

Orange scions and varieties

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NSW DPI strongly recommends nursery trees are purchased from a reputable nursery. Budwood and rootstock seed can be purchased by growers or coordinated by the nursery and is best sourced through the Australian Citrus Propagation Association (Auscitrus). Auscitrus is a national not-for-profit industry organisation that provides true to type, high health status propagation material for the Australian citrus industry. The improved productivity and health of Australian citrus orchards since its inception continues to highlight its value.

Australian growers have many varieties to choose from. Some are public varieties, while most of the new varieties in Australia are subject to plant breeder's rights (PBR). Plant breeder's rights are exclusive commercial rights for a registered variety of plant. Variety owners usually have a variety manager to manage their intellectual property right and each of these manages a different variety portfolio (Table 1).

Auscitrus distributes both public and private variety propagation material, but only public varieties are listed on the Auscitrus order form for purchase directly by growers. For PBR varieties, the variety manager arranges a special order form for the supply of high health

status propagation material to an approved nursery. A PBR variety manager may limit the nurseries they licence to propagate the varieties in their portfolio.

Several variety fact sheets are on the Citrus Australia website (<https://citrusaustralia.com.au/>). Fact sheets on the most recently evaluated varieties are published on the NSW DPI web site in the 'Rootstocks and varieties' section (<https://www.dpi.nsw.gov.au/agriculture/horticulture/citrus>). Many of these are an outcome of Hort Innovation Australia funded citrus variety evaluation research.

Some variety information is published by the variety manager exclusively – especially data collected internationally during testing and evaluation during the breeding and selection phases. It is recommended to check with a variety manager for private variety fact sheets that are not published on the Citrus Australia or NSW DPI websites.

The following maturity charts provide a guide to when varieties mature in southern Australia (Sunraysia on citrange rootstock). Variety managers for PBR varieties are denoted by superscript numbers after the variety name in the maturity table. Contacts for variety managers in Australia are listed in Table 1.

Table 1. Contacts for citrus varieties in Australia.

Symbol	Contact
P	Public variety Contact: Auscitrus Email: contact@auscitrus.com.au Phone: 03 5027 4411 Web: www.auscitrus.com.au
1	Advanced Production Methods (APM) Contact: Arthur Edwards Email: arthur@apmaustralia.com Phone: 0409 609 300
2	Australian Nurseryman's Fruit Improvement Company (ANFIC) Contact: Dr Gavin Porter Email: info@anfic.com.au Phone: 0419 639 509 Web: anfic.com.au
3	Chislett Developments Contact: Jonathon Chislett Email: jonathon@chislettfarms.com.au Phone: 03 5038 8238 Web: www.chislettfarms.com.au
4	FAVCO and Carter and Spencer Contact: Deon Doss Email: info@favcoqld.com.au Phone: 07 3717 1500
5	Nu Leaf IP Pty Ltd Contact: Matthew Cottrell Email: matthew@nuleafip.com Phone: 0438 594 010
6	Variety Access Australia Contact: Wayne Parr Email: ggrove@bigpond.com.au Phone: 0418 862 016 Web: www.varietyaccess.com.au
7	D & J M Clark Email: clark.dj@bigpond.com Phone: 0427 248 511

Table 2. Navel orange maturity for the Sunraysia region. For the Riverina, add two weeks.

Variety	Apr				May				Jun				Jul				Aug				Sep				Oct				Nov							
	Week				Week				Week				Week				Week				Week				Week											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
M7 ³																																				
Rayno ⁶																																				
Ryan ^P																																				
FJ ⁶																																				
Newhall ^P																																				
Navelina ^P																																				
Fisher ^P																																				
Fukumoto 'off-type' ^P																																				
Thomson ^P																																				
Leng ^P																																				
Atwood ^P																																				
Palmer ⁶																																				
Cara Cara ^P																																				
Kirkwood Red ⁶																																				
Villa 11 ⁶																																				
Washington ^P																																				
Hockney ^P																																				
Benyenda ^P																																				
Sunsmooth ¹																																				
Dolci ⁶																																				
Navelate ^P																																				
Summer Gold ²																																				
Nielson ^P																																				
Lane Late ^P																																				
Autumn Gold ²																																				
Rohde ³																																				
Barnfield ^P																																				
Clark ⁷																																				
Hutton ^P																																				
Powell ^P																																				
Wilson ^P																																				
Chislett ³																																				
Witkrans ⁶																																				
Glen Ora ⁶																																				

Notes: the Riverina region is generally two weeks later than Sunraysia. This can vary with season and variety. Rootstock selection will also affect the maturity period. Superscripted letter or numbers refer to the variety manager. Red shading indicates red pigment fruit.

Table 3. Key characteristics of navel orange varieties.

Variety	Characteristics
M7 ³	Earliest navel orange, high Brix with round fruit. Varietal-specific management is required.
Rayno ⁶	South African early Navelina sport, under field evaluation in Australia. Elongated fruit with prominent 'necking'.
Ryan ^P	Relatively easy to peel, sensitive to albedo breakdown, low juice content if harvested too early.
FJ ⁶	Early Navelina sport selected in the Riverina, mostly round fruit, develops a deep orange skin.
Newhall ^P	Early navel, popular in China and Western Australia. Elongated fruit distinguishes it from Navelina.
Navelina ^P	Introduced from Spain to Australian in 1989. Oval, medium to large fruit with high internal quality.
Fisher ^P	Popular early navel from California. Earlier internal maturity than Washington navel but slower to develop full fruit skin colour, particularly when trees are young.
Fukumoto 'off-type' ^P	An 'off-type' navel selection introduced as Fukumoto, maturing at a similar time to Washington navel. Trees are thorny and yield low to average crops of good quality fruit.
Thomson ^P	An earlier Washington navel selection from California. A susceptibility to albedo breakdown and tendency for low juice content has relegated Thomson to minor variety status.
Leng ^P	Limb sport from a Washington navel in Victoria, Australia. Early, round fruit with smooth, fine-textured rind that can split. Has been displaced by varieties such as Navelina and M7 navels.
Atwood ^P	Limb sport from a Washington navel released in Australia in 1990. Large-sized, good quality, early-mid season navel with a maturity period similar to Fisher navel.
Palmer ⁶	A quality, mid-season navel selection; the standard navel clone planted in South Africa.
Cara Cara ^P	A red-fleshed Washington navel limb mutation. Good taste, high juice, a popular export navel.
Kirkwood Red ⁶	A red-fleshed Palmer navel limb mutation from South Africa. Less prone to sunburn damage than Cara Cara because most fruit is produced within the tree canopy.
Villa 11 ⁶	A later maturing Cara Cara navel originating as a whole tree mutation found in the Riverina. Fruit is slower to externally colour and holds on the tree longer than the 'parent', Cara Cara navel.
Washington ^P	Most planted navel variety in Australia. Houghton and Herps are the Washington navel clones distributed by Auscitrus.
Hockney ^P	Navel clone with large fruit. Acceptable internal quality and typical Washington navel rind quality.
Benyenda ^P	A Washington navel selection from Queensland.
Sunsmooth ¹	A navel mutation selected from Riverland, South Australia, currently being commercialised.
Dolci ⁶	Has brown-olive rind, excellent eating quality at maturity with sweet, low acid flesh.
Navelate ^P	Similar, good internal fruit quality to Washington navel, small fruit size and oval fruit shape.
Summer Gold ²	Late navel selected mid-1950s from Mourquong in south-west NSW. Fruit is held on the tree, has good juice content and high Brix:acid. Usually harvested at the start of the late navel season.
Nielson ^P	Late selection from Waikerie in South Australia. Usually harvested at the start of the late navel season. Evaluated as a mid-late navel selection in southern Australia trials.
Lane Late ^P	Selected from a property in Curlwaa, NSW in 1950 and presumed to be a Washington limb sport. Good flavour, high juice content and a local and international late navel industry standard.
Autumn Gold ²	Selected in the 1950s from Mourquong in south-west NSW. Good flavour, high juice content.
Rohde ³	Selected from a property at Iraak, VIC; commercialised in the mid-1980s. Good quality, large-sized fruit. A high yielding late navel.
Barnfield ^P	Selected from Ellerslie, NSW in 1985. Quality late navel, lower level of granulation than Lane Late.
Clark ⁷	Selected from a property at Trentham Cliffs, NSW. High early yields, medium to large fruit and good internal fruit quality.
Hutton ^P	Selected from near Loxton, South Australia in the mid-1980s. Matures at the same time as Lane Late and can be held on the tree longer than Lane navel, which can granulate late in the season.
Powell ^P	Late navel selection found at Curlwaa, NSW in the mid-1980s. High juice content, good palatability with a low level of stem-end dryness ('granulation') in late-season fruit.
Wilson ^P	South Australian selection from the early 1980s. Smaller fruit than Lane Late with a similar maturity period. Lower juice acid content gives it a higher Brix to acid ratio than most late hanging navels.
Chislett ³	Selected from a Washington navel block at Kenley, VIC in 1988. Fruit quality holds well late, less prone to granulation.
Witkrans ⁶	South African late navel orange with good internal fruit quality and smooth rind texture.
Glen Ora ⁶	South African late navel orange, holds firm on the tree, good internal quality, has small navel end.

Superscripted letter or numbers refer to the variety manager (see Table 1).

Table 4. Common orange maturity for the Sunraysia region. For the Riverina, add two weeks.

	May				Jun				Jul				Aug				Sep				Oct				Nov				Dec				Jan							
	Week				Week				Week				Week				Week				Week				Week				Week											
Variety	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Bintangcheng #2 ^P																																								
Earlygold ²																																								
Bintangcheng Renbin #5 ^P																																								
Salustiana ^P																																								
Joe's Early ⁵																																								
Parson Brown ^P																																								
Hamlin ^P																																								
Pineapple ^P																																								

Notes: the Riverina region is generally two weeks later than Sunraysia. This can vary with season and variety. Rootstock selection will also affect the maturity period. Superscripted letter or numbers refer to the variety manager (see Table 1).

Table 5. Key characteristics of common orange varieties.

Variety	Characteristics
Bintangcheng #2 ^P	Early sweet orange suitable for juice blending, imparts fresh flavour to last season's Valencia, or blend with new season Salustiana.
Earlygold ²	An early processing orange from Florida.
Bintangcheng Renbin #5 ^P	Later maturity and smaller fruit size than Bintangcheng #2.
Salustiana ^P	Popular early season juice variety. Low seeded and can be marketed as a fresh fruit. Vigorous and productive tree.
Joe's Early ⁵	Early, Western Australia sweet orange selection.
Parson Brown ^P	Mid-season juice variety.
Hamlin ^P	Popular, high yielding variety used for early season juice production.
Pineapple ^P	Later mid-season juice variety.

Superscripted letter or numbers refer to the variety manager (see Table 1).

Table 6. Valencia orange maturity for the Sunraysia region. For the Riverina, add two weeks.

	Aug				Sep				Oct				Nov				Dec				Jan				Feb				Mar				Apr							
	Week				Week				Week				Week				Week				Week				Week				Week											
Variety	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Weipe SL ⁶																																								
Turkey ⁶																																								
Benny ⁶																																								
McClellan SL ⁶																																								
Gusocora ⁶																																								
McMahon SL ^P																																								
Benyenda ^P																																								
Ruby ⁶																																								
Midnight SL ^P																																								
Midnight SL improved ⁶																																								
Delta SL ^P																																								
Keenan ^P																																								
Berri ^P																																								
DV Valencia ⁶																																								
Lavalle ⁶																																								

Notes: the Riverina region is generally two weeks later than Sunraysia. This can vary with season and variety. Rootstock selection will also affect the maturity period. Superscripted letter or numbers refer to the variety manager (see Table 1). Red shading indicates red pigment fruit.

Table 7. Key characteristics of Valencia orange varieties.

Variety	Characteristics
Weipe SL ⁶	Early maturing selection from South Africa, tends to produce fruit with thick rinds.
Turkey ⁶	A consistent cropping, early Valencia with high juice content. Low seeded and can be marketed as a fresh fruit.
Benny ⁶	Early maturing selection from South Africa with a low seed number per fruit.
McClellan SL ⁶	Low seeded Valencia from South Africa with good internal quality and fruit appearance.
Gusocora ⁶	A mid-maturing Valencia selection from South Africa that crops consistently.
McMahon SL ^P	Seedless Valencia. Manage crop load on mature trees for consistent yields. Prone to biennial bearing.
Benyenda ^P	An early maturing, seeded Valencia selection from Queensland.
Ruby ⁶	Valencia mutation with internal red lycopene (similar to Cara Cara navel orange).
Midnight SL ^P	Large sized, good quality seedless Valencia. Original clone released in Australia was low yielding with management practices.
Midnight SL improved ⁶	The industry standard seedless Valencia in South Africa. The improved selection is being evaluated in Australia.
Delta SL ^P	Vigorous tree, fruit are medium size and seedless.
Keenan ^P	Newton Keenan 3125 is a standard mid-late season Valencia clone planted in Australia.
Berri ^P	High yielding, mid-late season Valencia. Fruit holds well on the tree into February.
DV Valencia ⁶	Higher Brix and % juice compared to Keenan Valencia. Juice quality holds better late in the season compared to other Valencia clones.
Lavalle ⁶	Very late maturing Valencia selection from South Africa.

Superscripted letter or numbers refer to the variety manager (see Table 1).

Table 8. Blood orange maturity for the Sunraysia region. For the Riverina, add two weeks.

	May				Jun				Jul				Aug				Sep				Oct				Nov				Dec				Jan							
	Week				Week				Week				Week				Week				Week				Week				Week											
Variety	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Arnold blood ^P																																								
Tarocco Ippolito ^P																																								
Tarocco Roso ^P																																								
Tarocco Meli ^P																																								

Note: the Riverina region is generally two weeks later than Sunraysia. This can vary with season and variety. Rootstock selection will also affect the maturity period. Superscripted letter or numbers refer to the variety manager (see Table 1).

Table 9. Key characteristics of blood orange varieties.

Variety	Characteristics
Arnold blood ^P	Fruit develop a strong internal blood (anthocyanin) colour and external red blush on the tree. Small to medium fruit size. Higher acid levels compared to Tarocco bloods.
Tarocco Ippolito ^P	Internal blood colour and external red skin blush at full maturity. No external blush on fruit.
Tarocco Roso ^P	Thorny tree. Limited external colour and internal blood colour development on the tree.
Tarocco Meli ^P	No external or internal red colour development on the tree at Dareton. Cool storage at 5°C for 6 weeks enhanced internal blood colour development.

Superscripted letter or numbers refer to the variety manager (see Table 1).

Reference number: PUB20/919.

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