

## **Alvin Avocado improves avocado quality**

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### **Abstract: Alvin Avocado improves avocado quality**

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Avocados Australia in partnership with Agri-science Queensland (ASQ) has worked to develop a series of industry education materials to fill information gaps within the supply chain and improve fruit quality. To date materials have been published on recommended handling practices for retailers, wholesalers and packhouses as well as a revised colour and ripeness chart and a book detailing the story of Australian avocados and their journey to consumer's shopping bags.

During 2011 a transport handling guide, a new grading poster and a best practice harvest guide have been under production. Plans for the future include the development of interactive, online versions of the materials which can be tailor made for individual packhouses.

In 2010 and 2011 Avocados Australia targeted approximately 150 retailers in Brisbane Queensland to build on their knowledge on how to best store, handle and present avocados and thus improve fruit quality. The retailers were given information packs with industry updates and the retail handling guides and brief training sessions were undertaken. These retailers have also been added to the industry database so that they receive relevant industry updates to help them in managing fruit quality. Feedback to date has been positive with most retailers being keenly involved in the program. The program will be rolled out in stages in the other major cities in the coming years.

## **Alvin el Aguacate ayuda a mejorar la calidad del aguacate**

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Avocados Australia asociado con Agri-science Queensland (ASQ) ha venido trabajando para desarrollar una serie de materiales educativos para llenar los vacíos de información dentro de la cadena de suministro y así mejorar la calidad de la fruta. Hasta la fecha estos materiales han sido publicados con prácticas de manejo para los minoristas, mayoristas y empacadores, también así como revisar el color y la tabla de madurez y un libro que detalla la historia de los aguacates en Australia y su transporte hasta las manos de los consumidores.

Durante el 2011 una guía de gestión de transporte, un cartel de valores y una guía de buenas prácticas de cosecha han sido la guía para la producción. Los planes para el futuro incluyen el desarrollo de versiones interactivas en línea con los materiales que pueden enviarse a medida de cada empacador.

En el 2010 y 2011 Avocados Australia se centro en 150 tiendas de Brisbane, Queensland para brindarles conocimiento de cómo las mejores tiendas deben gestionar y presentar los aguacates y así lograr un mejoramiento en la calidad de la fruta. A las tiendas se les entrego un paquete con las actualizaciones de la industria y así sesiones breves de capacitación fueron dadas. Estas tiendas fueron agregadas a la base de datos de la industria, para que así reciban actualizaciones de la industria que los ayuden a conocer más sobre el manejo y mejoramiento de la calidad de la fruta. Muy buenos comentarios se han venido recibiendo con la mayoría de las tiendas que han sido parte del programa. La siguiente etapa es la de implementar el programa en otras ciudades durante los próximos años.

**Key words:** avocado supply chain education retail packhouse wholesale handling harvest grading transport

**Notation:** NA

**Introduction**

Two of the priority areas for investment for the avocado industry over the last six years have been increasing the eating quality of avocados and improving supply chain efficiency. Recognising that the wide variety of factors affecting fruit quality, productivity and supply chain efficiency are interrelated, a Supply Chain Improvement Program was developed in 2009. The aim of the program was to specifically identify where the industry sat in terms of quality and efficiency and identify points in the supply chain where further work is required to make improvements in these areas.

As part of this program, consumer sensory testing was completed to determine quality levels which provide an acceptable consumption experience for consumers and hence do not negatively impact on future purchasing decisions. Results indicated that 85% of consumers prefer to buy avocados at a level of ripeness that they can consume that evening (which equates to a ripeness level between ripe to soft ripe). Lastly, consumers indicated that any internal quality defects to more than 10% of the overall flesh at all price points would impact negatively on future purchase intent.

Monthly quality surveys conducted in Perth, Melbourne, Sydney and Brisbane in 64 separate stores showed that bruising is the biggest issue in terms of internal damage, followed by rots.

Given these results, the Supply Chain Improvement Program needed to address quality issues including maturity, ripeness and internal damage with a significant focus on reducing bruising damage at all points of the supply chain.

Because of the close relationship between level of ripeness and susceptibility to damage, specific handling requirements are very much dependent on the level of ripeness of avocados. The first piece of material developed therefore was aimed at providing a tool to better identify the different levels of ripeness both by colour and firmness – see Figure 1. This material was then used as a basis for handling requirements for fruit at different levels of ripeness from the packing shed right through to the retail floor and was distributed to all members of the supply chain. The document was also translated into Chinese to widen its distribution and uptake.

Figure 1: Avocado Colour and Ripeness Chart



Handling guides were subsequently designed and produced for packhouses, wholesalers and retailers to outline industry standards for handling avocados at those points in the supply chain. See Figures 2-4.

Figure 2: Packhouse Avocado Handling Guide



Figure 3: Wholesale Avocado Handling Guide



Figure 4: Retail Avocado Handling Guide



In parallel to these handling guides a small book (see Figure 5) was designed including the newly designed avocado mascot, "Alvin" (see Figure 6) providing a basic history of avocados in general and an overview of the avocado supply chain. This was designed to give everyone in the supply chain an indication of where they fit in the supply chain and how their treatment of the avocado will impact on the end quality of the product. Copies of all documents were distributed to relevant supply chain

members. Copies are also available to download from the Avocados Australia website:  
<http://industry.avocado.org.au/EducationMaterials.aspx>

Figure 5: The Little Green Book

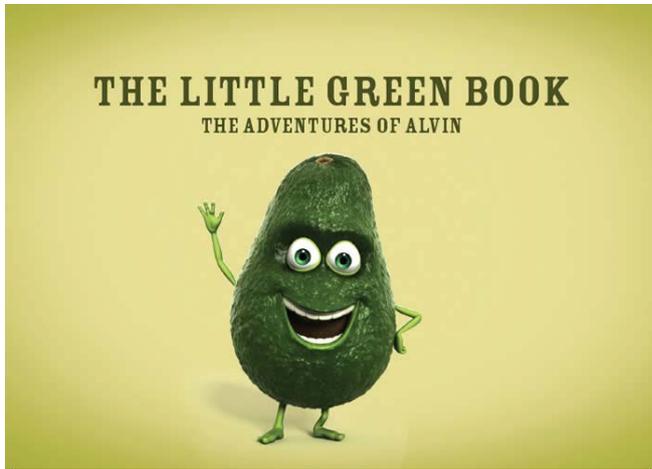


Figure 6: Alvin Avocado



Following the publication of these documents, a second phase in the Supply Chain Improvement Program began with the aim of continuing to address any quality gaps in the supply chain. Four main priorities were identified to focus the project on:

1. Implementation of a training program to facilitate uptake of handling guides in the retail sector. There is a high level of correlation between level of ripeness and potential to develop and express quality issues, thus making education of staff on the retail floor, vital.

This will be achieved by conducting short training sessions with produce staff at a minimum of 150 retail outlets each in Brisbane, Melbourne, Sydney and Perth. Both supermarkets and independent grocers will be targeted. Training will be focused around the retail handling guides and will be repeated in selected stores at least three times per year to maximize effectiveness and compensate for staff turnover.

In October 2010, the first training module was rolled out in Brisbane and over 150 potential stores were identified to be included in the program. At the time of writing this report, 130 of those stores

have been visited at least once. The main message presented in the training was: *how retailers can improve quality and avocado handling in stores.*

The retailers were given information packs to help reinforce the above message. Included in the packs were copies of:

- Avocado Colour and Ripeness Chart
- Avocado Handling – Retail
- Avocado News: an overview of the season thus far
- The Little Green Book

Feedback to date has been predominately positive with approximately 67 per cent of stores visited now using the materials and engaging positively with the trainer. One of the primary concerns retailers have are how they can prevent consumers squeezing the fruit when searching for a ripe one. This obviously causes bruising and can lead to increased customer dissatisfaction.

In response to these concerns, Avocados Australia has provided the below retailer training to make sure ripe avocados are managed better at retail level:

- Rotate stock to ensure the oldest or ripest fruit is displayed first.
- Retailers can assist consumers to identify 'ripe for tonight' avocados either through having a separate display or applying stickers.
- Explain to retailers and their staff that to check ripeness they can gently press the stem end and not squeeze the whole fruit. Retailers can pass this message onto consumers.
- Follow temperature guidelines on the Avocado Handling: Retail guide to ensure the fruit is in the best possible quality when it's presented to consumers and to help manage the ripeness level of the fruit.
- Optimise stock control – minimise storage and display time to ensure the fruit is always fresh and some ripe and ready fruit is always on hand.
- Regularly check display and stock levels to ensure ripe and ready fruit is always on hand.

In June 2011, the second training module was rolled out in Melbourne pushing the same key messages. The third training module will most likely be rolled in Sydney and the fourth in Perth.

2. Expanding on the existing handling guides to encompass the harvest sector and transport sector of the avocado supply chain.

Avocados Australia in conjunction with the Department of Employment, Economic Development and Innovation (DEEDI), Agri-Science Queensland (ASQ), has developed draft harvest and transport guides as well as a revised grade standards poster.

### 2.1 Harvest Guide

Based off a list of harvest priorities for both the grower/managers as well as the pickers, harvest guides have been drafted. Two documents are under development; the first is aimed at the grower/manager (see Figure 7) and the second document is aimed at the pickers and due to potential language barriers, will use a combination of text and images to convey the key messages (see Figure 8).

Figure 7: Draft Grower and Manager Harvest Guide

# AVOCADO HARVESTING: GROWERS & MANAGERS



**Picking photo**

Look after your avocados!  
Make sure they get the best start.

### Treat 'em right

**Mature**

- Ensure fruit is mature by measuring the percentage of dry matter of a representative sample
- Immature/over-mature fruit: don't send to market

**Undamaged**

- Reject any fruit which has dropped more than 300 mm

**Unblemished**

- Assess fruit for physical damage and foreign matter
- Complete a packhouse receipt assessment
- When ripe: hold a library tray system - check for skin damage and flesh problems

### Keep 'em dry

**Pre-harvest**

- After rain or heavy dew: ensure fruit is completely dry
- After heavy or prolonged rain: delay harvesting for 48 hours

**Harvest**

- Stop harvesting if it rains

**Post-harvest**

If it has been raining during harvest:

- ensure foliar fungicide program is maintained (e.g. Amistar)
- follow label instructions
- observe fungicide withholding periods

### Pick 'em well

**Pickers**

- Clearly instruct pickers on which blocks to harvest and which fruit to pick
- Ensure pickers understand they should not drop the fruit more than 300 mm
- Monitor throughout the day

**Equipment**

- Ensure harvesting equipment is in good working order
- Ensure adequate suspension on bin trailers/runners and don't travel too fast

**Field bins**

- Within 30 minutes of filling: ensure field bins are collected from blocks
- Immediately after filling: ensure the field bins are covered

**Mural**

Figure 8: Draft Picker Harvest Guide

# AVOCADO HARVESTING: PICKERS

### Listen...

to instructions



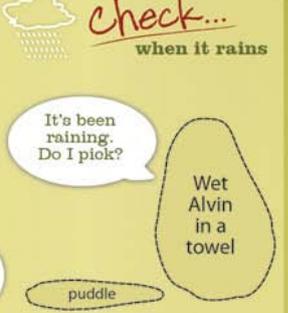
### Look...

at the fruit

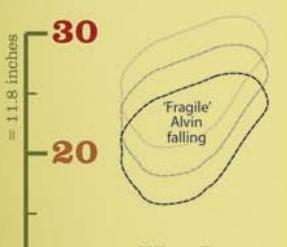


### Check...

when it rains



### Don't drop...



30  
20  
10  
0

Under **30 cm** is OK!

Dropped too high? Throw me out!

### Empty...

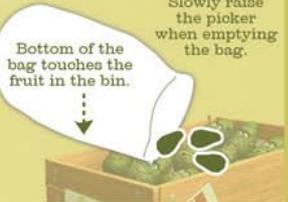
bags carefully

**On the ground...**



Bottom of the bag touches the fruit in the bin.

**In a cherry picker...**



Bottom of the bag touches the fruit in the bin.

Slowly raise the picker when emptying the bag.

### Stack...

in bags or bins



no more than **8** deep

### Protect...

cover field bins straight after filling



**IF YOU ARE UNSURE... ASK!**

Bumper stickers are also under development for use in the field to act as a visual reminder to the pickers to not drop the fruit. The stickers can be placed on tractors, picking trailers or other in-field machinery which the pickers will constantly pass while harvesting fruit.

## 2.2 Transport Guide

In developing the guide, growers, packhouses and transport companies were canvassed to understand:

- What they thought the information gaps were
- Where they sourced their transport advice from currently
- Existing transport practices
- What are the most common transport issues experienced

Based off this feedback, the key messages became apparent:

- Fruit must be correctly pre-cooled to prevent unwanted ripening of fruit during transport to customers
- Good air flow during transport is essential to prevent the heat transfer from outside the vehicle/container warming the fruit
- Fruit must be packed and secured correctly to ensure it remains undamaged during transport

Two documents have been developed in conjunction with ASQ for publication to industry – a quick reference reminder sheet as well as a more detailed background document focusing on addressing the above main points. Copies will be distributed to all known Australian avocado packhouses and transport companies handling avocados.

3. Updating the Avocado Packing Grade Standards to reflect both the industry’s International quality guide and findings of the consumer research.

In early 2011, a phone survey was undertaken of a cross-section of growers and packhouses in the industry to assess how the existing Australian Avocado Growers Federation (AAGF) grading poster was being used and what needed to be improved. The AAGF poster was published approximately ten years ago so it is important to ensure the new poster aligns with more recent information on consumer research and industry standards. A review of the existing Woolworths and Coles grade standards is being undertaken to identify any discrepancies.

At the time of writing this report, Avocados Australia and ASQ are working to source and review photos which could be used in the new poster.

4. Development of interactive, online learning activities to support of the hard copy educational materials produced.

Avocados Australia is currently working to design a set of learning modules aimed at adult learners. Specifically they will include:

**Table 1: Interactive Learning Modules**

| Interactive Module   | Target Audience             |
|--|-----------------------------|
| Hass and green skin varieties: stages of ripeness and where avocados are grown throughout the year | Members across supply chain |

|   |                                     |
|---|-------------------------------------|
| The avocado story                               | Members across supply chain         |
| Grade standards for use across the supply chain | Members across supply chain         |
| Harvest handling guide                          | Growers/pickers                     |
| Packhouse handling guide                        | Packers                             |
| Transport handling guide                        | Transport companies/truck drivers   |
| Wholesale handling guide                        | Wholesalers                         |
| Retail handling guide                           | Retail managers/fresh produce staff |

Alvin Avocado will be used to help engage the user and support the educational outcomes.

### **Conclusion and recommendations**

Avocados Australia is confident that by educating members of the supply chain about the role they each play in delivering a quality eating avocado to consumers, the industry can work together to improve its standards and thus increase consumption.

Filling knowledge gaps in handling practices and ensuring that the avocado's journey from paddock to plate is as efficient as possible will enable industry to meet its bench marks for reduced flesh blemishes (particularly bruising) will ensure all parties are working towards the same goal.

### **Acknowledgments**

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### **References**

NA