

Australian Cherry Quality Guide



“Enhance Your Profitability”

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Acknowledgement

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Thank you to Lifespan who have sponsored both the poster and guide.

Andrew Dick
General Manager, AFFCO

Version 1, 2004.



Objective

Background

The Australian cherry industry has traditionally been very fragmented with many growers, packers, wholesalers and exporters. Quality attributes have not been clearly characterised to date and thus many different standards of quality, size, sweetness and presentation are commonly found. In today's increasingly sophisticated global marketplace, buyers and consumers demand that cherries are packed to the highest standards.

The Australian Fresh Fruit Company (AFFCO) has undertaken research into identifying practical quality attributes that 'raise the bar' for the Australian industry. Through partnership with Cherry Growers of Australia (CGA) and Horticulture Australia (HAL), consultation has taken place to create a set of product standards that meet the demands of the marketplace, yet are practical for all growers and packing sheds.

Aim

The aim of the CGA and the AFFCO Australian Cherry Quality Guide is to greatly improve the quality of cherries available for domestic and export sale.

This booklet is divided into sections which explain how cherries should be examined for quality, the product standard and the defect guide.

There is an accompanying poster which displays large photographs of typical defects that detract from cherry quality.

How to Use this Guide

This Booklet

This booklet should be read and understood by leading staff involved with the handling, harvesting, sorting, selling, buying or inspection of cherries throughout the supply chain from growers through to wholesalers, exporters and retailers.

It explains how proper quality surveys should be conducted and the methods of fruit quality assessments which includes fruit sizing and colour determination. The booklet also contains examples of typical cherry defects and varying degrees of what is acceptable for these defects. The Cherry Standard (version 1, 2004) establishes the current industry quality standard.

Cherry Growers of Australia Cherry Standard (version 1, 2004)

This standard should be referred to by all staff responsible for maintaining quality standards within the supply chain from growers through to wholesalers, exporters and retailers. Cherries should be inspected by staff to ensure that they meet this standard (or higher as per buyer specification). It should be noted that the use of this standard is voluntary and is offered as an 'industry wide' benchmark. Individual buyers may request a higher specification or an export customer may require different product attributes.

Australian Cherry Quality Guide Poster

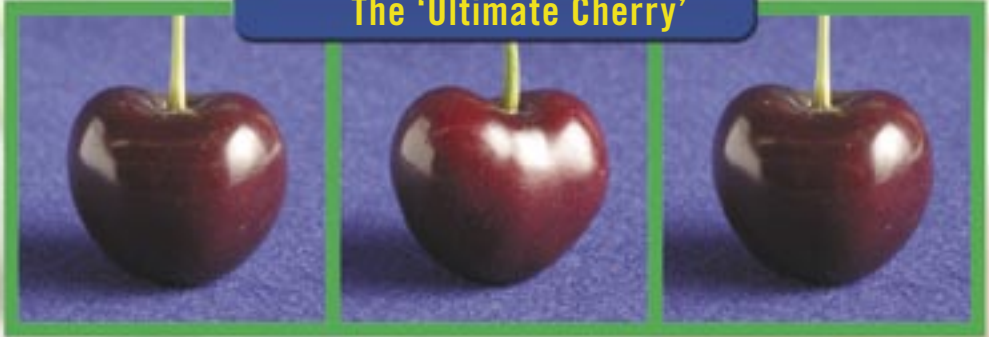
The accompanying cherry defect poster displays large photos of typical cherry defects. These posters should be used in conjunction with this booklet as a visual means of simply identifying common defects. These posters will be very useful in packing sheds, warehouses, or for buyers of domestic or export cherries.

The poster is an excellent means for basic staff training as well as an ongoing fast reference while sorting or inspecting cherries. It should be displayed in an easy to see location by all staff who carry out these tasks as a reminder or reference.



Ultimate Cherry

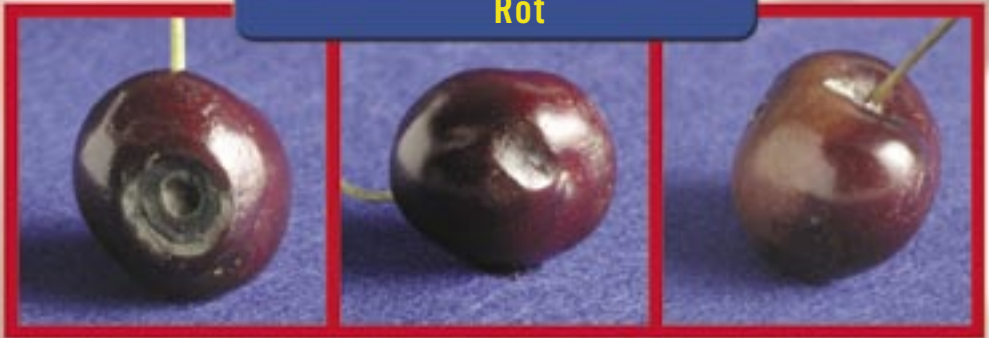
The 'Ultimate Cherry'



01 'Ultimate Cherry'. These cherries are examples of the 'Ultimate Cherry', perfect in size, colour and shape. Ideal for local and export trade.

Defect Guide

Rot



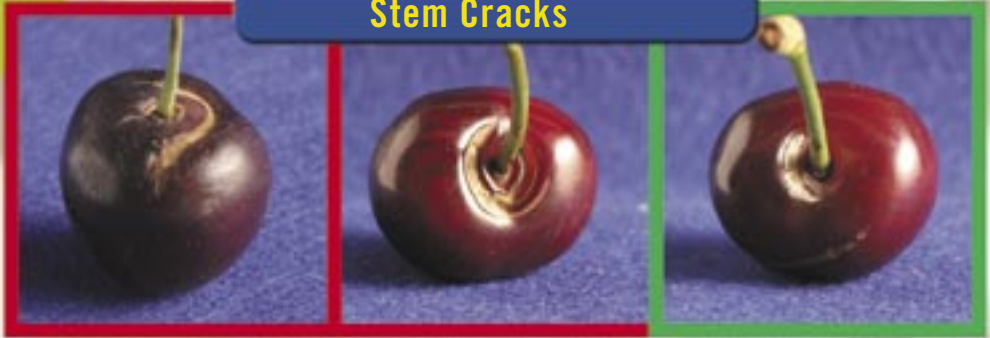
02 Major Rot.
Not recommended for commercial sale.

03 Major Rot.
Not recommended for commercial sale.

04 Major Rot.
Not recommended for commercial sale.

Defect Guide

Stem Cracks



05 Major Stem Crack.

Not recommended for commercial sale.

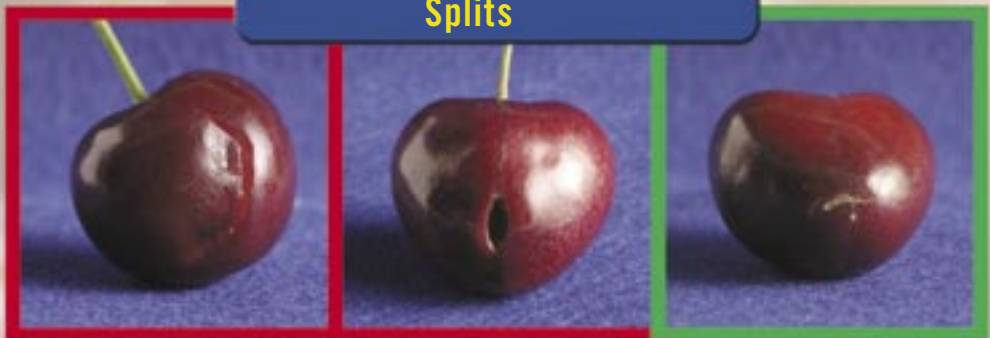
06 Major Stem Crack.

Not recommended for commercial sale.

07 Minor Stem Crack.

This is acceptable for commercial sale within customer specifications.

Splits



08 Major Wet Split.

Not recommended for commercial sale.

09 Major Suture Split > 3 mm.

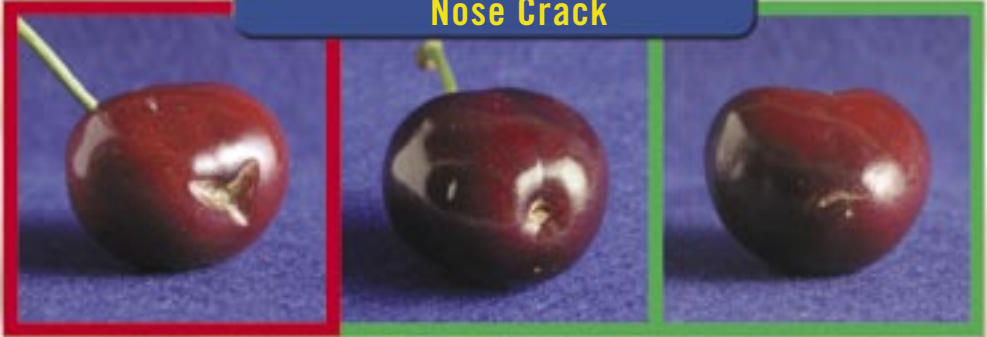
Not recommended for commercial sale.

10 Minor Dry Split <3 mm.

This is acceptable for commercial sale within customer specifications.

Defect Guide

Nose Crack



11 Major Nose Crack.

Not recommended for commercial sale.

12 Minor Nose Crack.

This is acceptable for commercial sale within customer specifications.

13 Minor Nose Crack.

This is acceptable for commercial sale within customer specifications.

Bird or Insect Damage



14 Major Insect Damage.

Not recommended for commercial sale.

15 Major Insect/Rot Damage.

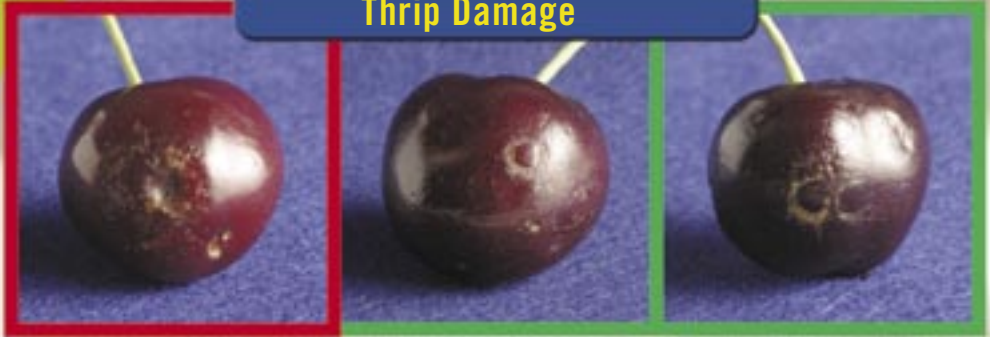
Not recommended for commercial sale.

16 Major Insect Damage.

Not recommended for commercial sale.

Defect Guide

Thrip Damage



17 Major Thrip Damage.
Not recommended for commercial sale.

18 Minor Thrip Damage.
This is acceptable for commercial sale within customer specifications.

19 Minor Thrip Damage.
This is acceptable for commercial sale within customer specifications.

Scarring/Rub Marks



20 Major Scarring.
Not recommended for commercial sale.

21 Minor Scarring <3 mm.
This is acceptable for commercial sale within customer specifications.

22 Minor Scarring <3 mm.
This is acceptable for commercial sale within customer specifications.



Defect Guide

Pitting - Impact Damage



23 Major Pitting.
Not recommended for commercial sale.

24 Major Pitting.
Not recommended for commercial sale.

25 Major Pitting.
Not recommended for commercial sale.

Bruising with Skin Damage



26 Major Bruising.
Not recommended for commercial sale.

27 Minor Bruising.
This is acceptable for commercial sale within customer specifications.

Defect Guide



28 Spur.

This is acceptable for commercial sale within customer specifications.

29 Double.

This is acceptable for commercial sale within customer specifications.

Colour Relates to Bing cultivar



30 Overmature and Heat Damage.

Not recommended for commercial sale.

31 Immature.

Not recommended for commercial sale.



How to Conduct Cherry Quality Surveys

Cherry samples should be taken randomly from various boxes or packs or from the end of the packing line. The most common way of conducting the surveys is to have defect containers set out and cherries placed in them as the sample is counted.

- Step 1. A random sample of at least 50 to 100 cherries are taken.
- Step 2. Cherries are counted as they are sorted for defects and placed in the various defect containers as per the defect guide.
- Step 3. After the cherry sample is sorted, totals of each defect are counted to give percentages of each defect. For a 50 cherry sample, the number is doubled to give the percentage.
Eg. 3 wet splits in a 50 cherry sample
= 6% wet splits.
At this time, cherries should also be examined for undersize and immaturity. See “How to Use a Cherry Colour Chart” (pg 12) and “How to use a Cherry Size Gauge” (pg 14). Undersize and immature fruit should also be separated and placed in appropriate defect containers.
- Step 4. The totals of each defect are recorded on a Quality Survey sheet noting the sample time and date, batch, the sample size (ie. 50 cherries) and the percentage defects in the sample.
- Step 5. Sugar content of the cherries should be taken from the random sample. Five cherries will give a good average of sugar content. The method used is to combine all cherries and get an average soluble solids content, using a handheld refractometer.
- Step 6. The Quality Survey sheet should be compared to the Cherry Growers of Australia Cherry Standard or the customer specification to see if they meet the quality criteria set out. The survey sheet should be marked as to whether the sample meets the Cherry Growers of Australia Cherry Standard or the customer specification.

Note: Staff need to make honest and subjective appraisals of product quality without prejudice.

How to Use a Cherry Colour Chart

The Australian Cherry Colour Chart has been developed as a tool to help within the supply chain from growers through to wholesalers, exporters and retailers in determining ideal cherry maturity.

Different varieties should be harvested at different shades of colour as a guide of maturity. For example, Rons Seedling should be dark in colour around #5, whereas Burlat should be a lighter shade around #3.

In different climatic regions and micro-climates, some varieties will be at their optimum maturity and eating quality at different shades of colour. As a generalisation, warmer areas will require a lighter colour for optimal maturity than in cooler regions. Therefore colour should only be used as a guide and these differences in growing region should be considered.

Stem retention on cherries can be assessed by quantifying the pull force required to remove the stem from the cherry. Pull force gauges with suitable attachments are commercially available. Force is measured in grams and a value above 600 g is a benchmark for which an orchardist should strive. The stem pull force is largely variety dependent (eg. 'Van'= 350-450 g; 'Sweetheart'= 600-800 g) but horticultural practices can greatly impact this characteristic. Varieties with stem pull forces less than 500 g tend to lose stems during harvest and post-harvest handling. To use the gauge, simply cradle the cherry horizontally in the attachment and pull the stem horizontally with a uniform, steady force. A random sample of 25 fruit is recommended.



How to Measure Cherry Firmness

A number of devices are available to measure fruit firmness in cherries including penetrometers and non-destructive force deformation or impact sensors. Recently, FirmTech machines have gained in popularity for use in packing sheds. This machine is highly accurate and has a high speed of operation. Firmness of the cherry is assessed by measuring the force-deformation response from gradual compression of a cherry. The rotating table that holds the sample can accommodate 25 fruit. In addition to measuring firmness, the FirmTech will also measure fruit size (mm) of each cherry.



How to Use a Cherry Size Gauge

The internationally accepted method of determining cherry size is with a cherry size gauge as shown below.

Cherries should be measured using a standard cherry sizing card with round holes measured in millimeters (mm).

Cherries should be measured for size by placing the cherries stalk-up into the holes. The size of the cherry is determined to be the stated size, or larger when it does not fall through the size hole.

Cherries should be labeled as the size that they are and larger with only a 10% tolerance on undersize fruit.

Example. 24 mm+ means 24 mm cherries and larger only.



CGA AFFCO Cherry Standard

Minimum Requirements:

The cherries must be:

- intact,
- fresh in appearance,
- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded,
- firm,
- clean, practically free of any visible foreign matter,
- free from pests,
- practically free from damage caused by pests,
- free from abnormal external moisture,
- free of any foreign smell and/or taste,

Sugar Levels: Minimum of 15° Brix

Sizing: Minimum size requirement of greater than 20 mm.

The following size grades should apply and be marked on each package:

- 20 mm+ (20 mm and Larger)
- 22 mm+
- 24 mm+
- 26 mm+
- 28 mm+
- 30 mm+
- 32 mm+
- etc.....

(Explanation of size grades, eg. 24 mm+ would mean, 24 mm minimum fruit size).

Sizing Tolerance:

Fruit within each grade should be predominantly larger than stated grade with not greater than 10% undersize fruit. The minimum size within each grade should not be less than 3 mm below the stated size.

- Cherries should be measured using a standard cherry sizing card with round holes measured in millimeters (mm).
- Cherries should be measured for size by placing the cherries stalk-up into the holes.

The size of the cherry is determined to be the stated size or larger only when it does not fall through the stated size hole.

Appearance and Uniformity:

The contents of each package must be uniform and consist exclusively of cherries of the same origin, variety and quality. The fruit should be bright in appearance and of a relatively uniform appearance. Ideally stems should be attached, green and fresh in appearance.

Defect Tolerances

- Dehydrated stalks
- Russeting/scarring
- Non-discoloured pitting

TOTAL Superficial defect tolerance: 25%

Minor Defects

Minor defects are those which do not affect the shelf life of the product. Only 10% of the cherries may be affected with minor defects.

These include:

- Limb rub
- Skin blemish – sunburn & scuffing
- Healed cuts and punctures
- Misshaped
- Indentation and pressure flattening.
- Minor dry splits under 3 mm in length can be counted as a minor defect. An example of such is those on blossom end typical with some varieties or stem ring splits of a minor nature.

TOTAL Minor defect tolerance: 10%

Major Defects

- Rots, mould and decay 0.5% at packinghouse, 2% at destination.
- Soft, bladdery bruising 5%
- Over mature, bladdery fruit 5%
- Open wet cuts and cracks 2% at packing shed, 5% at destination.
- Open unhealed dry splits, cracks and punctures 5%

TOTAL Major defect tolerance: 5%

AFFCO Best Guide Practice for Cherries

Objective: Provide a minimum benchmark quality standard to be used as a reference by all sectors of the supply chain to improve the quality of cherries to consumer.

CRITICAL FUNCTIONS & SPECIFICATIONS	BEST PRACTICE	MINIMUM FOR DOMESTIC CONSUMPTION	MINIMUM FOR OVERSEAS CONSUMPTION
GROWING			
Spraying	Ensure spray program meets Maximum Residue Limits and minimizes chemical use.	Ensure Maximum Residue Limits are met	Ensure Maximum Residue Limits are met
Tree pruning	Regular pruning ensuring maximum fruit size and quality		
Inputs	Maintain appropriate nutritional and irrigation programs to maximize fruit size and quality.		
Quality procedures	Implement and hold accreditation of acceptable HACCP based system		
HARVEST			
Staff training	Ensure all harvest staff are trained about food hygiene and best harvest practice.		
Fruit maturity	Test that fruit is of minimum maturity level. Colour should be determined by variety. eg. Bing = # 4. Minimum soluble solids level (15°)		
Hygiene	Ensure orchard and all harvest equipment is clean. Ensure staff are trained about food hygiene.		
Traceability	Full traceability to orchard block, with date and variety on bins or containers.	Have full traceability to grower	Have full traceability to grower
Temperature management	Harvest fruit in early morning and halt harvest when temperature reaches 30°C.		
Harvesting equipment	All buckets, totes or boxes should be covered or stored in shade prior to being removed from orchard.		

CRITICAL FUNCTIONS & SPECIFICATIONS	BEST PRACTICE	MINIMUM FOR DOMESTIC CONSUMPTION	MINIMUM FOR OVERSEAS CONSUMPTION
HARVEST Continued			
Transport from orchard to hydro cooler	Ensure fruit is transported in a gentle manner and not exposed to the sun through use of bin covers.		
Cooling	Ensure fruit is hydro cooled to below 5°C within 2 hours of being picked from tree.		
Transport from hydro cooler to packing shed (if applicable)	Ensure that cool chain is maintained.		
Storage prior to packing (if applicable)	Fruit is stored with a fruit core temperature of between 0°C to 2°C.		
PACKING			
QC controls	Ensure fruit traceability and QC controls are in place.		
Critical measures: Firmness Defects Temperature Appearance Total Soluble Solids (TSS)	Fruit is inspected upon receipt to packing shed to pre-determine quality attributes and potential market suitability.		
Temperature management	Maintain fruit temperature below 4°C while being packed.		
Packing shed hygiene	Ensure grading equipment, packing shed, are maintained to appropriate food safety standards. Water and equipment are properly and regularly sanitized. Water should be potable.		
Pre-packaging hydro cooling	Fruit is hydro cooled before being packed in boxes between 0°C and 5°C.		
Packaging	Cherries should be packed into a poly-liner or MAP bag with soaker pad. Packaging should allow for vent draft cooling.		
Handling	Fruit is handled gently. Grading equipment is gentle to fruit.		

CRITICAL FUNCTIONS & SPECIFICATIONS	BEST PRACTICE	MINIMUM FOR DOMESTIC CONSUMPTION	MINIMUM FOR OVERSEAS CONSUMPTION
PACKING Continued			
Post packing cooling	Cherries should be cooled or force draft cooled down to as close to 0°C.		
Critical measures: Firmness Defects Temperature Appearance Total Soluble Solids (TSS)	Fruit is measured for adherence to set specification to meet customer needs.		
STORAGE/ DISTRIBUTION			
Temperature management	Post packing core temperature < 2°C while in storage.		
TRANSPORT			
Temperature management	Core temperature of 0°C to 4°C should be maintained. Temperature aim is as close to 0°C as possible.	Maximum fruit temperature 8°C; aim for 4°C	Maximum fruit arrival temperature 4°C
AIR-FREIGHT			
	MRL's, phytosanitary, protocol, export documents		
Temperature management at Freight Forwarder	Fruit should be draft cooled if above 5°C. Fruit should be loaded into ULD with a core temperature of between 0°C and 5°C.		
Loading of ULD	Cherries should be loaded in ULD with sufficient Dry Ice and with container lined with Bubble Foil insulation.		
Fruit Firmness	Minimum pressure of 250g/mm ²		
SEA-FREIGHT (In addition to above)			
Temperature management	Fruit is only loaded when core temperature is 0°C to 2°C.		
Temperature recording	Always use data loggers Always record vent & temperature settings		
Fruit Firmness	Minimum pressure of 280g/mm ²		



CRITICAL FUNCTIONS & SPECIFICATIONS	BEST PRACTICE	MINIMUM FOR DOMESTIC CONSUMPTION	MINIMUM FOR OVERSEAS CONSUMPTION
CUSTOMER HANDLING			
Temperature Management	Fruit temperature management should be maintained upon customer receipt. If fruit is packed in MAP, bags should be opened when cool chain is broken.		
Product Handling	Fruit should be handled with care. Stock Rotation.		
Displaying Cherries	Stock should be regularly rotated.		

Notes



Amcor “LifeSpan” is proud to be associated with this produce quality improvement initiative.

At LifeSpan our goal has always been to provide genuine benefits to growers and exporters of fresh produce through the development of quality Modified Atmosphere Packaging solutions.

We recognise our MAP is only one link in the supply and distribution chain and therefore support and encourage the production of the only fruit quality, handling and packaging guide specifically for the Australian cherry industry.

The logo for Amcor Flexibles Australasia is displayed within a white rectangular box. It features the word "AMCOR" in a bold, black, sans-serif font, with a yellow circle containing a black dot in the center of the letter 'O'. To the right of "AMCOR" is the word "FLEXIBLES" in a black, sans-serif font. A horizontal yellow line runs beneath both "AMCOR" and "FLEXIBLES". Below this line, the word "AUSTRALASIA" is written in a smaller, black, sans-serif font.

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