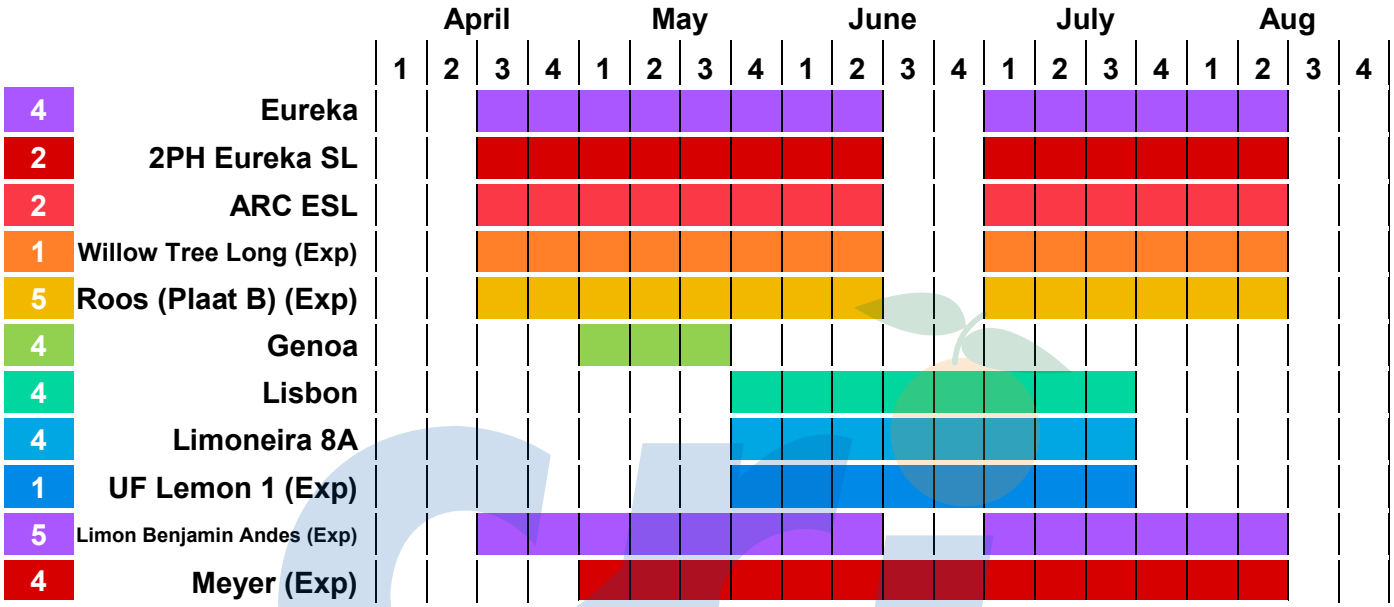
Lemons

CRW

Lemon Maturity Periods

Eastern Cape



Key:

Exp Experimental Cultivar
1 CGA Cultivar Company
2 Citrogold
3 Eurosemillas
4 Open
5 Stargrow
6 XLnT
7 Citrus Genesis

Updated: July 2024

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Eureka Lemon

Origin
The Eureka lemon comes from California where it was selected from a group of seedlings originating from Italy. The selection in South Africa is the Frost Nucellar Eureka, the only known nucellar selection of the various Eureka selections available. Currently Eureka constitutes just over 70% of total lemon plantings in South Africa, whereas a few years ago nearly all lemon plantings were Eureka.

Ownership
Open.

General Description
The most widely planted lemon selection, which is highly productive, with a prolonged harvest period and produces fruit of good size. The fruit is good quality with a high juice percentage. The trees are vigorous.

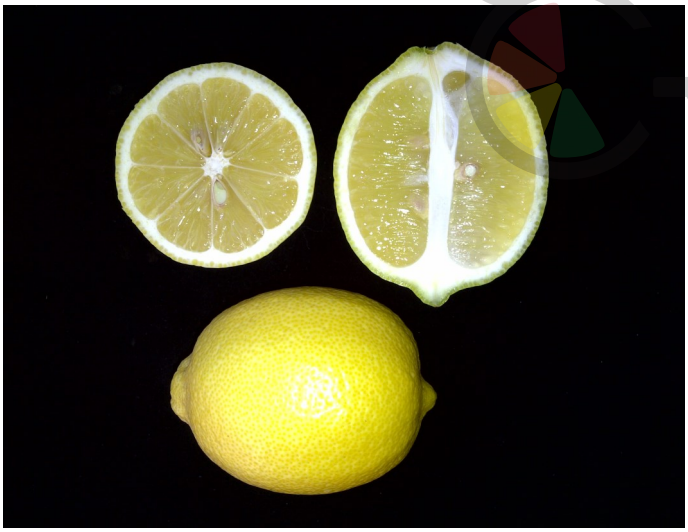
Tree Characteristics
The tree is vigorous with a spreading growth habit and more sparsely foliated than other selections. It is less cold resistant and not as thorny as Lisbon. In the colder regions, during winter, it suffers from winter chlorosis, which is not a problem.

Rootstock Options
Eureka is not compatible with trifoliate orange and its hybrids except Benton citrange, X639 (Cleopatra mandarin x trifoliate) and Minneola x Trifoliate. Eureka on the latter two hybrids has performed well in South Africa. The majority of plantings are on Rough lemon and to a lesser extent Volckameriana.

Fruit Characteristics
The Eureka can have three sets per tree producing fruit from as early as late February in warmer areas to as late as mid/late September in cool areas, most of the crop being harvested from mid May to mid June and mid July to mid August, depending on climatic area. Fruit size is medium between 48 – 72mm averaging 60mm. The fruit is often borne on terminal clusters making it more susceptible to wind blemish and sunburn. It has a smooth rind and fruit shape can be round to fairly elongated with a small neck and extended shoulder (nipple). Fruit colour is pale green at harvest and later turns yellow. The juice levels are normally high, being above the 40% minimum for export, due to a fairly thin rind provided planted in suitable areas, i.e. not too cold such as the Grabouw area. The flesh is a greenish yellow colour which is acidic in flavour. Seed varies from 3-5 seeds/fruit.

Production
Production is good with yields up to 80 tons/ha on mature trees (10 years plus).

General
No crop manipulation is required by Eureka lemon, however, it is susceptible to sunburn and wind blemish. Thrips can be a problem in certain areas as well as Citrus Black Spot. The Eureka is fairly tolerant to greening disease. Harvest, packing and shipping requirements are as for orange cultivars. However, Peteca spot can be a problem in certain years. The cause of this condition is still not known with any certainty. Endoxerosis which is a form of granulation can occur in well coloured, over mature fruit, depending on area and climate.



Eureka Lemon fruit showing typical shape, rind texture and seed counts.

Thirteen year old Eureka Lemon tree on Rough Lemon showing typical vigorous growth and tree shape (tree height 2.9m).

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Status, Area Suitability and Availability
Commercial - suitable lemon areas. Commercial quantities of propagation material are available from the Citrus Foundation Block.

Key References
The information in this fact sheet is based on evaluations by Citrus Research International.

Evaluation Data

Internal Quality
Data still to be included.

Count Distribution

Count	64	75	88	100	113	138	162	189	216
%	4	7	14	20	23	18	7	4	3

Production
For 10 year old trees, 192 Kg per tree and 80 tons per hectare at 6m x 4m spacing (417 trees/ha).

Export %

Grade	Percentage
1	75
2, 3 & 4	25

Comments
The Eureka lemon is less vigorous than Lisbon types and the selection in South Africa has small to no thorns, depending on tree vigour and climate. Eureka lemons have been a success in South Africa, particularly in the Sundays River Valley, the country's largest lemon production area.

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Eureka Seedless Lemon

Origin
The Eureka Seedless is an irradiation-induced mutation of the Eureka lemon bred by the Agricultural Research Council. The selection was released in South Africa around 2000.

Ownership
Agricultural Research Council.

General Description
A seedless Eureka selection.

Tree Characteristics
Similar vigour and spreading growth habit to the standard Eureka lemon.

Rootstock Options
Probably the same incompatibility with trifoliate orange and its hybrids as Eureka. Note that Eureka is not compatible with trifoliate orange and its hybrids except Benton citrange, X639 (Cleopatra mandarin x trifoliate) and Minneola x Trifoliate. Eureka on the latter two hybrids has performed well in South Africa.

Fruit Characteristics
The Eureka Seedless has not produced as well as standard Eureka to date with the result that fruit size has been larger. The fruit is not as robust as Eureka and does not have as many different fruit sets causing the picking window to be shorter. As a result in the Sundays River Valley, the largest lemon growing area in South Africa, Eureka seedless is picked for only 10 to 12 weeks while standard Eureka is picked for 26 to 27 weeks. Mature fruit drop easily. The fruit is slightly more elongated than Eureka with high shoulders, resulting in low pack-out percentages. Juice levels are good and the fruit is completely seedless.

Production
Production is less than standard Eureka ranging from 10 to 55 tons/ha when trees are manipulated with Gibberellic Acid (GA) and girdling for increased fruit set.

General
Fruit set and size need to be manipulated for Eureka Seedless Lemon. It is susceptible to sunburn and wind blemish. Thrips can be a problem in certain areas as well as Citrus Black Spot. Harvest, packing and shipping requirements are the same as for normal Eureka. However, Peteca spot can be a problem in certain years. The cause of this condition is still not known with any certainty. Endoxerosis which is a form of granulation can occur in well coloured, over mature fruit, depending on area and climate.

Status, Area Suitability and Availability
Since release the Eureka Seedless has been planted fairly extensively. It should be suited to all areas where Eureka is commercially grown, i.e. all climatic zones in South Africa except the very cold coastal areas and possibly semi desert areas. It has however shown to be sensitive to fruit set even in cooler areas such as the East Cape. This has led to reduced crops of larger fruit, reducing quantities of exportable fruit. Commercial quantities of propagation material are available from the Citrus Foundation Block.

Eureka Seedless fruit showing the complete absence of any seeds.

Thirteen year old Eureka SL Lemon tree on Rough Lemon showing typical vigorous growth and tree shape (tree height 2.9m).

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Key References
The information in this fact sheet is based on reports from Eureka seedless growers compiled by Citrus Research International.

Evaluation Data

Internal Quality
Data still to be included.

Count Distribution

Count	64	75	88	100	113	138	162
%	8	14	25	26	18	7	2

Production
On 10 year old trees, 132 Kg per tree and 55 tons per hectare at 6m x 4m spacing (417 trees/ha).

Export %

Grade	Percentage
1	65
2, 3 & 4	35

Comments
The Eureka Seedless has a number of problems that are presently limiting its further expansion as a commercial cultivar in South Africa. These problems are not due to the Eureka Seedless in the Citrus Improvement Scheme being unstable horticulturally, but apparently due to it being less productive than the standard Eureka. This results in a number of unacceptably large sizes which reduces export percentages. In areas where fruit set has been manipulated through girdling, *Phytophthora* problems were enhanced. It is also a less hardy fruit than the standard Eureka Lemon and other Lisbon types. In addition very few growers have earned premiums to date for the seedless fruit. When this is added to the royalties payable on this fruit it cannot compete income wise with the standard Eureka lemon. Should larger quantities of fruit become available over a longer period in future it should be possible to establish a programme that highlights its seedlessness and thus receive the premiums expected of seedless fruit.

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Fino Lemon

Origin
Of unknown Spanish origin but believed to have originated from seed of a Comun lemon. Selection 49 was released around 1991 in South Africa. It is also known as Mesero, Primofiori or Blanco.

Ownership
Open.

General Description
A vigorous, highly productive tree with large fruit size.

Tree Characteristics
The tree is exceptionally vigorous with an upright to spreading, dense growth habit and thorny. The fruit is borne more inside, lower down in the canopy.

Rootstock Options
Fino appears to be compatible with Swingle citrumelo, Carrizo and Troyer citranges.

Fruit Characteristics
Yields are initially low due to the vigorous growth but can be higher than Eureka and fruit size somewhat larger. Fruit set appears more concentrated, just after the main Eureka set. In the hot areas maturity is around mid March to mid May and 4 to 6 weeks later in cold areas. Fruit shape is round to oval. Rinds are thicker than Eureka, resulting in less juice, sometimes not meeting export standards. Seed can vary from 5-15 seeds per fruit.

Production
No data available.

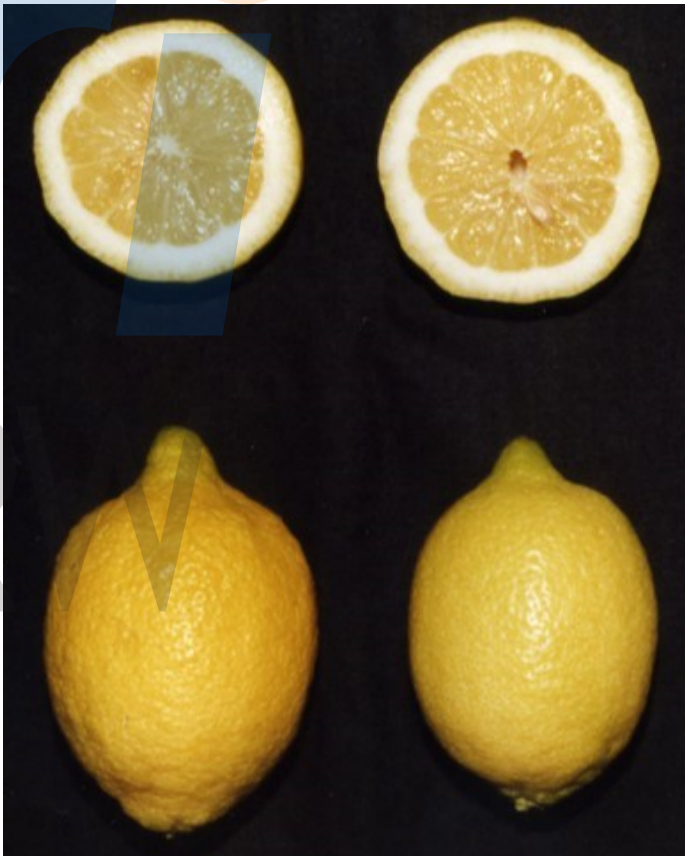
General
The Fino Lemon does not require crop manipulation but is susceptible to sunburn and wind blemish. Thrips can be a problem in certain areas as well as Citrus Black Spot. Fino is fairly tolerant to greening disease. Harvest, packing and shipping requirements are as for orange cultivars. However, Peteca spot can be a problem in certain years. Endoxerosis which is a form of granulation can occur in well coloured, over mature fruit, depending on area and climate.

Status, Area Suitability and Availability
Fino trees have only been grown experimentally in South Africa. Although late maturing they are of poor quality and not recommended. No propagation material is currently available at the Citrus Foundation Block.

Key References
The information in this fact sheet is based on evaluations by Citrus Research International.

Evaluation Data
No Evaluation Data available.

Comment
The Fino lemon tree is very vigorous and the selection in South Africa has large thorns, depending on tree vigour and climate. The Fino has not been a success in South Africa, due to extreme vigour, thick rinds and low juice percentages.



Fino Lemon showing thick rinds, typical rind texture and fruit shape.

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Genoa Lemon

Origin
The Genoa originated in Genoa, Italy from where it was taken to California during 1875. It is a Eureka type and is the principle variety grown in Argentina and Chile. It was released around 1998 in South Africa.

Ownership
Open.

General Description
A dense tree of the Eureka type, earlier maturing and with one main set.

Tree Characteristics
The tree is vigorous with a spreading, dense growth habit. It is more cold resistant than Eureka. Like the Eureka it is substantially less thorny than Lisbon types.

Rootstock Options
Although it is described as being in the Eureka group, trials in South Africa have shown that it is compatible with trifoliate orange and its hybrids. Trial results have not shown any incompatibilities even on Swingle citrumelo, which is extremely incompatible with Eureka. Genoa trees on Swingle citrumelo and Rangpur lime are considerably smaller than on Rough Lemon and Volckameriana.

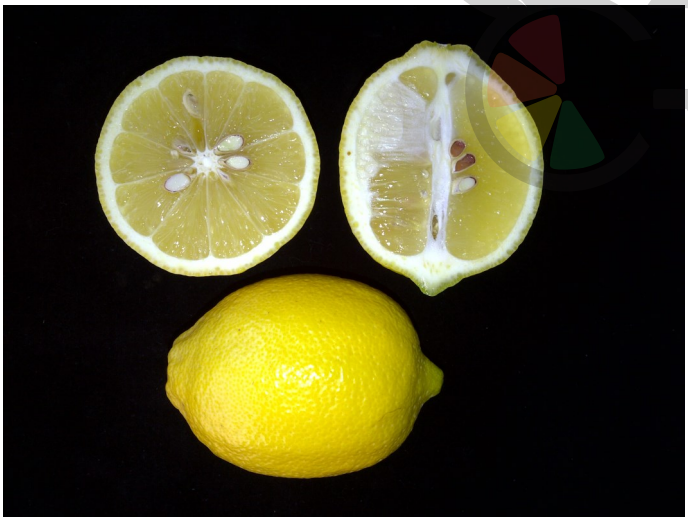
Fruit Characteristics
The Genoa appears to have one main set. Fruit size is larger than Eureka and Lisbon. It has a smooth to occasionally coarse, but thin, rind and sometimes high shoulders with good juice levels. Fruit tends to be rounder than other lemons with a small shoulder. Rind colour is earlier than Lisbon. Seed counts can vary from nil to 6 per fruit in cold areas, but can be substantially higher in hot areas. The main crop is harvested during late June/early July in the Cape regions and approximately 4 weeks earlier in warmer areas.

Production
Six year old trees on Rough Lemon in Citrusdal gave 53 tons per hectare.

General
Genoa Lemon does not require crop manipulation but is susceptible to sunburn and wind blemish. Thrips can be a problem in certain areas as well as Citrus Black Spot. Genoa is fairly tolerant to greening disease. Harvest, packing and shipping requirements are as for Eureka and other lemons. However, Peteca spot can be a problem in certain years. Endoxerosis which is a form of granulation can occur in well coloured, over mature fruit, depending on area and climate.

Status, Area Suitability and Availability
Genoa lemon is a new selection in South Africa and has only been planted on a limited scale to date - 2% of total lemon plantings. This cultivar will probably perform in all the traditional lemon areas of South Africa. However, fruit size may be too large, particularly in warmer areas. Commercial quantities of propagation material are available at the Citrus Foundation Block.

Key References
The information in this fact sheet is based on evaluations by Citrus Research International.



Genoa Lemon fruit showing typical shape, rind texture and seed counts.

Thirteen year old Genoa Lemon tree on Swingle citrumelo showing typical vigorous growth and tree shape (tree height 3.4m).

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Evaluation Data

Internal Quality
Data still to be included.

Count distribution
Data still to be included.

Production
192 Kg per tree and 80 tons per hectare at 6m x 4m spacing (417 trees/ha).

Export %

Grade	Percentage
1	83
2,3 & 4	7

Comment
The Genoa Lemon is less vigorous than Lisbon types - more like Eureka - and the selection in South Africa has small to no thorns, depending on tree vigour and climate. Genoa lemons have not been grown on a large scale to date (2% of total). The fact that it has a single set could be of value to growers requiring a lemon cultivar with a single crop.

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Limoneira 8A Lemon

Origin
The Limoneira 8A is a selection of Lisbon, developed in California. The selection was released in South Africa around 1998 and now constitutes approximately 4% of total lemon plantings.

Ownership
Open.

General Description
A vigorous Lisbon selection with good production, medium fruit size and high oil content. It has protracted flowering.

Tree Characteristics
The tree is vigorous, slightly smaller than Lisbon. Thorns are small to 20mm in length.

Rootstock Options
As the Limoneira 8A is of Lisbon origin, it should be compatible with all rootstocks. Compatibility on Volckameriana and Carrizo has been confirmed in the Eastern Cape.

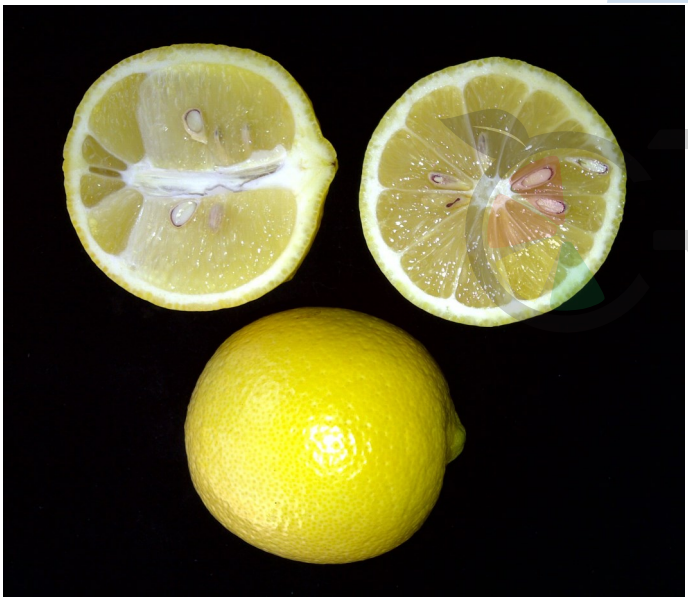
Fruit Characteristics
Fruit size is medium to large. The rind can be fairly thick, smooth to coarse and slightly ribbed. The fruit shape is round to oval with a fairly large point. Juice levels of fruit off young trees in a hot area are borderline, similar to Lisbon. Seed counts vary from 5-20 seeds per fruit (similar to Lisbon). Reported to have a protracted blossom and high oil content.

Production
Yields can be slightly lower than Eureka, although some trees observed in the Eastern Cape have yielded exceptionally large crops.

General
Limoneira 8A Lemon does not require crop manipulation but it is susceptible to sunburn and wind blemish. Thrips can be a problem in certain areas as well as Citrus Black Spot. Limoneira 8A is fairly tolerant to greening disease. Harvest, packing and shipping requirements are as for Eureka and other lemons. Peteca spot can be a problem in certain years. Endoxerosis which is a form of granulation can occur in well coloured, over mature fruit, depending on area and climate.

Status, Area Suitability and Availability
Some Limoneira 8A trees in South Africa are performing well. Growers that have Lisbon Lemon plantings as well prefer Limoneira. Area suitability appears as for other lemons. Commercial quantities of propagation material available from the Citrus Foundation Block.

Key References
The information in this fact sheet is based on various reports from Citrus Research International.



Limoneira Lemon fruit showing typical shape, rind texture and seed counts. Note purple colour when seeds are cut through.

Thirteen year old Limoneira Lemon tree on Swingle citrumelo showing typical vigorous growth and tree shape (tree height 2.8m).

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Evaluation Data

Internal Quality
Data still to be included.

Count distribution
Data still to be included.

Production
For 10 year old trees, 160 to 200 kg per tree and 66.7 to 83.4 tons per hectare at 6m x 4m spacing (417 trees/ha)

Export %
Data still to be included.

Comment
The Limoneira lemon is slightly more vigorous than the Eureka, but thorns are larger. To date the Limoneira has been a success in South Africa, particularly in the Sundays River Valley, the country's largest lemon production area. As a result of its higher oil content this lemon is often favoured for lemon processing. Because this lemon is compatible with Swingle citrumelo rootstock it is a good replant choice where citrus nematodes are a problem.

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Lisbon Lemon

Origin
The Lisbon's origin is unclear, but from its name it is probably of Portuguese origin. Seed from Portugal was grown in Australia as early as 1824 and it was probably also established from seed in California circa 1874. Currently Lisbon constitutes nearly 5% of total lemon plantings in South Africa.

Ownership
Open.

General Description
A very vigorous, cold hardy tree, which is highly productive with good fruit size and quality.

Tree Characteristics
The tree is very vigorous with a spreading growth habit and more densely foliated, thorny and cold tolerant than Eureka.

Rootstock Options
It is compatible with a wide range of rootstocks, including trifoliate orange and citranges.

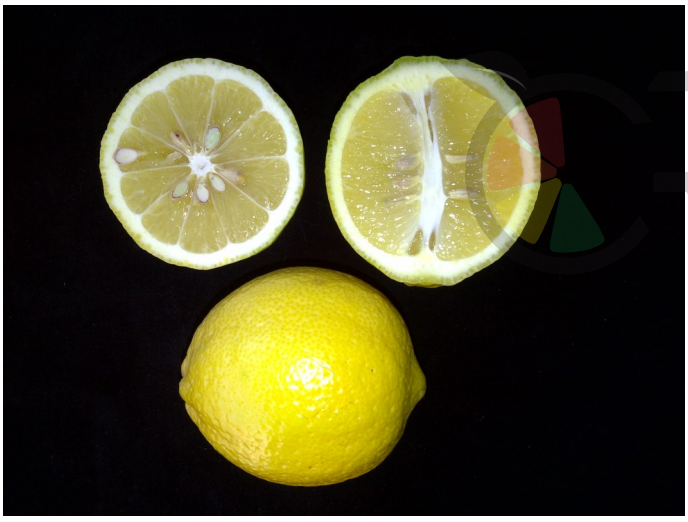
Fruit Characteristics
The tree tends to have a more concentrated bearing habit and can be harvested once or twice, from March through to May in the warmer areas and April through to July in the cooler areas. Fruit size is medium but slightly larger than Eureka. As the fruit tends to be borne more inside the tree, it has more protection against environmental and pest damage. The shape is elliptical to oblong with a prominent nipple. The rind is of medium thickness and smoother than Eureka. The seed content is variable, being from 5-20 seeds per fruit depending on climatic area. The acid and juice levels are normally high.

Production
Production is good although figures are still to be included.

General
Lisbon Lemon does not require crop manipulation, however, exposed fruit is susceptible to sunburn and wind blemish. Thrips can be a problem in certain areas as well as Citrus Black Spot. Lisbon is fairly tolerant to greening disease. Harvest, packing and shipping requirements are as for other lemons. However, Peteca spot can be a problem in certain years. Endoxerosis which is a form of granulation can occur in well coloured, over mature fruit, depending on area and climate.

Status, Area Suitability and Availability.
Lisbon trees in South Africa are performing well. Area suitability appears to be as for other lemons. Commercial quantities of propagation material are available at the Citrus Foundation Block.

Key References
The information in this fact sheet is based on various reports from Citrus Research International.



Lisbon Lemon fruit showing typical shape, rind texture and seed counts.

Thirteen year old Lisbon Lemon tree on Swingle citrumelo showing typical vigorous growth and tree shape (tree height 3.2m) .

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Evaluation Data

Internal Quality
Data still to be included.

Count Distribution
Data still to be included.

Production
For 10 year old trees, 168 to 192 Kg per tree and 70 to 80 tons per hectare at 6m x 4m spacing (417 trees/ha).

Export %
Data still to be included.

Comment
The Lisbon Lemon is slightly less vigorous than the Eureka, but thorns are larger. To date the Lisbon has been a success in South Africa, particularly in the Sundays River Valley, the country's largest lemon production area. Because this lemon is compatible with Swingle citrumelo rootstock, this combination is a good choice in replant situations where nematodes are a problem.

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