Ashbourne Hills Avocados
C F Fechner
Chinoola Orchards
Chislett Developments Pty Ltd
KV & JM Lehmann
LD & PM Burns
Vitor Marketing Pty Ltd

WA
Advance Packing & Marketing Services P/L
Applewood Orchard
Avonova
Avowest
Box Organics
Delroy Orchards
Green Pear Avocado
Mariners Rest
The Avocado Grove
VP & EA Farrell
West Aussie Avos
Willow Creek

For more detailed reports please go to www.avocado.org.au and login to Infocado. Instructions on accessing reports are available at www.avocado.org.au by clicking on the Industry tab and then looking under services.

For further assistance please contact: Julie Petty, Ph: 07 3846 6566, Email: infocado@avocado.org.au

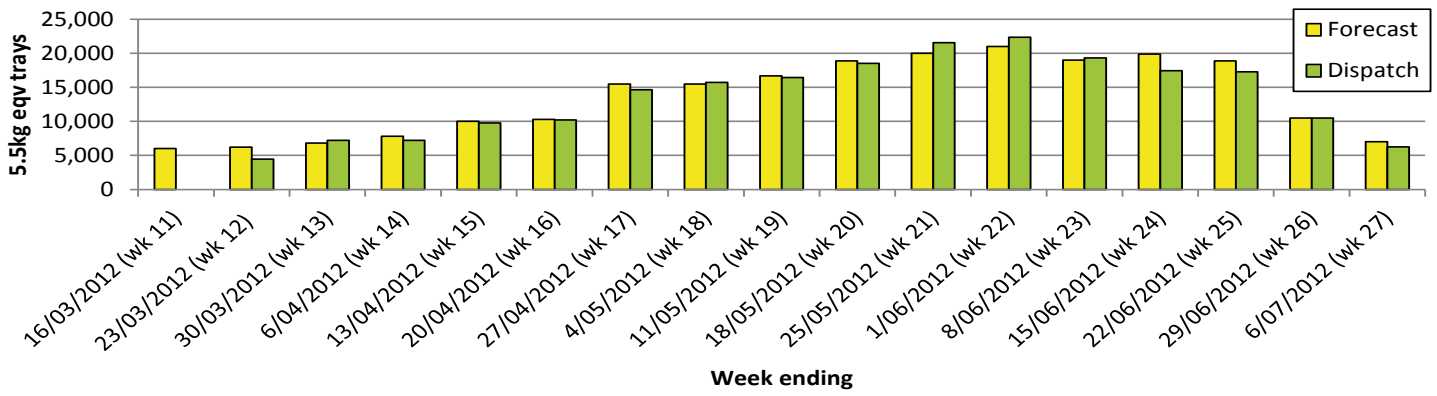
19.Appendix 10 – Infocado Annual Report

INFOCADO INDIVIDUAL REPORT

Example Packhouse - 2012

Green shading indicates dispatch data | Yellow shading indicates forecast data

Example Packhouse - Weekly Forecast vs Dispatch

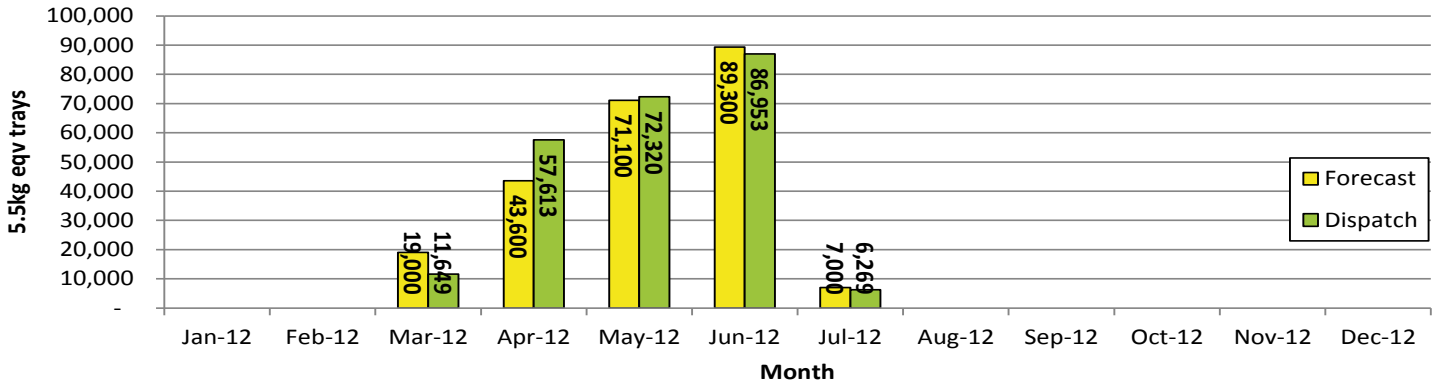


Percentage Difference between Weekly Forecast and Weekly Dispatches

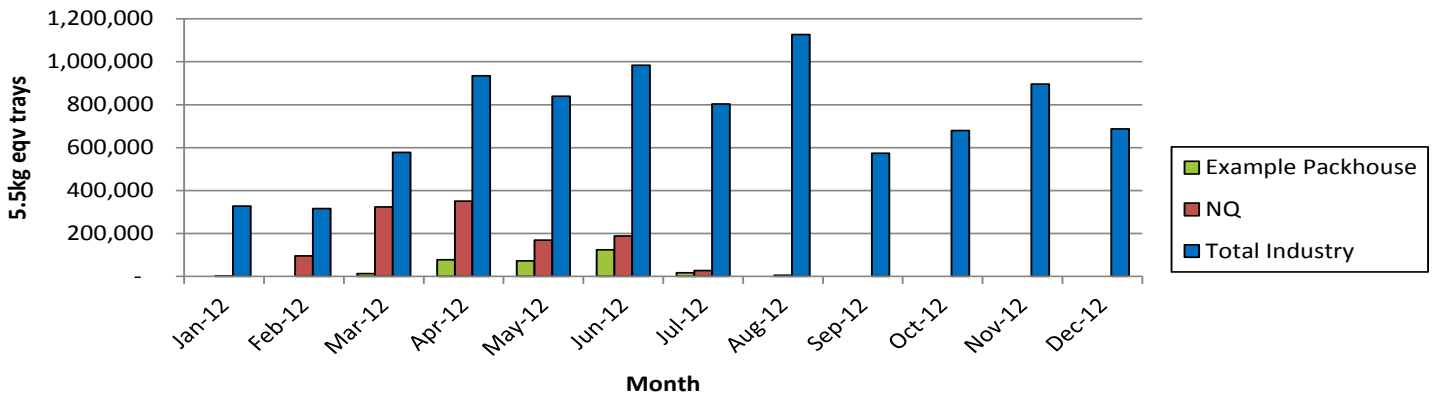
Week no.	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Forecast	6,000	6,200	6,800	7,800	10,000	10,300	15,500	15,500	16,700	18,900	20,000	21,000	19,000	19,900	18,900	10,500	7,000
Dispatch	-	4,444	7,205	7,210	9,780	10,222	14,667	15,734	16,456	18,545	21,567	22,379	19,348	17,439	17,289	10,498	6,269
% Diff	-100%	-28%	6%	-8%	-2%	-1%	-5%	2%	-1%	-2%	8%	7%	2%	-12%	-9%	0%	-10%

NB: Red font indicates % by which dispatch is less than forecast, black indicates % by which dispatch is higher than forecast.

Example Packhouse - Seasonal Forecast vs Dispatch



Dispatches - Example Packhouse vs NQ vs Total Industry



Dispatches (5.5kg eqv trays) January to December 2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Example Packhouse			11,649	57,613	72,320	86,953	6,269	-	-	-	-	-
NQ	1,534	95,817	323,672	351,401	168,776	188,042	27,256	5,617				
Total Industry	328,211	315,612	578,019	934,433	839,128	984,319	803,051	1,126,376	574,183	679,548	895,638	687,456

20.Appendix 11 – OrchardInfo Form and Instructions

Refers to the harvest that began in 2010

Refers to the harvest that began in 2011

Enter rejected fruit in tonnes—enter 0 if no fruit rejected.

Where a previous season's block has been removed (before harvesting for this season) please just put a line through the whole row but include a comment to explain the reason the block was removed.

Please complete the form below, and when finished, forward the form to the form server b

Refresh

These fields or columns are mandatory when a variety has been selected.

Orchard Profile (Avocado)

Date 15/1

Grower: Avocados Australia Ltd
Contact: Joanna Embry

Address:

Australia

Phone:
Email: j.embry@avocado.org.au

Instructions

2010 Season

Orchard Profile for the 2011 Season

	Unique Block ID	Block Name	Variety	Rootstock	Yield (T)	Reject (T)	Year Plant	Tree Space	Row Space	No Trees	Ha	Yield (T)	Reject (T)	Comments	Clear Block
eg.	Office Use	H01	Hass	Velvick Clonal	50.5	10.2	1995	8.00	8.50	500	3.4	60.8	5.8		
		Jo1	Hass	Velvick			1990	10.00	5.00	100				Block details unchanged	
		Jo2	Hass	Velvick			1990	10.00	5.00	200				Block details unchanged	

Total harvested fruit in tonnes—enter 0 if

Choose comment from below that best describes any changes to the block since last season or add a different explanation if need be

Use any combination of alpha numeric characters

Bacon
Edrinol
Fuerte
Gwen
Hass
Hass NZ
Lamb Hass
Pinkerton
Reed
Sharwil
Shepard
Wurtz
Other

A8 Clonal
A8 Seedling
Ashdot Seedling
Degania Seedling
Duke 6 Clonal
Duke 6 Seedling
Duke 7 Clonal
Duke 7 Seedling
Dusa Clonal
Edranol Seedling
Guatemalan Seedling
Kidd Seedling
Latas Clonal
Nabal Seedling
Reed Seedling
Velvick Clonal
Velvick Seedling
Velvick Types
Zutano Seedling
Unknown

If the exact year planted is not known please include an estimate

Unit is metres

Please specify either number of trees or hectares. You do not need to include both. Enter the one you are most sure of

Block details unchanged
Some trees removed
All trees staghorned
Some trees staghorned
All trees removed permanently
All trees removed and block replanted
All trees removed with plans to replant
Some trees removed and new trees replanted in spaces
New trees planted amongst existing block
New trees planted in a new block
Some trees pruned
All trees pruned
Hail damage
Storm damage
Cyclone damage
Frost damage
Flood damage
Cool temperatures during fruitset
Drought affected
Reduced water allocations
Other explanation - please enter details

21.Appendix 12 – 2011 OrchardInfo Report All Regions

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 1	1	Velvick Seedling	2011	0 Yr	459	2.48	185			
Region 1	2	Zutano	2011	0 Yr	350	2.1	167			
				Tree Age Total :	809	4.58	177			
Region 1	1	Reed	2010	1 Yr	2,000	8	250			
Region 1	4	AA1	2010	1 Yr	3,000	6	500			
Region 1	4	Ashdot Seedling	2010	1 Yr	1,000	1.75	571			
Region 1	4	Reed	2010	1 Yr	3,000	6	500			
Region 1	4	Velvick	2010	1 Yr	6,000	12	500			
				Tree Age Total :	15,000	33.75	444			
Region 1	1	Unknown	2009	2 Yr	500	2	250			
Region 1	1	Velvick	2009	2 Yr	1,780	7.19	248			
				Tree Age Total :	2,280	9.19	248			
Region 1	1	Velvick Seedling	2008	3 Yr	670	3.62	185	0.5	0.14	0.7
				Tree Age Total :	670	3.62	185	0.5	0.14	0.7
Region 1	1	Velvick Seedling	2007	4 Yr	1,982	10.7	185	6.5	0.61	3.3
				Tree Age Total :	1,982	10.7	185	6.5	0.61	3.3
Region 1	1	Dean	2006	5 Yr	225	1.01	223			
Region 1	1	Guatemalan Mexicol	2006	5 Yr	200	0.8	250	0.8	1	4
Region 1	1	Unknown	2006	5 Yr	4,109	18.4	223	74	4.63	19.4
Region 1	1	Velvick	2006	5 Yr	652	2.93	223			
				Tree Age Total :	5,186	23.14	224	74.8	4.45	18.7
Region 1	1	Guatemalan Seedling	2005	6 Yr	1,178	6.36	185	2.8	0.44	2.4
Region 1	1	Mixed Guat/Velvick	2005	6 Yr	861	4.65	185	2.5	0.54	2.9
Region 1	1	Unknown	2005	6 Yr	2,750	12	229	10	1	4
				Tree Age Total :	4,789	23.01	208	15.3	0.73	3.4
Region 1	1	Guatemalan Seedling	2004	7 Yr	776	4.19	185	4	0.95	5.2
Region 1	1	Unknown	2004	7 Yr	187	0.9	208	7.1	7.89	38
Region 1	1	Velvick	2004	7 Yr	2,049	9.22	222			
Region 1	2	Zutano Seedling	2004	7 Yr	70	0.42	167	1.5	3.57	21.4
				Tree Age Total :	3,082	14.73	209	12.6	2.29	12.2
Region 1	1	Guatemalan Seedling	2003	8 Yr	552	2.98	185	1.1	0.37	2
				Tree Age Total :	552	2.98	185	1.1	0.37	2

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 1	1	Guatemalan Seedling	2002	9 Yr	498	2.69	185	3.1	1.15	6.2
Region 1	4	Unknown	2002	9 Yr	321	0.77	417	0.9	1.17	2.8
Region 1	7	Unknown	2002	9 Yr	100	1	100			
				Tree Age Total :	919	4.46	206	4	1.16	4.9
Region 1	5	Unknown	1992	10+ Yr	27	0.07	386			
Region 1	6	Birdwood	1998	10+ Yr	100	0.4	250			
Region 1	6	Unknown	1992	10+ Yr	60	0.29	207			
Region 1	1	Birdwood	1998	10+ Yr	200	0.8	250			
Region 1	1	Duke 6 Seedling	1993	10+ Yr	251	0.88	285	3.6	4.09	14.3
Region 1	1	Duke 7 Seedling	1988	10+ Yr	719	3.04	237	21.8	7.17	30.3
Region 1	1	Edranol Seedling	1999	10+ Yr	581	2.61	223			
Region 1	1	Guat & Velvick Seed	2000	10+ Yr	773	3.48	222			
Region 1	1	Guatemalan Seedling	1995	10+ Yr	3,684	18.69	197	25.7	13.11	52.4
Region 1	1	Reed	1995	10+ Yr	300	1.92	156	1.2	0.63	4
Region 1	1	Unknown	1980	10+ Yr	6,215	28.2	220	165.6	9.8	37.1
Region 1	1	Unknown-Anderson	1999	10+ Yr	250	1.5	167	0.9	0.6	3.6
Region 1	1	Velvick	1995	10+ Yr	300	1.92	156	7	3.65	23.3
Region 1	1	Velvick Clonal	1999	10+ Yr	520	2.91	179			
Region 1	1	Zutano Seedling	1995	10+ Yr	400	2.52	159			
Region 1	8	Unknown	1992	10+ Yr	13	0.03	433			
Region 1	2	Birdwood	2000	10+ Yr	100	0.4	250			
Region 1	2	Guatemalan Seedling	2000	10+ Yr	250	0.7	357	5.9	8.43	23.6
Region 1	4	Guatemalan Seedling	1998	10+ Yr	200	0.48	417	6	12.5	30
Region 1	4	Unknown	1992	10+ Yr	11	0.02	550			
Region 1	7	Unknown	1992	10+ Yr	73	0.32	228	0.4	2	17.4
				Tree Age Total :	15,027	71.18	211	238.1	8.02	32.8
Region Total :					50,296	201.34	250	352.9	2.5	9.1
Region 2	1	Birdwood	2011	0yr	7,725	38.62	200			
Region 2	7	Reed	2011	0yr	500	3.6	139			
				Tree Age Total :	8,225	42.22	195			
Region 2	1	B22	2010	1yr	1,500	7.5	200			
Region 2	1	Birdwood	2010	1yr	4,686	23.31	201			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 2	3	Birdwood	2010	1yr	1,435	7.18	200			
Region 2	3	BW2	2010	1yr	1,455	7.28	200			
Region 2	3	Velvick	2010	1yr	152	0.61	249			
Region 2	9	Unknown-Birdwood	2010	1yr	1,080	2.84	380			
				Tree Age Total :	10,308	48.72	212			
Region 2	1	Unknown	2009	2yrs	478	5.02	95	23.8	4.74	49.8
Region 2	3	Velvick/Birdwood unknown	2009	2yrs	832	3.74	222			
				Tree Age Total :	1,310	8.76	150	23.8	4.74	49.8
Region 2	1	Birdwood	2008	3yrs	3,000	15	200			
Region 2	1	Velvick	2008	3yrs	350	2.52	139			
Region 2	1	Velvick Seedling	2008	3yrs	5,000	25	200	190.9	7.64	38.2
Region 2	3	Unknown	2008	3yrs	478	4.52	106	9.3	2.06	19.5
				Tree Age Total :	8,828	47.04	188	200.2	4.5	23.6
Region 2	1	Birdwood	2007	4yrs	5,000	25	200	125.2	5.01	25
Region 2	1	Reed Seedling	2007	4yrs	1,800	9	200	102.7	11.41	57.1
Region 2	1	Unknown	2007	4yrs	12,324	62.07	199	447.1	8.14	39.7
				Tree Age Total :	19,124	96.07	199	675	7.59	37.3
Region 2	1	Birdwood	2006	5yrs	3,000	15	200	58.8	3.92	19.6
Region 2	1	Dusa Clonal	2006	5yrs	250	1.25	200	14	11.2	56
Region 2	1	Guatemalan Seedling	2006	5yrs	2,280	11.77	194	102.8	8.73	45.1
Region 2	1	Unknown	2006	5yrs	19,883	111.59	178	1,069.70	9.59	53.8
Region 2	1	Unknown-Birdwood	2006	5yrs	96	0.52	185	2.6	5	27.1
Region 2	1	Velvick	2006	5yrs	400	2.88	139			
Region 2	1	Velvick Seedling	2006	5yrs	4,020	18.7	215	232	12.41	57.7
Region 2	10	Unknown-Birdwood	2006	5yrs	98	0.39	251	4.7	12.05	48
Region 2	7	Unknown-Birdwood	2006	5yrs	13	0.07	186	0.1	1.43	7.7
Region 2	3	Unknown	2006	5yrs	478	3.51	136	11.7	3.33	24.5
Region 2	3	Unknown-Birdwood	2006	5yrs	277	1.22	227	5.9	4.84	21.3
Region 2	3	Velvick	2006	5yrs	600	3.24	185			
Region 2	3	Velvick Seedling	2006	5yrs	1,600	8	200	106.3	13.29	66.4
				Tree Age Total :	32,995	178.14	185	1,608.60	9.35	50.3
Region 2	1	Birdwood	2005	6yrs	750	3.75	200	42	11.2	56

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 2	1	Guatemalan Seedling	2005	6yrs	730	3.65	200	37.5	10.27	51.4
Region 2	1	Unknown	2005	6yrs	15,584	87.04	179	1,185.30	13.88	77.2
Region 2	1	Velvick Seedling	2005	6yrs	5,172	9.73	532	175.9	18.08	82.9
Region 2	1	Velvick/Birdwood unknown	2005	6yrs	1,570	7.85	200	87	11.08	55.4
Region 2	1	Youngs 19	2005	6yrs	1,638	8.19	200	89	10.87	54.3
Region 2	10	Guatemalan Seedling	2005	6yrs	550	2.75	200	36	13.09	65.5
Region 2	4	Unknown	2005	6yrs	9,834	52.24	188	531.8	10.18	54.1
Region 2	3	Guatemalan Seedling	2005	6yrs	1,250	6.25	200	68	10.88	54.4
Region 2	3	Unknown	2005	6yrs	3,726	22.36	167	185.1	8.28	49.7
				Tree Age Total :	40,804	203.81	200	2,437.60	12.06	65
Region 2	1	Guatemalan Seedling	2004	7yrs	704					
Region 2	1	Unknown	2004	7yrs	9,451	53.08	178	671.3	13.59	75.3
Region 2	1	Velvick	2004	7yrs	155	0.74	209	7.8	10.54	50.3
Region 2	1	Velvick Seedling	2004	7yrs	2,900	13.05	222	256.3	19.64	88.4
Region 2	1	Velvick/Birdwood unknown	2004	7yrs	1,685	8.43	200	93	11.03	55.2
Region 2	1	Youngs 128	2004	7yrs	800	4	200	42	10.5	52.5
Region 2	2	Unknown	2004	7yrs	2,580	14.13	183	330.7	23.4	128.2
Region 2	4	Unknown	2004	7yrs	3,124	16.79	186	196.3	11.69	62.8
Region 2	3	Guatemalan Seedling	2004	7yrs	787					
Region 2	3	Unknown	2004	7yrs	1,660	8.58	193	62.2	7.25	37.5
Region 2	9	Unknown	2004	7yrs	643	2.06	312	10.1	4.9	15.7
				Tree Age Total :	24,489	120.86	203	1,669.70	14.25	74.3
Region 2	1	Unknown	2003	8yrs	27,623	141.13	196	2,646.00	18.75	95.8
Region 2	2	Unknown	2003	8yrs	401	2.41	166	22.3	9.25	55.6
Region 2	3	Unknown	2003	8yrs	11,080	58.41	190	358.9	6.14	32.4
Region 2	3	Velvick	2003	8yrs	80	0.32	250	1	3.13	12.5
				Tree Age Total :	39,184	202.27	194	3,028.20	14.97	77.3
Region 2	1	Unknown-Birdwood	2002	9yrs	110	0.4	275	6	15	54.5
Region 2	1	Velvick	2002	9yrs	120	0.48	250	6.2	12.92	51.7
Region 2	7	Unknown-Birdwood	2002	9yrs	76	0.27	281	3	11.11	39.5
				Tree Age Total :	306	1.15	266	15.2	13.22	49.7
Region 2	6	Unknown	2001	10yrs+	100	0.5	200	4.7	9.4	47

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 2	6	Velvick Seedling	1994	10yrs+	279	2.23	125	10.5	4.71	37.6
Region 2	1	Guatemalan Seedling	1995	10yrs+	3,750	5.54	677	30.4	5.49	43.9
Region 2	1	Unknown	2001	10yrs+	39,409	198.21	199	2,235.10	11.28	56.7
Region 2	1	Velvick Seedling	1994	10yrs+	286	2.29	125	11.6	5.07	40.6
Region 2	1	Velvick/Birdwood unknown	1997	10yrs+	5,112	36.81	139			
Region 2	2	Unknown	1999	10yrs+	6,134	22.99	267	416.6	18.12	67.9
Region 2	7	Guatemalan Seedling	2000	10yrs+	80	0.36	222	0.9	2.5	11.3
Region 2	7	Unknown	1996	10yrs+	818	4.22	194	35.1	8.32	42.9
Region 2	3	B22	1994	10yrs+	500	2.7	185	33.1	12.26	66.2
Region 2	3	Unknown	2001	10yrs+	14,614	72.98	200	329.5	4.51	22.5
Region 2	3	Velvick	2000	10yrs+	100	0.45	222	0.9	2	9
Region 2	9	Guatemalan Seedling	2000	10yrs+	100	0.45	222	-0.3	-0.67	-3
Region 2	9	Unknown	1993	10yrs+	4,187	21.05	199	115.2	5.47	27.5
Region 2	9	Velvick Seedling	1993	10yrs+	300	1.35	222	5.4	4	18
				Tree Age Total :	75,769	372.13	204	3,228.70	9.63	47.8
Region Total :					261,342	1,321.17	198	12,887.00	10.26	52.8
Region 3	3	Velvick	2011	0yr	1,270	9.61	132			
Region 3	11	Turner Hass	2011	0yr	1,240	6.2	200			
				Tree Age Total :	2,510	15.81	159			
Region 3	1	Guatemalan Seedling	2010	1yr	2,660	21.01	127			
Region 3	3	Velvick	2010	1yr	500	4.22	118			
Region 3	3	Velvick/Birdwood unknown	2010	1yr	400	2.8	143			
				Tree Age Total :	3,560	28.03	127			
Region 3	1	Unknown-Turkinje	2009	2yrs	750	4.5	167			
				Tree Age Total :	750	4.5	167			
Region 3	1	Unknown-Turkinje	2009	2 Yr	750	4.5	167			
				Tree Age Total :	750	4.5	167			
Region 3	1	Velvick	2009	2yrs	54	0.45	120			
Region 3	1	Velvick Seedling	2009	2yrs	2,840	18.74	152	-1.1	-0.06	-0.4
Region 3	3	Velvick	2009	2yrs	800	9.06	88	38.8	4.28	48.5
Region 3	3	Velvick Seedling	2009	2yrs	838	5.53	152	4.7	0.85	5.6
Region 3	3	Zutano	2009	2yrs	620	3.35	185			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 3	11	Velvick	2009	2yrs	1,000	8.4	119			
				Tree Age Total :	6,152	45.53	135	42.4	1.01	7.7
Region 3	1	Dusa	2008	3yrs	450	1.8	250	16.9	9.39	37.6
Region 3	1	Velvick Seedling	2008	3yrs	350	2.31	152	11.9	5.15	34
Region 3	3	Velvick Seedling	2008	3yrs	385	2.54	152	12.3	4.84	31.9
Region 3	3	Velvick/BW2 Ashdot	2008	3yrs	3,500	29.4	119	25.7	0.87	7.3
				Tree Age Total :	4,685	36.05	130	66.8	1.85	14.3
Region 3	1	Guatemalan Seedling	2007	4yrs	720	6.08	118	3	0.49	4.2
Region 3	3	Velvick	2007	4yrs	420	2.27	185			
				Tree Age Total :	1,140	8.35	137	3	0.49	4.2
Region 3	1	Nabal Seedling	2006	5yrs	246	1.48	166	9.1	6.15	37
Region 3	1	Velvick Seedling	2006	5yrs	305	1.83	167	10.6	5.79	34.8
Region 3	12	Unknown	2006	5yrs	238	1.43	166	2.8	1.96	11.8
Region 3	3	Reed	2006	5yrs	450	2.7	167	39.6	14.67	88
Region 3	3	Unknown-Birdwood	2006	5yrs	100	0.48	208			
Region 3	3	Velvick Seedling	2006	5yrs	654	3.73	175	7.5	2.01	11.5
				Tree Age Total :	1,993	11.65	171	69.6	5.97	34.9
Region 3	1	Guatemalan Seedling	2005	6yrs	780	6.59	118	8	1.21	10.3
Region 3	3	Guatemalan Seedling	2005	6yrs	780	4.21	185			
Region 3	3	Reed	2005	6yrs	480	2.88	167	39.6	13.75	82.5
Region 3	3	Unknown	2005	6yrs	650	3.35	194	10.4	3.1	16
Region 3	3	Unknown-Birdwood	2005	6yrs	474	2.28	208			
Region 3	3	Velvick	2005	6yrs	8,374	42.93	195	399.5	10.28	52.4
Region 3	3	Velvick/Birdwood unknown	2005	6yrs	1,100	5.14	214	44.6	8.68	40.5
				Tree Age Total :	12,638	67.38	188	502.1	8.49	45.2
Region 3	1	Guatemalan Seedling	2004	7yrs	660	3.96	167	22	5.56	33.3
				Tree Age Total :	660	3.96	167	22	5.56	33.3
Region 3	1	Guatemalan Seedling	2004	7 Yr	660	3.96	167			
				Tree Age Total :	660	3.96	167			
Region 3	2	Unknown-Birdwood	2004	7yrs	225	1.35	167	2	1.48	8.9
				Tree Age Total :	225	1.35	167	2	1.48	8.9
Region 3	2	Unknown-Birdwood	2004	7 Yr	225	1.35	167			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
				Tree Age Total :	225	1.35	167			
Region 3	13	Unknown-Birdwood	2004	7yrs	25	0.15	167			
				Tree Age Total :	25	0.15	167			
Region 3	13	Unknown-Birdwood	2004	7 Yr	25	0.15	167			
				Tree Age Total :	25	0.15	167			
Region 3	3	Unknown	2004	7yrs	1,420	7.51	189	18.7	8.86	44.5
				Tree Age Total :	1,420	7.51	189	18.7	8.86	44.5
Region 3	3	Unknown	2003	8yrs	1,200	7.2	167	68	9.44	56.7
Region 3	3	Velvick	2003	8yrs	1,821	10.93	167	113.2	10.36	62.2
Region 3	3	Velvick Seedling	2003	8yrs	470	2.37	198	10.1	4.26	21.5
				Tree Age Total :	3,491	20.5	170	191.3	9.33	54.8
Region 3	3	Duke 7 Seedling	2002	9yrs	307	1.66	185	27.3	16.45	88.9
Region 3	3	Velvick/Birdwood unknown	2002	9yrs	450	2.1	214	3.5	1.67	7.8
				Tree Age Total :	757	3.76	201	30.8	8.19	40.7
Region 3	1	Duke 7 Clonal	1998	10yrs+	1,650	13.2	125	107	8.11	64.8
Region 3	1	Guatemalan Seedling	2000	10yrs+	1,670	14.11	118	20.5	1.45	12.3
Region 3	10	Guatemalan Seedling	1980	10yrs+	50	0.42	119	0.7	1.67	14
Region 3	3	Duke	1999	10yrs+	1,404	7.86	179	91.5	11.64	65.2
Region 3	3	Unknown	2001	10yrs+	6,580	38.05	173	263.3	9.16	54
Region 3	3	Unknown-Birdwood	2001	10yrs+	1,620	7.78	208			
Region 3	3	Velvick	1995	10yrs+	4,544	31.57	144	211	9.42	74.2
Region 3	3	Velvick Clonal	1992	10yrs+	450	3.6	125	10	2.78	22.2
Region 3	3	Velvick Seedling	1990	10yrs+	2,851	22.54	126	168.5	7.48	59.1
Region 3	3	Velvick/Birdwood unknown	2001	10yrs+	1,136	6.81	167	81.8	12.01	72
				Tree Age Total :	21,955	145.94	150	954.3	7.49	51.4
Region Total :					63,621	410.43	155	1,903.00	5.34	35.2
Region 4	1	Velvick Seedling	2011	0yr	250	1.35	185			
				Tree Age Total :	250	1.35	185			
Region 4	1	Birdwood	2010	1yr	165	1.32	125			
Region 4	1	Dusa Clonal	2010	1yr	600	3.34	180			
Region 4	1	Unknown-Birdwood	2010	1yr	750	6.07	124			
Region 4	1	Velvick Seedling	2010	1yr	101	0.48	210			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 4	13	Birdwood	2010	1yr	160	1.01	158			
				Tree Age Total :	1,776	12.22	145			
Region 4	1	Dusa Clonal	2009	2yrs	570	4.98	114			
Region 4	1	Merensky Clonal	2009	2yrs	100	0.54	185			
Region 4	1	Velvick Seedling	2009	2yrs	202	1.64	123	5	3.05	24.8
				Tree Age Total :	872	7.16	122	5	0.7	5.7
Region 4	1	A10 & Velvick seed	2008	3yrs	277	1.33	208	0.2	0.15	0.7
Region 4	1	Dusa Clonal	2008	3yrs	300	1.92	156			
Region 4	1	Velvick Seedling	2008	3yrs	224	1.08	207	0.5	0.46	2.2
				Tree Age Total :	801	4.33	185	0.7	0.16	0.9
Region 4	1	Ashdot Seedling	2007	4yrs	65	0.41	159	2.2	5.37	33.8
Region 4	1	Birdwood	2007	4yrs	480	4.75	101			
Region 4	1	Dusa Clonal	2007	4yrs	65	0.41	159	1.8	4.39	27.7
Region 4	1	Guatemalan Seedling	2007	4yrs	65	0.41	159	1.4	3.41	21.5
Region 4	1	Merensky Clonal	2007	4yrs	100	0.54	185	2.3	4.26	23
Region 4	1	Velvick	2007	4yrs	2,000	14	143			
Region 4	1	Velvick Seedling	2007	4yrs	300	1.92	156	9.8	5.1	32.7
Region 4	1	Velvick/Birdwood unknown	2007	4yrs	119	0.57	209	2	3.51	16.8
				Tree Age Total :	3,194	23.01	139	19.5	4.58	27.3
Region 4	1	Dusa Clonal	2006	5yrs	50	0.25	200	1	4	20
Region 4	1	Guatemalan Seedling	2006	5yrs	255	1.73	147	8.3	6.75	42.6
Region 4	1	Unknown	2006	5yrs	100	0.48	208			
Region 4	1	Velvick Seedling	2006	5yrs	555	3.18	175	12.6	3.96	22.7
				Tree Age Total :	960	5.64	170	21.9	4.7	27.4
Region 4	1	Dusa Clonal	2005	6yrs	300	1.92	156	19.6	10.21	65.3
Region 4	1	Velvick Seedling	2005	6yrs	240	2.4	100	4.2	1.75	17.5
Region 4	7	Velvick Seedling	2005	6yrs	162	1.3	125			
Region 4	9	Velvick Seedling	2005	6yrs	33	0.2	165			
				Tree Age Total :	735	5.82	126	23.8	4.09	32.4
Region 4	1	Velvick Seedling	2004	7yrs	240	2.4	100	3.9	1.63	16.3
				Tree Age Total :	240	2.4	100	3.9	1.63	16.3
Region 4	1	Guatemalan Seedling	2003	8yrs	65	0.41	159	4	9.76	61.5

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 4	1	Unknown-Birdwood	2003	8yrs	380	1.37	277	49	35.77	128.9
Region 4	2	Guatemalan Seedling	2003	8yrs	100	0.63	159	3.3	5.24	33
Region 4	9	Guatemalan Seedling	2003	8yrs	149	0.94	159	3.6	3.83	24.2
				Tree Age Total :	694	3.35	207	59.9	17.88	86.3
Region 4	1	Unknown	2002	9yrs	300	2.88	104	9.3	3.23	31
Region 4	1	Velvick	2002	9yrs	3,000	21	143			
Region 4	1	Velvick Seedling	2002	9yrs	250	2.5	100	12.7	5.08	50.8
Region 4	2	Velvick Seedling	2002	9yrs	250	2.5	100	3.1	1.24	12.4
				Tree Age Total :	3,800	28.88	132	25.1	3.19	31.4
Region 4	6	Unknown	1985	10yrs+	223	1.88	119	1.3	3.82	30.2
Region 4	1	Birdwood	1994	10yrs+	1,149	7.24	159			
Region 4	1	Guat & Velvick Seed	2000	10yrs+	200	1.8	111			
Region 4	1	Guatemalan Seedling	1982	10yrs+	4,203	32.27	130	262.1	21.27	141.1
				Tree Age Total :	5,775	43.19	134	263.4	20.81	138.6
Region 4	1	Unknown	1995	10+ Yr	1,344	12.9	104			
				Tree Age Total :	1,344	12.9	104			
Region 4	1	Unknown	1990	10yrs+	5,618	48.67	115	133	3.84	31.5
Region 4	1	Unknown-Birdwood	1998	10yrs+	1,612	5.8	278	223.5	38.53	138.6
				Tree Age Total :	7,230	54.47	133	356.5	8.81	61.1
Region 4	1	Velvick	1995	10+ Yr	70	0.67	104			
				Tree Age Total :	70	0.67	104			
Region 4	1	Velvick	1990	10yrs+	7,000	49	143			
				Tree Age Total :	7,000	49	143			
Region 4	1	Velvick	2000	10+ Yr	700	9.8	71			
				Tree Age Total :	700	9.8	71			
Region 4	1	Velvick	1995	10yrs+	200	1.8	111			
Region 4	1	Velvick Seedling	1995	10yrs+	100	0.64	156			
Region 4	1	Velvick Types	2001	10yrs+	507	5.07	100	30.2	5.96	59.6
Region 4	2	Birdwood	1998	10yrs+	156	0.98	159			
Region 4	10	Guatemalan Seedling	1995	10yrs+	90	0.75	120			
Region 4	4	Guatemalan Seedling	1997	10yrs+	6	0.05	120			
Region 4	7	Guatemalan Seedling	1995	10yrs+	231	1.88	123	17.6	15.58	124.8

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 4	7	Unknown	1981	10yrs+	64	0.57	112	1.3	4.81	38.2
Region 4	9	Birdwood	1994	10yrs+	220	0.77	286			
Region 4	9	Guatemalan Seedling	1996	10yrs+	318	2	159	6	3.57	21.4
Region 4	9	Unknown	1985	10yrs+	350	1.22	287			
				Tree Age Total :	2,242	15.73	143	55.1	5.93	43.7
Region Total :					37,683	279.92	135	834.8	7.35	51.1
Region 5	1	Various	2010	1yr	110	0.5	220			
Region 5	1	Velvick	2010	1yr	400	2	200			
				Tree Age Total :	510	2.5	204			
Region 5	1	Guatemalan Seedling	2009	2yrs	571	2	286	39.5	19.75	69.2
				Tree Age Total :	571	2	286	39.5	19.75	69.2
Region 5	1	Velvick	2008	3yrs	400	2	200			
				Tree Age Total :	400	2	200			
Region 5	1	Guatemalan Seedling	2007	4yrs	490	3.09	159	23	7.44	46.9
Region 5	7	Guatemalan Seedling	2007	4yrs	179	1.13	158	4.8	4.25	26.8
				Tree Age Total :	669	4.22	159	27.8	6.59	41.6
Region 5	2	Unknown-Birdwood	2006	5yrs	10	0.06	167			
				Tree Age Total :	10	0.06	167			
Region 5	1	Dusa C & Guate S	2005	6yrs	480	2.16	222	52.5	24.31	109.4
Region 5	1	Unknown-Birdwood	2005	6yrs	85	0.52	163	1.6	3.08	18.8
Region 5	2	Guatemalan Seedling	2005	6yrs	320	1.2	267	26.1	21.75	81.6
Region 5	4	Guatemalan Seedling	2005	6yrs	339	1.27	267	22	17.32	64.9
				Tree Age Total :	1,224	5.15	238	102.2	19.84	83.5
Region 5	2	Unknown-Birdwood	2004	7yrs	51	0.31	165	0.7	2.26	13.7
Region 5	10	Unknown-Birdwood	2004	7yrs	34	0.21	162			
Region 5	4	Unknown-Birdwood	2004	7yrs	14	0.09	156			
				Tree Age Total :	99	0.61	162	0.7	1.15	7.1
Region 5	1	Velvick Types	2002	9yrs	238	0.95	251	18.7	19.68	78.6
				Tree Age Total :	238	0.95	251	18.7	19.68	78.6
Region 5	6	Mexican	1986	10yrs+	111	0.9	123	25.5	28.33	229.7
Region 5	6	Unknown	1950	10yrs+	15	0.1	150	-1	-10	-66.7
Region 5	1	Guatemalan Seedling	1980	10yrs+	2,891	13.6	213	159.4	11.72	55.1

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 5	1	Guatemalan&Zutano	1997	10yrs+	2,486	9.7	256	121.4	12.52	48.8
Region 5	1	Mexican	2001	10yrs+	111	0.9	123	6.8	7.56	61.3
Region 5	1	Unknown	1983	10yrs+	3,560	22.19	160	122.3	5.77	35.4
Region 5	1	Unknown-Birdwood	1992	10yrs+	1,470	8.23	179	9.6	1.17	6.5
Region 5	1	Velvick/Birdwood unknown	1975	10yrs+	100	0.64	156	4.3	6.72	43
Region 5	2	Guatemalan&Zutano	2001	10yrs+	635	2	318	7.7	3.85	12.1
Region 5	10	Unknown	1982	10yrs+	225	1.52	148			
Region 5	4	Guatemalan Seedling	1998	10yrs+	30	0.15	200	4	26.67	133.3
Region 5	4	Guatemalan&Zutano	1990	10yrs+	298	0.5	596	5.8	11.6	19.5
Region 5	4	Unknown	1960	10yrs+	15	0.1	150	0.8	8	53.3
Region 5	15	Unknown	1960	10yrs+	25	0.16	156	1.3	8.13	52
Region 5	7	Guatemalan Seedling	2000	10yrs+	118	0.46	257	4.4	9.57	37.3
Region 5	7	Unknown	1960	10yrs+	50	0.32	156	1.8	5.63	36
Region 5	3	Guatemalan&Zutano	1994	10yrs+	457	1.6	286	12.7	7.94	27.8
Region 5	9	Guatemalan Seedling	1996	10yrs+	335	1.09	307	26.1	23.94	77.9
Region 5	9	Guatemalan&Zutano	1993	10yrs+	1,458	5.1	286	29.2	5.73	20
				Tree Age Total :	14,390	69.26	208	542.1	8.12	38.6
Region Total :					18,111	86.75	209	731	8.68	41.1
Region 6	1	Velvick Types	2009	2 Yr	539	2.23	242	0.5	0.22	0.9
				Tree Age Total :	539	2.23	242	0.5	0.22	0.9
Region 6	1	Velvick Types	2008	3 Yr	248	1.12	221	1.7	1.52	6.9
				Tree Age Total :	248	1.12	221	1.7	1.52	6.9
Region 6	1	Velvick Seedling	2007	4 Yr	769	3.46	222			
				Tree Age Total :	769	3.46	222			
Region 6	1	Velvick Types	2006	5 Yr	177	0.8	221	8.6	10.75	48.6
				Tree Age Total :	177	0.8	221	8.6	10.75	48.6
Region 6	1	Velvick Seedling	2005	6 Yr	649	2.92	222			
Region 6	10	Unknown	2005	6 Yr	60	0.21	286	1	4.76	16.7
				Tree Age Total :	709	3.13	227	1	4.76	16.7
Region 6	1	Velvick Seedling	2004	7 Yr	1,508	5.43	278			
Region 6	1	Velvick Types	2004	7 Yr	891	4.01	222	59.9	14.94	67.2
Region 6	2	Degania Seedling	2004	7 Yr	210	0.74	284	7.2	9.73	34.3

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
				Tree Age Total :	2,609	10.18	256	67.1	14.13	60.9
Region 6	1	Velvick Seedling	2002	9 Yr	1,200	6	200			
				Tree Age Total :	1,200	6	200			
Region 6	6	Guatemalan Seedling	1968	10+ Yr	90	0.74	122	1.3	3.51	41.9
Region 6	6	Unknown	1970	10+ Yr	20	0.16	125			
Region 6	1	Guatemalan Seedling	1968	10+ Yr	4,135	25.81	160	108.5	10.02	48.4
Region 6	1	Unknown	1993	10+ Yr	1,063	5.44	195	8.6	7.35	45.7
Region 6	10	Guatemalan Seedling	1968	10+ Yr	21	0.25	84	1.4	5.6	66.7
Region 6	10	Unknown	1982	10+ Yr	8	0.1	80	0.5	5	62.5
Region 6	7	Guatemalan Seedling	1968	10+ Yr	23	0.18	128	1	14.29	166.7
Region 6	9	Unknown	1979	10+ Yr	60	0.22	273	1.8	8.18	30
				Tree Age Total :	5,420	32.9	165	123.1	9.46	48.2
Region Total :					11,671	59.82	195	202	9.13	43.2
Region 7	1	BW181	2011	0 Yr	833	5.25	159			
Region 7	1	BW70	2011	0 Yr	484	3.05	159			
Region 7	1	Various	2011	0 Yr	720	4.54	159			
Region 7	1	Velvick Seedling	2011	0 Yr	600	2.4	250			
				Tree Age Total :	2,637	15.24	173			
Region 7	16	GMalan / W indian	2010	1 Yr	4	0.02	200			
Region 7	16	Velvick	2010	1 Yr	36	0.13	277			
Region 7	1	Ashdot Seedling	2010	1 Yr	75	0.45	167			
Region 7	1	BC2	2010	1 Yr	65	0.39	167			
Region 7	1	BW19	2010	1 Yr	60	0.36	167			
Region 7	1	BW2	2010	1 Yr	123	0.74	166			
Region 7	1	Dusa Merensky	2010	1 Yr	15	0.07	214			
Region 7	1	GMalan / W indian	2010	1 Yr	20	0.09	222			
Region 7	1	M1	2010	1 Yr	4	0.02	200			
Region 7	1	M2	2010	1 Yr	75	0.45	167			
Region 7	1	Velvick	2010	1 Yr	519	1.89	275			
Region 7	2	GMalan / W indian	2010	1 Yr	85	0.21	405			
Region 7	2	Velvick Seedling	2010	1 Yr	1,616	2.4	673			
				Tree Age Total :	2,697	7.22	374			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 7	1	Velvick	2009	2 Yr	585	3.51	167			
Region 7	9	Velvick	2009	2 Yr	375	2.25	167			
				Tree Age Total :	960	5.76	167			
Region 7	1	Velvick	2008	3 Yr	342	0.91	376	5.4	5.93	15.8
				Tree Age Total :	342	0.91	376	5.4	5.93	15.8
Region 7	1	Zutano Seedling	2007	4 Yr	56	0.26	215			
				Tree Age Total :	56	0.26	215			
Region 7	1	Velvick Seedling	2006	5 Yr	506	1.45	349			
Region 7	2	Velvick Seedling	2006	5 Yr	69	0.2	345			
Region 7	4	Velvick Seedling	2006	5 Yr	281	0.81	347			
Region 7	7	Velvick Seedling	2006	5 Yr	100	0.29	345			
				Tree Age Total :	956	2.75	348			
Region 7	1	Zutano	2005	6 Yr	7	0.04	175	1.5	37.5	214.3
Region 7	2	Zutano	2005	6 Yr	28	0.07	400			
Region 7	2	Zutano Seedling	2005	6 Yr	65	0.15	433			
				Tree Age Total :	100	0.26	385	1.5	37.5	214.3
Region 7	4	Unknown	2004	7 Yr	81	0.29	279			
				Tree Age Total :	81	0.29	279			
Region 7	1	Zutano	2003	8 Yr	880	5.28	167			
				Tree Age Total :	880	5.28	167			
Region 7	17	Zutano	2002	9 Yr	107	0.4	268			
				Tree Age Total :	107	0.4	268			
Region 7	6	Zutano	1993	10+ Yr	31	0.2	155	3.5	17.5	112.9
Region 7	6	Zutano Seedling	1978	10+ Yr	13	0.07	186	1.2	17.14	92.3
Region 7	17	Zutano	1990	10+ Yr	257	1.06	242			
Region 7	17	Zutano Seedling	1995	10+ Yr	2,067	6.24	331	12.7	14.43	43.1
Region 7	1	Duke 6	1990	10+ Yr	11	0.04	275			
Region 7	1	Unknown	2000	10+ Yr	3,336	10.3	324	199.9	20.67	62
Region 7	1	Velvick Seedling	1994	10+ Yr	409	1.17	350			
Region 7	1	Zutano	1997	10+ Yr	3,773	22.52	168	87.5	16.99	120.4
Region 7	1	Zutano Seedling	1994	10+ Yr	9,833	36.09	272	551.1	16.58	58.9
Region 7	2	Zutano	1990	10+ Yr	43	0.11	391			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 7	2	Zutano Seedling	1999	10+ Yr	62	0.14	443			
Region 7	4	Duke 6	1990	10+ Yr	39	0.14	279			
Region 7	4	Velvick Seedling	1994	10+ Yr	234	0.67	349			
Region 7	4	Zutano	1997	10+ Yr	522	4.46	117	20	15.38	123.5
Region 7	4	Zutano Seedling	1995	10+ Yr	1,175	3.42	344	68.3	34.15	101
Region 7	7	Velvick Seedling	1994	10+ Yr	137	0.39	351			
Region 7	18	Zutano Seedling	2000	10+ Yr	6	0.01	600			
Region 7	19	Zutano	1980	10+ Yr	30	0.15	200			
Region 7	9	Zutano	1998	10+ Yr	408	3.58	114			
Region 7	20	Zutano	1980	10+ Yr	15	0.07	214			
				Tree Age Total :	22,401	90.83	247	944.2	17.98	65.2
Region Total :					31,217	129.2	242	951.1	17.14	61.8
Region 8	1	Zutano	2011	0 Yr	75	0.26	288			
				Tree Age Total :	75	0.26	288			
Region 8	1	Reed	2010	1 Yr	715	3.01	238			
				Tree Age Total :	715	3.01	238			
Region 8	1	Dusa Merensky	2009	2 Yr	34	0.08	425			
Region 8	1	Velvick	2009	2 Yr	300	1.15	261			
Region 8	1	Zutano	2009	2 Yr	220	0.77	286			
				Tree Age Total :	554	2	277			
Region 8	1	Dusa Merensky	2008	3 Yr	175	0.42	417			
Region 8	1	Velvick Seedling	2008	3 Yr	150	0.45	333			
				Tree Age Total :	325	0.87	374			
Region 8	1	Dusa Merensky	2007	4 Yr	345	0.83	416			
Region 8	1	Guatemalan Seedling	2007	4 Yr	150	0.45	333			
Region 8	1	Zutano Seedling	2007	4 Yr	200	0.48	417	1.5	3.13	7.5
Region 8	4	Reed	2007	4 Yr	50	0.05	1,000	0.3	6	6
				Tree Age Total :	745	1.81	412	1.8	1.32	3
Region 8	1	Guatemalan Seedling	2006	5 Yr	1,000	2	500			
Region 8	1	Reed Seedling	2006	5 Yr	400	1.6	250			
Region 8	1	Zutano	2006	5 Yr	449	1.57	286	2.7	1.72	6
				Tree Age Total :	1,849	5.17	358	2.7	1.72	6

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 8	1	A10	2005	6 Yr	854	1.84	464	0.9	0.68	1.3
Region 8	1	AA1	2005	6 Yr	159	0.45	353			
Region 8	1	Reed Seedling	2005	6 Yr	138	0.33	418	0.4	1.21	2.9
Region 8	1	Velvick	2005	6 Yr	702	2.32	303	0.2	0.41	0.8
Region 8	1	Velvick Types	2005	6 Yr	237	0.66	359			
Region 8	4	Velvick	2005	6 Yr	20	0.1	200			
				Tree Age Total :	2,110	5.7	370	1.5	0.7	1.4
Region 8	1	Guatemalan Seedling	2004	7 Yr	500	1	500			
Region 8	1	Reed Seedling	2004	7 Yr	819	1.79	458	0.8	0.66	1.3
				Tree Age Total :	1,319	2.79	473	0.8	0.66	1.3
Region 8	1	Guatemalan Seedling	2003	8 Yr	500	1	500			
Region 8	1	Reed Seedling	2003	8 Yr	294	0.88	334	13.5	15.34	45.9
				Tree Age Total :	794	1.88	422	13.5	15.34	45.9
Region 8	1	Guatemalan Seedling	2002	9 Yr	500	1.4	357			
Region 8	1	Zutano	2002	9 Yr	300	1.05	286	6.8	6.48	22.7
Region 8	1	Zutano Seedling	2002	9 Yr	563	1.48	380	5.5	3.72	9.8
Region 8	13	Zutano Seedling	2002	9 Yr	84	0.25	336	0.8	3.2	9.5
				Tree Age Total :	1,447	4.18	346	13.1	4.71	13.8
Region 8	5	Unknown	1985	10+ Yr	22	0.08	275	1.4	17.5	63.6
Region 8	5	Velvick	1990	10+ Yr	3	0.01	300			
Region 8	6	Unknown	1985	10+ Yr	74	0.28	264	3.7	20.56	74
Region 8	6	Velvick	1987	10+ Yr	3	0.01	300			
Region 8	1	Guatemalan Seedling	1998	10+ Yr	2,184	8.1	270			
Region 8	1	Guatemalan&Zutano	1998	10+ Yr	500	1.75	286			
Region 8	1	Unknown	2000	10+ Yr	1,294	5.28	245	32.8	6.33	25.8
Region 8	1	Velvick	1989	10+ Yr	55	0.27	204			
Region 8	1	Zutano	2001	10+ Yr	329	1.15	286	13.8	12	41.9
Region 8	1	Zutano Seedling	2001	10+ Yr	609	3.01	202	18.1	6.01	29.7
Region 8	2	Guatemalan Seedling	2000	10+ Yr	236	0.66	358			
Region 8	2	Unknown	2000	10+ Yr	400	1.06	377	6.3	5.94	15.8
Region 8	2	Velvick Seedling	2001	10+ Yr	35	0.13	269	0.2	1.54	5.7
Region 8	10	Velvick	1989	10+ Yr	3	0.01	300			

					2011					
Region	Variety	RootStock	Year Planted	Tree Age	No Trees	Ha	Trees/Ha	Mkt Yield	Yield/Ha (T)	Yield/Tree (Kg)
Region 8	4	Velvick	1987	10+ Yr	40	0.2	200			
Region 8	21	Velvick	1986	10+ Yr	1					
Region 8	22	Unknown	1985	10+ Yr	43	0.15	287	1.6	10.67	37.2
Region 8	7	Velvick	1989	10+ Yr	6	0.03	200			
				Tree Age Total :	5,837	22.18	263	77.9	7.12	28.2
Region Total :					15,770	49.85	316	111.3	4.96	15.4
					489,711	2,538.48	193	17,973.10	8.76	45.1