

Module 3

Citrus Varieties

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Introduction

Citrus fruit comes in a wide variety of shapes and sizes. For marketing and production in South Africa, citrus is separated into four main groups, being oranges, grapefruit, lemons and soft citrus. In each of these groups are a number of varieties and cultivars.



information

Cultivar versus Variety - Terminology in the Citrus Industry

(Adapted from publication of Dr. Graham Barry – SA Fruit Journal, April/May 2006)

A misunderstanding and lack of consistency often occurs when naming the different types of citrus fruit. Resolving this problem can be a complex issue and the terminology used by technical and marketing personnel often differs.

Therefore, the following guideline is proposed to reduce, and ultimately avoid, confusion pertaining to the naming of citrus fruit types in a) the production and b) the marketing of citrus fruit.

The commercially important types of citrus are divided into six groups: sweet oranges, mandarins, grapefruit, shaddocks (pummelos), lemons, and limes. These groups are easily identifiable in the marketplace. However, within each of these six types of citrus are numerous cultivated varieties, sometimes referred to as cultivars and other times as varieties.

Hopefully this simple guideline will help to avoid unnecessary confusion in the naming of citrus fruit types in both the orchards and in the trade.

Production-Related Terminology

- ❖ A cultivar is a group of cultivated plants with distinct characteristics. The word 'cultivar' is a contraction of the phrase 'cultivated variety'.
- ❖ For example, Bahianinha Navel orange has a better fruit set ability than Palmer Navel orange.
- ❖ Strangely enough, the correct term in Afrikaans is 'cultivar', although 'kultivar' is often used and seems to be gaining recognition.

Market-Related Terminology

- ❖ Variety is used as a trade designation for fruit with similar characteristics, and is often made up of more than one cultivar.

- ❖ For example, Navels are considered to be excellent eating oranges, whereas Valencias are considered to be dual-purpose oranges, consumed both as fresh fruit or used for juicing.
- ❖ In Afrikaans the term is 'variëteit'.

example

Example of Use of Cultivar and Variety Terminology

Variety	Navels	Valencias	Satsumas	Clementines
Cultivar	Palmer	Olinda	MihoWase	Nules
	Navelina	DuRoi	Kuno	Oroval
	Bahianinha	Midknight	Owari	Marisol

Citrus Types

There are many types of citrus cultivars of which the most important commercially are:

- ❖ Navels
- ❖ Valencias
- ❖ Grapefruit
- ❖ Mandarins and mandarin hybrids
- ❖ Lemons and limes



Limes

The small green fruit are limes that are seedless. These are known as Tahiti or Persian limes and production in South Africa is not high. Limes are produced more in really hot and humid tropical areas of the world, such as the Caribbean Islands and similar climates.



Lemons

The larger fruit, the lemons, the yellow fruit are produced in South Africa on a very large scale and are sought after in our markets because of the high juice percentage that we attain with the selections we use.



Mandarins

The dark orange red fruit are Mandarin hybrids and it is very well sought after in the Middle and Far Eastern markets. Its colour also makes it popular in the European Union. It is seedless and is an excellent quality fruit to eat.



Grapefruit

Then we have white or Marsh grapefruit and Star Ruby or red pigmented Grapefruit. Grapefruit is popular still in the European Union and we also do have markets in other parts of the world such as Japan.



Oranges

We then have a Valencia. They are a little bit pale at the moment because it is a later maturing fruit. Then we have Navel selections, in the front there are two selections: a Palmer navel which is the pale colour and a Cara-Cara navel which is the red pigmented navel.



Cultivar Selection

In each cultivar category there are numerous selections which are similar in many ways yet differ in important aspects such as time of maturity, fruit size, fruit shape, internal quality and flavour, tree vigour and internal and external fruit colour.

These selections have made it possible for growers to produce a flow of superior quality fruit throughout the season, which now extends from mid-March to mid-October in Southern Africa.

These maturity charts depict the times of maturity of the different selections per cultivar category throughout the season and in the different production areas.



information

Maturity Charts

Mandarin & Mandarin Hybrid Maturity Periods in Cold Regions - 2008 Season																												
	March				April				May				June				July				Aug				Sept			
	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
Satsuma																												
Clementine																												
Fairchild																												
Nova																												
Minneola																												
African Sunset																												
Valley Gold																												
Kiyomi																												
Nectar																												
Nadorcott																												
Mor																												
Hadas Ellendale																												
Winola																												

Note: Maturity per selection was based on a 3 week period peaking at a ratio of 11:1

Navel Maturity Periods in Cape Regions – 2008 Season																												
	March				April				May				June				July				Aug				Sept			
	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
PEN (Exp.)																												
Fukumoto																												
Newhall/Navelina																												
Fisher																												
Dream (Exp.)																												
Tulegold (Exp.)																												
PAN (Exp.)																												
Bahianinha																												
Palmer																												
Washington																												
Cara Cara																												
EDPN 1 (Exp.)																												
Chislett																												
EDPN 2 (Exp.)																												
Autumn Gold																												
Barnfield Summer																												
Summer Gold																												
Powell Summer																												
Witkrans																												
Lane Late																												
Cambria																												
LBN (Exp.)																												
SUN (Exp.)																												
DSN (Exp.)																												

Note: Maturity was based on a 3 week period peaking at a ratio of 10:1

Valencia Maturity Periods in Northern Regions – 2008 Season																													
	March				April				May				June				July				Aug								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Limpopo SL																													
Tambuti Early																													
Turkey																													
Mouton Early																													
Portsgate																													
Alpha																													
Midnight																													
Bennie 1																													
Bennie 2																													
Bend 8A1																													
Bend 8A2																													
Jassie																													
Delta																													
Ruby																													
McClellan SL																													
Lavalle																													

Note: Maturity was based on a 3 week period peaking at a ratio of 10:1

Grapefruit Maturity Periods in Northern Regions – 2008 Season																														
	March				April				May				June				July				Aug									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
Marsh																														
Nartia																														
Star Ruby																														
Ray Ruby																														
Henderson																														
Jackson																														
Nelruby																														
Flame																														
Rosé																														

Note: Maturity was based on the minimum export ratio

Lemon Maturity Periods in Cape Regions – Past 3 Seasons																														
	March				April				May				June				July				Aug				Sept					
	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		
Eureka																														
Eureka Seedless																														
Lisbon																														
Limoneira																														
Genoa																														
Fino																														
Verna																														

Conclusion

There are specific export requirements for each type of citrus. Each type also has characteristics that determine how it should be handled in the packhouse to best preserve its quality.

It is therefore very important to know the different varieties and cultivars that are packed in your packhouse, and to know how the fruit should best be handled and what is required of that fruit in the export market.



information

Citrus Cultivar Characteristics

Cultivar	Description	Origins	Harvest Period	Marketing (Week No.)
Oranges				
Production Areas	<p>Navels</p> <ul style="list-style-type: none"> • Eastern Cape: 30% • Limpopo Province: 25% • Mpumalanga: 20% • Western Cape: 25% <p>Valencias</p> <ul style="list-style-type: none"> • Eastern Cape: 20% • KwaZulu-Natal: 3% • Limpopo Province: 50% • Mpumalanga: 17% • Western Cape: 10% <p>Midseasons</p> <ul style="list-style-type: none"> • Limpopo Province: 70% • Mpumalanga: 30% 			
Navels	Medium to large seedless fruit with small embedded navel at the styler end of the fruit. Easily peeled with soft fibred segments. The worlds' premier dessert fruit.	Originally from China. The Washington navel was the first commercially recognised navel. Many selections now exist.	March to June	15-30
Late Navels	Late ripening selections of navels.	Selections derived from the Navel	End May to end July	22-35
Tomango	Small but good quality fruit. Largely seedless with tender juicy flesh.	Unknown	May and June	22-32

Shamouti	Medium to large size. Oval in shape. Distinctive fragrance and flavour.	Israel	June and July	25-35
Midnight	Large fruit and virtually seedless. Good internal quality. Bears more fruit inside the tree canopy.	Sundays River Valley in the Eastern Cape, South Africa	Mid July to mid August in hot areas, and from August to mid September in colder areas	33-43
Delta Seedless	Medium-sized, seedless fruit of good quality with a smooth rind.	South Africa	Mid July to end August in hot areas and end July to early September in colder areas	30-42
Valencia	Medium to large fruit, roundish in shape with a well-coloured, moderately thin rind of smooth, sometimes finely pebbled texture. The relatively high acid content and high sugar content to produce a delicious taste. This variety is ideal for juicing.	Portuguese Azores	July to end September in hot areas and mid July to mid October in colder areas	30-49
Soft Citrus (Mandarins)				
Production Areas	<ul style="list-style-type: none"> • Eastern Cape: 43% • Western Cape: 50% • Other: 7% 			
Satsumas	Earliest ripening of all soft citrus varieties. They are seedless and very easily peeled. Flavour can only be described as average to poor.	Japan	March to end April	12-20
Novas	Medium to large fruit, with a rind that does not peel easily and has a distinctive aroma. The flesh is deep orange. The segments are juicy, tender and sweet.	Florida	April to mid May in hot areas and May to Mid June in colder areas	15-25

Clementine	The world's premier mandarin. They are easy to peel and, if grown in single blocks away from other cross-pollinating varieties, the fruit are seedless. When mature, the peel turns bright orange. The fruit has a distinctive sweet taste and flavour.	Thought to be China. Numerous selections have been discovered or developed in Spain, Corsica, Italy and Morocco.	Mid April to end June	17-34
Minneola	A hybrid of grapefruit and tangerine, they tend to have big fruit with a distinctive nipple at the stem end of the fruit. The mature fruit turns a deep orange colour. It is juicy, aromatic and has a good tangy flavour.	Florida	Mid May to end June in hot areas Mid June to end July in colder areas	24-36
Tambor	Generally difficult to peel, the pulp is tender and extremely juicy. The fruit is of medium size and slightly flattened at the stylar-end, where a small navel often forms.	Jamaica	End June to early August	28-40
Nadorcott	Easily peeled, the rind turns deep orange at maturity. Seedless when grown in separate blocks away from other cross-pollinating varieties. Late maturing. Internal quality is excellent with high sugar levels.	Morocco	June-August	26-43
Grapefruit				
Production Areas	<ul style="list-style-type: none"> • Eastern Cape: 3% • KwaZulu-Natal: 12% • Limpopo Province: 15% • Mpumalanga: 35% • Swaziland: 35% 			
Marsh	The fruit is large, white and virtually seedless. Marsh is suitable for fresh consumption in segments and for juicing.	Lakeland, Florida	End March to mid June	17-35

Rosé	This fruit has a pale-pink flesh, and the skin is yellow with a red blush.	Texas	Mid April to end June	19-35
Star Ruby	Rind is this and a deep golden yellow to red. The flesh is deep red and the fruit rarely has more than one or two seeds. Very high juice content and sweet flavour. Well suited to those who find other grapefruit too sharp in taste.	Weslaco, Texas	Mid April to end June in hot areas	19-35
Lemons				
Production Areas	<ul style="list-style-type: none"> • Eastern Cape: 35% • Western Cape: 15% • KwaZulu-Natal: 3% • Limpopo Province: 15% • Mpumalanga: 30% • Swaziland: 2% 			
Eureka	The rind is smooth and has a thin to medium thickness. This lemon has a high acid level and high juice content. It rarely has more than 5 seeds per fruit and is often seedless.	California in 1858	Mid February to mid July in hot areas and mid March to mid August in colder areas	12-44



active learning

Watch the DVD clips, read through the learning material and do workplace research to gather the knowledge and information to complete the assignment below.

Activity 3.1 – Flowchart

Draw a flowchart, linked to a year calendar, showing the growth cycle and harvesting of citrus fruit.

(Additional resource reference: Citrus Academy learning material: Introduction to Citrus Production)

Activity 3.2 – Research Worksheet

Fill in the blanks in the table:

Cultivar	Description	Origins	Harvest Period	Marketing (Week No.)
Production Areas	Which province produces the highest percentage navels?			
	Which province produces the highest percentage Valencias?			
	Which province produces the highest percentage Midseasons?			
Navels	Medium to large seedless fruit with small embedded navel at the styler end of the fruit. Easily peeled with soft fibred segments. The worlds' premier dessert fruit.	Originally from China. The Washington navel was the first commercially recognised navel. Many selections now exist.		15-30
Late Navels	Late ripening selections of navels.	Selections derived from the Navel	End May to end July	
Tomango		Unknown	May and June	22-32
Shamouti	Medium to large size. Oval in shape. Distinctive fragrance and flavour.		June and July	25-35
Midnight		Sundays River Valley in the Eastern Cape, South Africa	Mid July to mid August in hot areas, and from August to mid September in colder areas	33-43
Delta Seedless	Medium-sized, seedless fruit of good quality with a smooth rind.		Mid July to end August in hot areas and end July to early September in colder areas	30-42
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