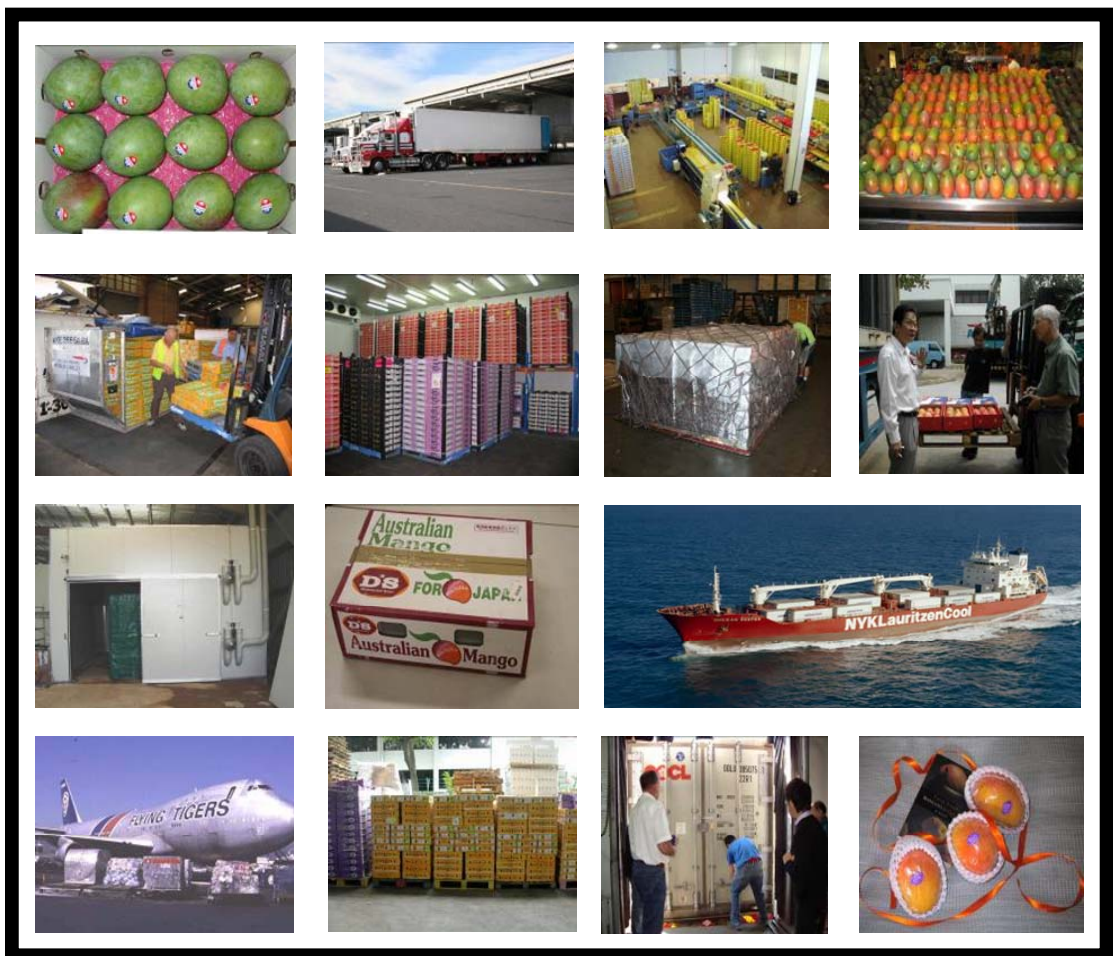


# Handling of Australian mangoes at export destinations



Leigh Barker, Jodie Campbell, Scott Ledger, Terry Campbell

October 2007

---

**Disclaimer:** The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis. While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this report.

---

© The State of Queensland, Department of Primary Industries and Fisheries, October 2007.

Copyright protects this material. Except as permitted by the *Copyright Act 1968* (Cth), reproduction by any means (photocopying, electronic, mechanical, recording or otherwise), making available online, electronic transmission or other publication of this material is prohibited without the prior written permission of the Department of Primary Industries and Fisheries, Queensland.

# Contents

## Acknowledgments

1. **How to use the guide** 1
2. **Handling of Australian mangoes at export destinations** 2
  - 2.1 **Air freight of pre-ripened mangoes**
  - 2.2 **Air freight of unripe mangoes**
  - 2.3 **Sea freight of unripe mangoes**
3. **References** 5
  - Mango skin colour guide
  - Mango defect guide
  - Mango handling guide
  - Mango ripening guide

# Acknowledgements

This guide has been prepared from the knowledge gained during many years of research and development and monitoring of commercial supply chains. The following organisations and mango businesses have supported these project activities:

- Australian Mango Industry Association
- Mango Sub-Committee of QFVG (now Growcom)
- Horticulture Australia Limited
- Asian Markets Horticulture Initiative of DPI&F Queensland
- Mango businesses – producers, transporters, wholesalers, retailers, exporters

Appreciation is expressed to the many people who have been involved in these project activities from the Queensland Department of Primary Industries and Fisheries, Northern Territory Department of Primary Industries Fisheries and Mines, and Western Australian Department of Agriculture and Food.

# 1. How to use the guide

This guide describes best practice handling systems for a range of mango supply chains for export market destinations. All of the supply chains include controlled ripening, where the temperature of the fruit is maintained between 18° to 20°C, ethylene is injected into the ripening room for 2 to 3 days, and the room is vented to remove carbon dioxide. Controlled ripening may occur before the mangoes leave Australia or may need to be done at the export destination.

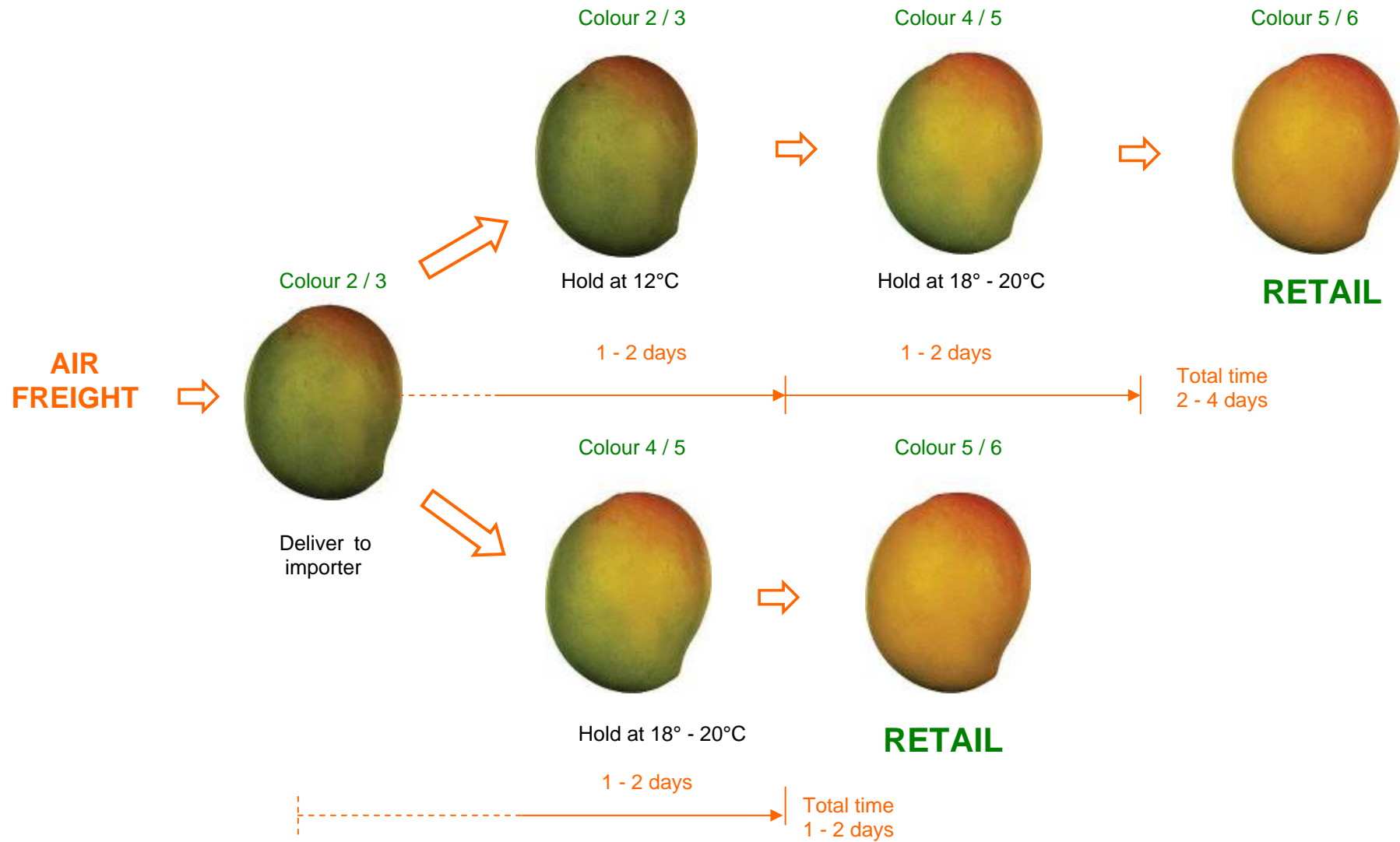
There are three different handling systems described in this guide to provide some flexibility in how mangoes can be handled at the export destination. To optimise mango quality, the handling system should be selected on the basis of what facilities are available at the export destination.

This guide provides three recommended handling systems for export market destinations:

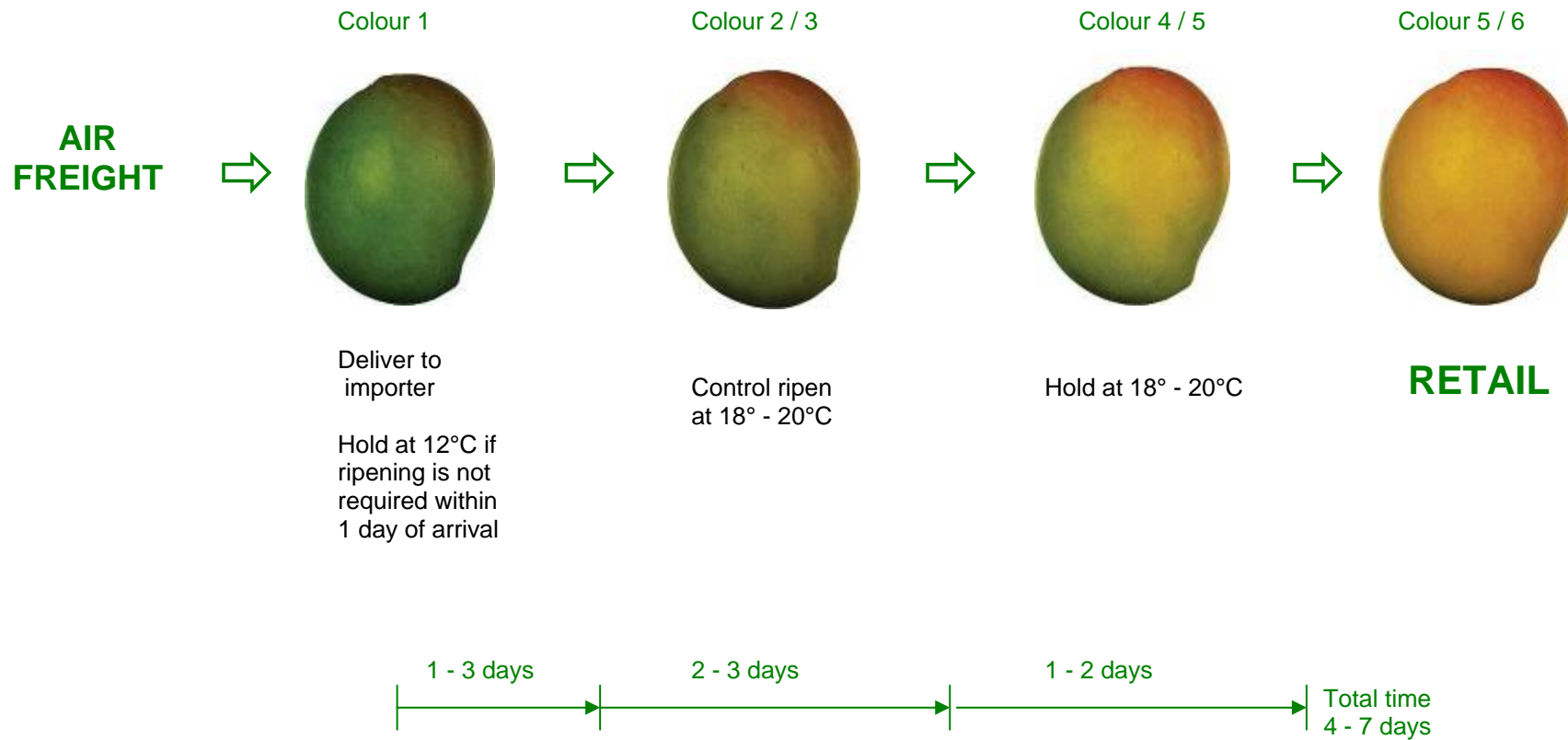
- Air freight of pre-ripened mangoes
- Air freight of unripe mangoes (to be control ripened at the export destination)
- Sea freight of unripe mangoes

The durations recommended for the steps in each handling system refer to the Kensington Pride variety. These durations may vary for other varieties. For example, the R2E2 variety may be stored for an extra 1 to 3 days before and after ripening.

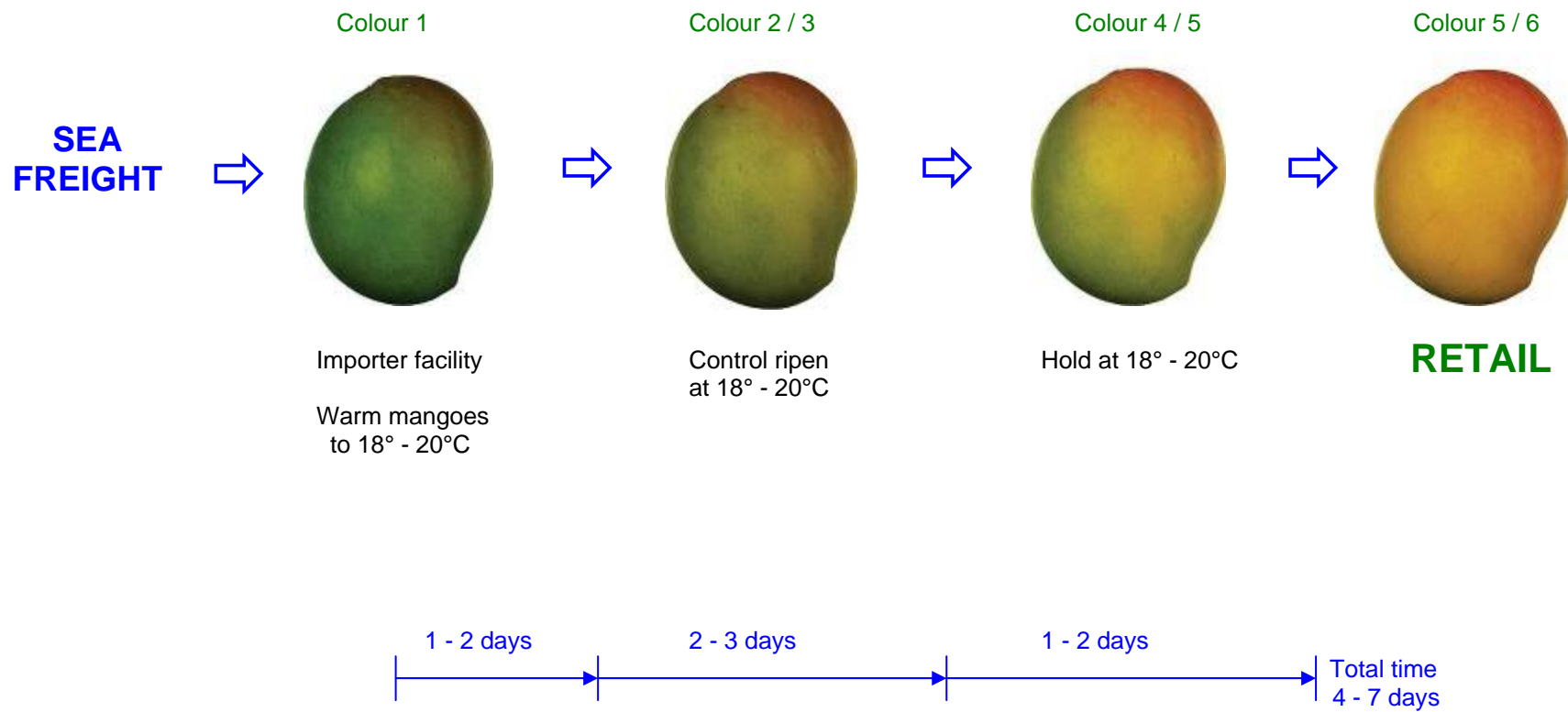
## 2.1 Air freight of pre-ripened mangoes



## 2.2 Air freight of unripe mangoes



## 2.3 Sea freight of unripe mangoes





### 3. References

#### Mango ripening guide

**MANGO ripening guide**  
for ERS and Kensington Pride

- ✓ Ripen mature fruit
- ✓ Keep fruit temperature between 18 and 22°C
- ✓ Set room temperature at 18-20°C
- ✓ Expose fruit to ethylene for two to three days
- ✓ Set ethylene concentration
- ✓ Maintain room humidity
- ✓ Vent rooms regularly

When will the fruit be ripe?

0 - 10% yellow, 10 - 30% yellow, 30 - 50% yellow, 50 - 70% yellow, 70 - 90% yellow, 90 - 100% yellow

#### Mango skin colour guide

**MANGO skin colour guide**

1	2	3	4	5	6
0 - 10% yellow	10 - 30% yellow	30 - 50% yellow	50 - 70% yellow	70 - 90% yellow	90 - 100% yellow

Logos: amia, HAL, Queensland Government

#### Mango handling guide

**MANGO handling guide** Right temperatures Better Mangoes

← 10° 10°~12° 12°~16° 18°~22° 24° →

Acid temperatures below 10°C

Temperatures between 10°C and 12°C are best for storage of backboard or open flat for a maximum of three days.

Temperatures between 12°C and 16°C are best for transport to market.

Temperatures between 18°C and 22°C are best for ripening.

Acid temperatures above 24°C

Logos: amia, HAL, Queensland Government

#### Mango defect guide

**MANGO defect guide** Correct identification Good communication Better Mangoes

1 Stem end rots	2 Dendritic spot	3 Anthracnose	4 Sapburn	5 Skin browning	6 Lenticel spot
-----------------	------------------	---------------	-----------	-----------------	-----------------

Logos: amia, HAL, Queensland Government