

Orri mandarin (Or 4)

March 2020, Primefact 1756, First edition

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Figure 1. An Orri mandarin (Or 4) tree.



Figure 2. Orri mandarins (Or 4).

Estimated maturity period

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Riverina												
Sunraysia												

Origin

The Orri mandarin (Or 4) is an irradiated selection of Orah (Temple tangor and Dancy mandarin) that was bred in Israel. It is a variety that was developed by the Agricultural Research Organisation (ARO) (Volcani Center) (Israel). It has Plant Breeder's Rights (PBR) protection and is managed in Australia by Variety Access.

Fruit quality

Table 1. Orri mandarin (Or 4) fruit quality* characteristics.

Skin	Firm, slightly pebbled to smooth, orange–yellow and relatively easy to peel. Stem end can be furrowed, but this has not been a dominant feature of early fruit production. Rind oil release when peeling. Near full skin colour developed by the first week of July at Sunraysia site. Acceptable internal fruit quality achieved by mid-June.
Average rind thickness (mm)	3.4
Internal quality	Unique taste, sweet and juicy, very palatable. Segments separate easily.
Average number of seeds	2.0
Juice per cent (%)	52
°Brix	13.9
Acid per cent (%)	0.9

Brix:acid ratio	15.4
Average fruit weight (g)	98
Average fruit diameter (mm)	58

*Juice quality levels considered adequate for harvest and developed by sequential analysis of fruit from top-worked evaluation trees.

Comments

- The first fruit was produced during 2009 in Australian evaluation trials.
- The fruit is highly palatable and can remain on the tree, in good condition, for a prolonged period.
- Fruit size is medium and appears to be consistent, without a wide spread of fruit shapes and sizes.
- Tree vigour is very high to excessive and specialised management will be required to balance vegetative growth and crop production.
- The average yield in 2009 from trees top-worked to mature Valencia orange with a trifoliata rootstock was 10.4 kg and a seedling tree on trifoliata rootstock yielded 5.4 kg. Low yields were also produced on a range of other commercial rootstocks in the evaluation trial.
- Extreme temperatures (10 days at 40 °C or above) occurred in the Sunraysia region during November 2009. This could have had a major influence on fruitlet retention of the Orri variety and affected the 2010 crop.
- Yields improved in 2011 and 2012 with the imposition of GA and limb girdling treatments to reduce tree vigour and set more fruit. These treatments were not successful in 2015 as tree yields were <20 kg, suggesting the 2014 crop load may have had a dominating effect on fruit set, affecting the 2015 harvest.

Table 2. Average yield per tree* on nursery propagated field trees (Sunraysia).

Rootstock	Average yield per tree (kg)				
	2009 (3-y-old trees)	2010 (4-y-old trees)	2011 (5-y-old trees)	2012 (6-y-old trees)	2013 (7-y-old trees)
C35 Citrange	Low yield	No fruit	23	44	Low yield
Citrange	Low yield	<5	28	34	Low yield
Cleopatra	Low yield	No fruit	3	33	Low yield
Swingle	Low yield	No fruit	33	49	Low yield
Trifoliata	Low yield	<5	7	39	Low yield
Volkameriana	Low yield	<5	50	59	Low yield

An Orri tree on swingle rootstock produced 924 fruit and a total yield of 115 kg at the Queensland evaluation site in 2010.

Table 3. Average yield per tree* on trees top-worked to Valencia orange.

Rootstock	Average yield per tree (kg)									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Citrange	Low yield	<4	41	95	31	49	Low yield	58	Low yield	43
Cleopatra	Low yield	<4	48	83	32	37	Low yield	22	Low yield	25
Trifoliata	Low yield	<4	72	118	48	58	Low yield	80	Low yield	74

*Average yield per tree results are from a small number of evaluation trees and should only be used as a general indication of the variety's potential yield.

Tree management information was provided from Israel to help alleviate the high vigour and low fruit set issues with this variety. The erratic yield behaviour of the variety would need to be managed to make Orri a successful commercial variety in Australia.

Commercial interest in the variety has increased, with trees for field evaluation propagated in 2013 along with top-working of trees over to Orri. Legal agreements with Israel have been formalised in 2018 for the commercialisation of Orri in Australia.

Acknowledgements

Citrus Australia Ltd (CAL)
 Department of Primary Industries and Regional Development, WA
 Hort Innovation Australia
 Variety Access

**Hort
 Innovation**
 Strategic levy investment

**CITRUS
 FUND**

This project has been funded by Hort Innovation using the citrus research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Reference number: PUB20/163

State of New South Wales through the Department of Planning, Industry and Environment ("Department") 2020. The content has been developed by the Department using funds provided by Horticulture Innovation Australia Limited ("Hort Innovation").

The information contained in this publication is based on knowledge and understanding at the time of writing (December 2019) and was generated from field and nursery trees at Dareton Primary Industry Institute, Sunraysia, NSW, unless otherwise stated. Where quantitative data are presented (e.g. % Juice or rind thickness) they are based on measured properties. Where qualitative data are presented (e.g. thorniness or tendency to split), they are based on observations or brief notes recorded in the field.

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