



Orange varieties for Western Australia

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Introduction

The sweet orange, which includes all of the commercial orange types grown in Australia, probably came from south-west China and north-east India, as did the other main types of citrus fruit.

Sweet oranges are divided into four groups:

- **Navel oranges:** there are many types but the most widely grown is the Washington navel.
- **Common oranges:** This group includes Valencia, Pineapple and Pera.
- **Pigmented oranges:** blood oranges (sanguina or sanguigna oranges).
- **Acidless or sugar oranges:** As the name suggests these have low acid and are usually quite tasteless. These are not commercially important in Australia.

Choosing varieties

Choosing varieties for your orchard can be difficult, especially if you are looking at new varieties that have not been extensively evaluated in your area. There are a number of considerations that will improve your chance of success with a new variety.

- Consider the market for the variety you intend to plant.
- Look for information on the performance of varieties in conditions similar to yours.
- Always purchase trees from a reputable nursery where the source of the bud-line is known.
- Select suitable rootstocks for the variety and local conditions.

Remember maturity times vary from one location to another. Consider the impact the new variety will have on your operation, especially if its maturity time clashes with existing varieties in the orchard.

If information is limited, you may wish to rework a few existing trees to evaluate the new variety before committing to large numbers.

The WA Department of Agriculture and Food, with industry cooperation, maintains major variety demonstration sites at West Gingin, Bindoon and Wokalup. New varieties made available by Auscitrus are reworked on trees at

these sites allowing for rapid evaluation. This is possible because of the high level of collaboration and generous support from F&J Taddei Nominees, Niela Citrus and the WA College of Agriculture at Harvey.

This Farmnote is intended to provide basic information on some of the commonly grown varieties in Western Australia. It also provides information about less common varieties and varieties that have recently been released in Australia and have not yet been extensively tested under Western Australian conditions.

Navel oranges

Navel oranges can be distinguished from other oranges by the small secondary fruit found embedded at the apex end of the main fruit. This gives the fruit its distinctive navel.

Navels are generally large, seedless and mature earlier than the other orange types. There are now many different navel selections available which has extended the harvest period. Navels grow best in sub-tropical, Mediterranean climates and are generally not suited to cold climates.

Navels are grown predominantly as a fresh eating fruit as the juice develops a bitter taste (caused by limonin release) and is generally unsuitable for juicing.

Early season navels

Navelina and Newhall are the current industry preferred early navels in WA. Both tend to produce 'elongated' fruit, however this is not considered an issue on the local market.

Fisher (Fischer): *(Available through Auscitrus and local nurseries)*

Originally from California this variety matures around three to four weeks before Washington. Rind colour, however, is achieved at a similar time to Washington and de-greening is required. Fruit quality may be slightly below that of Washington.

Leng: *(Available through Auscitrus and local nurseries)*

This variety matures two to three weeks ahead of Washington depending on location. In recent years it has been superseded by other early season varieties with improved fruit characteristics. The fruit have

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yellow/orange skin and are small to medium in size. They can be difficult to peel and may have high acidity early in the season.

Navelina (industry standard): *(Available through Auscitrus and local nurseries)*

This variety originated in California and there are now two strains available in Australia. The first was introduced from Spain and released from quarantine in 1988 and is known as Navelina 7.5. The second was imported from Italy and released in 1996 and is known as Navelina 315. It is too early to determine if there are major differences in the performance of the two strains.

Navelina trees are compact and suited to high density planting. The fruit mature three to four weeks before Washington, are medium too large, have excellent colour and good eating qualities. The fruit are inclined to be more oval shaped than Washington.

Newhall: *(Available through Auscitrus and local nurseries)*

Also from California, this variety has a distinctive oval shape similar to an egg. There can be some variation in fruit shape especially if trees are growing vigorously. Fruit are large with good colour and eating qualities, maturing about the same time as Navelina. The trees are medium in size and crop well.

Pasin: *(Available through Auscitrus and local nurseries)*

This small to medium sized early variety matures around four weeks before Washington. The trees have a dwarfing growth habit and can be difficult to grow. This variety may suffer from early overcropping resulting in large yields of small fruit. Pasin has not been extensively evaluated under West Australian conditions.

Ryan: *(Available through Auscitrus and local nurseries)*

This variety is around 10 days earlier than Navelina at Dareton Research Station in NSW and is probably the earliest maturing navel variety in southern Australia. It has low acid and is easier to peel than some other varieties. It is susceptible to albedo breakdown and Gibberellic acid application is necessary if holding the fruit on the tree for an extended period. This variety, like Pasin, has not been extensively evaluated under West Australian conditions.

Thomson: *(Available through Auscitrus and local nurseries)*

Originally from California this early season selection matures around two to three weeks before Washington. It is still widely grown in southern Australia although it is being replaced with newer varieties. The fruit can be dry and have pale internal colour early in the season.

Mid Season Navels

Washington is still the mid-season favourite in WA, however there has been considerable recent interest in the red fleshed variety Cara Cara.

Atwood: *(Available through Auscitrus and local nurseries)*

Originating from a limb sport of Washington navel found in California; this variety was released in Australia in 1990. The fruit mature up to two weeks before Washington and are of similar shape, large, with orange skin and good eating qualities. The trees have a similar growth habit to Washington.

Cara Cara (recent introduction): *(Available through Auscitrus and local nurseries)*

This variety was discovered in Venezuela in 1976. It is reputedly smaller than many other navel selections but has pink flesh similar to Star Ruby grapefruit but with a more pinkish-orange colour. In South Africa it matures slightly earlier than Washington navel. In early local evaluation it has been shown to have excellent pink/orange internal colour and is of similar size and maturity time to Washington. There is considerable interest in Cara Cara locally and a number of sizeable plantings have been made.

Fukumoto (recent introduction): *(Available through Auscitrus and local nurseries)*

This variety has only recently been introduced into Western Australian and has had limited testing under our conditions. It was reputed to have an attractive round shape with a deep reddish-orange colour similar to Minneola. In California it matures three to four weeks ahead of Washington (slightly later than Newhall) and develops good early colour. These characteristics however have not been observed in local trialing at West Gingin where maturity time and colour appears very similar to Washington. Evaluation in West Australia is continuing.

Washington (industry standard): *(Available through Auscitrus and local nurseries)*

This is the original seedless navel from which all other selections have been derived. Originally called Bahia it was imported from Brazil into the United States of America in 1870. Trees of Washington navel are of medium vigour and size. Fruit are round with a distinctive well-developed navel. Fruit colour and eating qualities are good. When compared to other types of citrus, maturity is early with ripening beginning in mid May to June, depending on location, continuing through until September.

Late Season (Summer Navels)

While Lane Late is the most widely grown late season navel, reports of its performance are varied. Many new plantings are favouring some of the newer selections listed below.

Autumn Gold: *(Available through ANFIC and some local nurseries)*

A late navel selection selected in the 1950's from Mourquong in NSW. Eastern states evaluation shows this variety to have good fruit quality although it has shown slightly higher susceptibility to albedo breakdown than other late navel selections. The variety has performed quite well in Western Australia although plantings are small.

Barnfield: (Available through Aussie Orange Nursery at Wentworth NSW)

A late navel selection from Ellerslie in NSW. This selection has good flavour and fruit characteristics compared to Lane Late. Is reputed to be slow to commence cropping but long term yields are comparable to Lane Late. Limited knowledge is available on performance in WA.

Chislett: (Available through Chislett nurseries in Kenley Victoria and selected local nurseries)

A late navel selection selected from a Washington planting in Kenley Victoria in 1986. This variety is subject to plant variety rights (PVR) in Australia. Chislett has very good flavour and fruit qualities and is considered one of the best late navel varieties. Chislett navel is widely planted in the southern growing regions of the eastern states and is only surpassed by Lane Late in area planted. There are currently only small plantings of this variety in Western Australia.

Lane Late (industry standard): (Available through Auscitrus and local nurseries)

This variety originated as a bud sport on a property in Curlwaa, near Mildura in Victoria. Tree characteristics are very similar to Washington. The fruit are also similar in shape and size but tend to have a smoother rind and a smaller, less protruding navel. Lane Late is much slower maturing than Washington ripening about a month later. Fruit tend to have a little less flavour than other late selections.

Navelate: (Available through Auscitrus and local nurseries)

This variety matures at about the same time as Washington but can be kept on the tree for about three weeks longer. Although it extends the season of Washington navel about three weeks it is not comparable to Lane Late and other late navel selections which hang on the tree much longer.

Rohde: (Available through Chislett nurseries in Kenley Victoria and selected local nurseries)

A late navel selection from a farm in Nangiloc in north-west Victoria in 1982. Has better fruit quality than Lane Late. Although generally round, in some seasons its shape is reported to be slightly elongated. Experience in the eastern states suggests that this variety will produce higher yields than Lane Late. Very little knowledge is available on performance in WA.

Powell: (Available through Auscitrus and local nurseries)

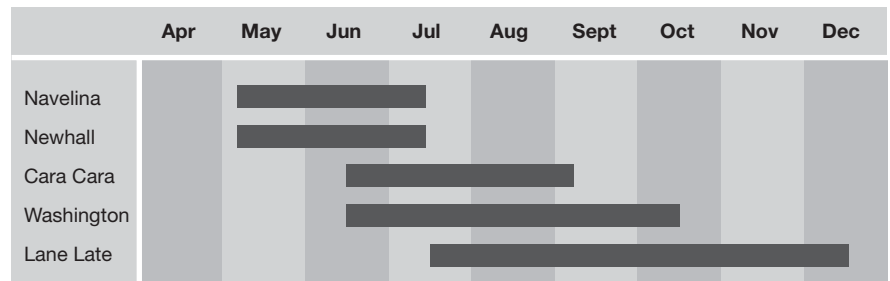
A late navel selection from Curiwaa in NSW. Reputed to have more flavour than Lane Late. This variety is planted in quite large numbers in the Sunraysia region of Australia. Limited knowledge is available on performance in WA.

Summer Gold: (Available through Sunraysia nurseries in NSW)

This mid to late season navel selection from Mourquang in NSW was selected in the 1950's, as was Autumn Gold. In the eastern states it matures earlier than Lane Late navel and is reputed to have a high °Brix level and sweet taste. Summer Gold has quite a low limonin content making it more suitable for fresh juice production than other navels. This is not a vigorous variety and trees are small and compact. Experience in other states suggests this variety will not maintain fruit quality on the tree for as long as a number of other late navel selections.

Other Australian Late Navel Selections

There are a number of other late navel selections grown around Australia including **Hutton**, **Wiffen** and **Wilson**. In general, these selections mature at around the same time as Lane Late but are able to be stored on the tree up to a month longer.



Maturity times for common navel orange varieties.

Common Oranges

Common oranges represent a wide and diverse group of oranges that are not pigmented and have a variety of growth habits and fruiting characteristics. They all produce seeds to some degree and because of this have declined in popularity for fresh consumption. This group does however contain the majority of processing varieties.

Local Experience:

As most Western Australian growers are targeting the fresh market, the local trend in the past decade has been to replace common oranges with navel selections. This trend has meant that local common oranges are often in short supply through the summer months and there is renewed interest in common oranges for the fresh market.

Delta (recent introduction): (Available through Auscitrus and local nurseries)

A selection of Valencia from South Africa that has few seeds and matures one to three weeks earlier than standard Valencia. Trees are more productive than Valencia and have slightly larger fruit. This variety has had limited testing under Western Australian conditions.

Midnight (recent introduction): (*Available through Auscitrus and local nurseries*)

An early maturing Valencia selection from South Africa that has excellent juice content, flavour and very few seeds. It holds on the tree for as long as standard Valencias. This variety has had limited testing under Western Australian conditions.

Valencia (industry standard): (*Available through Auscitrus and local nurseries*)

Valencia is the most extensively grown orange variety in the world and is thought to have originally come from Portugal. Trees are productive, large and vigorous with an upright growth habit. Fruit are medium size, have thin rind, mature late and keep well on the tree. The lateness of maturity means that the skin may regreen. Valencias are most important for the juice market as the juice has excellent processing characteristics.

Many selections of Valencia are now available in Australia. These include **Benyenda, Keenan-3125, Keenan-3247, Smith, Casey, Jenner** and **Berri**.

Other common oranges

There are many other varieties of common orange available but few are grown commercially because of the already established markets for navels and valencias. Some of the more common varieties available include **Hamlin, Parson Brown, Pineapple, Pera (Olimpia), Pera (Limeira), Salustiana** and **Joppa**.

Blood Oranges

Pigmented oranges are not commonly grown in Australia and include all the blood orange types. Some of the varieties available include **Arnold, Ruby** and **Maltese**.

References and further reading

Related Farmnotes:

- Note 157 'Mandarins, tangors and tangelos for Western Australia
- Note 155 'Citrus Rootstocks for Western Australia'

Books and Publications

- Saunt James. "Citrus Varieties of the World" published by Sinclair International Limited, Norwich, England 2000

Web sites

- The Australian Citrus Growers Inc. web site at www.australiancitrusgrowers.com has factsheets available on many different varieties of **mandarins, oranges, grapefruit and lemons**.

Other citrus links of interest include:

- Florida USA citrus site – www.ultimatecitrus.com
- Florida Department of Citrus – www.fred.ifas.ufl.edu/citrus/
- NSW Agriculture site – www.agric.nsw.gov.au/reader/4631
- Queensland Department of Primary Industries and Fisheries – www.dpi.qld.gov.au
- South Australian Research and Development Institute SARDI – www.sardi.sa.gov.au
- University of California, Riverside Citrus Variety Collection www.citrusvariety.ucr.edu/



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