

Gold Nugget mandarin

March 2020, Primefact 1727, First edition

Dave Monks and Graeme Sanderson, Research Horticulturists, Dareton



Figure 1. A Gold Nugget mandarin tree.

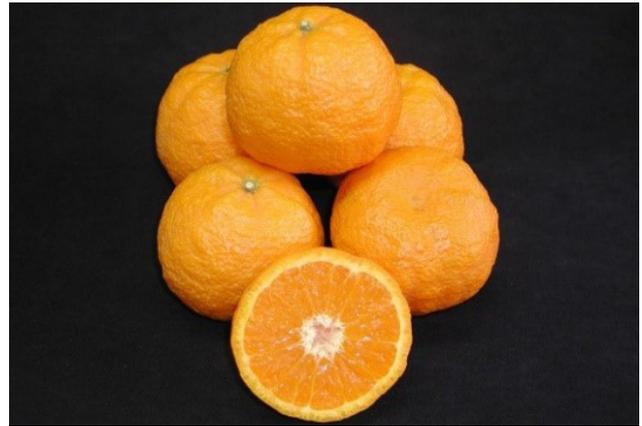


Figure 2. Gold Nugget mandarins.

Estimated maturity period

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

Origin

The Gold Nugget mandarin was bred in California and is a hybrid of Wilking (*King tangor* x *Willowleaf mandarin*) x Kincy (*King tangor* x *Dancy mandarin*). The variety has Plant Breeder's Rights (PBR) protection and is managed in Australia by Nu Leaf IP Pty Ltd.

Fruit quality

Table 1. Gold Nugget mandarin fruit quality* characteristics.

Skin	Pebbled to coarse, yellow to light orange. The texture is variable on young trees and relates to crop load, fruit size and rootstock. Full skin colour is slow to develop in Sunraysia. Near full colour developed by late July and total loss of 'green tinge' occurred by the second week of August. They are relatively easy to peel and the release of rind oil is noticeable when removing the skin.
Average rind thickness (mm)	3.9
Internal quality	Sweet, rich flavour. Good sugar and acid balance at peak maturity late August in Sunraysia. Segments separate easily. Fruit almost seedless even in a high cross-pollination environment.
Average number of seeds	<1 (0.03)
Juice per cent (%)	49
°Brix	13.7

Acid per cent (%)	0.75
Brix:acid ratio	18.3
Average fruit weight (g)	126
Average fruit diameter (mm)	62

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

Comments

Favourable characteristics that prompted its commercial release were seedless fruit, high eating quality and a late season maturity period.

The high oil content in the skin caused rind staining and breakdown issues in 2016 at both the harvest and fruit packing stages. Specialised handling and treatment in the packing house are required to manage Gold Nugget and reduce the likelihood of fruit breakdown in the market.

Fruit and tree canopy issues that need to be overcome with horticultural management to successfully produce this variety in Australia include:

- some thorns are present on young trees but this was not a significant issue for harvest
- coarse rind quality of fruit produced on young trees but this was improved with GA spraying
- extended on-tree 'storage', which can be difficult in hot climates
- a tendency for Gold Nugget to alternate bear on young trees but this improves with tree age
- limb breakage occurred on some top-worked trees, so limbs carrying high crop loads will need support
- large to very large fruit tend to have excessively coarse skin texture and this presents problems on the retail market. Fruit size must be maintained in the small to medium size range to reduce the rough skin characteristic of Gold Nugget
- the need to retain a lot of fruit on the tree to reduce the overall fruit size; this will affect the capacity of the tree to set fruit in the following year
- the need to hold fruit on the tree for longer to access the late mandarin market
- the upright nature of the trees but this can be modified by pruning into a more compact structure.

Tree vigour on seedling trees has not been excessive and has a similar growth rate and tree size to Murcott mandarin. The fruit produced on Volkameriana rootstock had the coarsest skin texture of the rootstocks used in the evaluation.

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	13	No harvest	59	Low yield	71
Citrange	29	No harvest	69	Low yield	60
Cleopatra	16	No harvest	55	Low yield	78
Swingle	17	No harvest	61	Low yield	46
Trifoliata	17	No harvest	50	Low yield	85
Volkameriana	31	No harvest	75	Low yield	85

QLD site: 2011 average yield/tree citrange rootstock = 38; swingle rootstock = 40 kg

QLD site: 2013 average yield per tree on citrange rootstock = 40 kg

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

Rootstock	Average yield per tree (kg)									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Citrange	23	43	89	77	99	25	106	129	114	145
Cleopatra	7	32	65	62	47	24	78	71	100	99
Trifoliata	46	2	107	39	88	23	98	110	120	125

*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.

Flower production in October 2013 was very low, particularly on young field planted trees. The potential harvest in 2014 was adversely affected by the high crop load in 2013. The challenge in growing this variety will be to manage the alternate bearing nature of Gold Nugget through the early years of tree establishment.

A plant growth regulator was applied at label recommendations as a thinning agent in 2015 but caused excessive fruit drop. A test application is advisable before general use.

Gold Nugget is planted commercially in Australia and fruit production has begun.

Acknowledgements

Citrus Australia Ltd (CAL)

Department of Primary Industries and Regional Development, WA

Hort Innovation Australia

Nu Leaf IP Pty Ltd

**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: PUB20/133

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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