



# Auscitrus

**Australian Citrus Propagation Association  
Incorporated**

**ANNUAL REPORT**

**2015**

CONTENTS

Chairman’s Report ..... 3  
Manager’s report..... 4  
Bud Sales..... 5  
Seed sales ..... 6  
Auscitrus operations at EMAI ..... 7  
Public varieties and clones in the Citrus Foundation Repository ..... 10

**MISSION STATEMENT**

**Auscitrus will ensure that adequate supplies of healthy, true to type, and certified citrus propagation material are produced in a scientifically sound, efficient, and economically sustainable manner**

---

# AUSCITRUS ANNUAL REPORT 2015

## CHAIRMAN'S REPORT



The citrus industry is at last looking forward to a much better season. The lower Australian dollar, improved export markets and good quality fruit are all helping. All this is having a marked effect on our sale of seed and budwood. Auscitus is seeing increased sales in both seed and budwood.

The good year has meant that we are able to re-employ Theresa as Finance and Administration Officer on a part time basis, thus relieving Tim, so he can spend more time in the field and attend more growers meetings in various citrus centers around Australia.

This year we have all been reminded of some of the very serious citrus diseases in other citrus growing areas and the need for greater biosecurity. Tim is working on a submission for funding a larger and more secure insect proof screen house, in case the industry is struck with an exotic disease. We have only to look at a map of Florida to see what has happened to their citrus industry.

We are hoping an application to the National Stronger Regions fund grant program will be successful for providing half the funds for this \$600,000 project. There will be a brief run-down of the project at the A.G.M.

By the time of our A.G.M. we will have had our nursery workshop and with over 35 attending I am sure it will be of great benefit to the citrus nurseries of Australia.

With increased interest in citrus planting we have raised the price of seed and budwood slightly. This is our first rise in seven years, I am sure we are all aware of the increases in most commodities over that time. Auscitus must remain viable for the sake of the whole industry.

Australia is soon to have a new quarantine station in Victoria at Mickleham Victoria. The old station at Eastern Creek is being decommissioned as the land is sold off for redevelopment. A lot of staff had left and citrus in quarantine was taking three to four years to pass through, where it should have taken 18 months to 2 years. Cost has risen significantly in the last 8 years as a result. The staff at the new facility seems keen to help pass varieties through quarantine quickly and work with industry.

Again our thanks must go to our enthusiastic staff, Dr. Nerida Donovan at E.M.A.I. for managing our independent indexing, and to Tim and his staff at River Road for the production side and managing our world class facility, which will be even better when the new screen house is installed.

To Theresa, it is great to have a person in the office to manage orders and the financial side of our business.

Thanks to all those nurseries that support Auscitus. The more budwood and seed we sell will help to keep the price down and if everyone utilized the scheme we could even see a reduction in prices.

Mike Arnold A.F.S.M.

Chairman

## MANAGER'S REPORT

This year's focus has been on preparing our budwood scheme for any future incursion of the insect vectored disease Huanglongbing. Following on from visits to Florida, California and South Africa last year we have been busy developing plans for insect screening at least a proportion of our budwood production. Should the disease and its insect vector ACP find its way into Australia, a key part of its control will be the use of disease tested budwood produced in an insect proof facility. This example has been set by California, who has legislated for the insect screening of all budwood sources, including all citrus nurseries, in order to control the spread of HLB and ACP which has been detected in parts of the state. The Californian industry and government are throwing large amounts of money at controlling this disease, and while not 100% successful at elimination are a good role model in how to at least restrict it.

Another key tool for controlling HLB, and other graft transmissible diseases, is a formal certification system for citrus nursery trees. Most other citrus growing regions in the world have some form of certification program so that growers can ensure they are purchasing trees produced from high health propagation material. The Auscitrus scheme is purely a voluntary scheme, with usage driven by the nurseries commitment to producing quality trees, and demand from growers for clean planting material. In order to formalise this Auscitrus is introducing a certification system that will allow growers to request a tree certificate from their nursery. This certificate will certify that the trees in the consignment were produced from seed and budwood from a certified source. The nurseries will be audited to ensure compliance. While this scheme will benefit growers in ensuring they are getting the high health status tree they expect, nurseries will also be able to use it to promote their trees to growers. A distinct branding and trademark for the certification scheme will be developed prior to promotion of this scheme to the wider Australian citrus industry.

As always the objective of Auscitrus is to maintain the high health status of Australian orchards, by supplying citrus nurseries with quality high health seed and budwood. It is demand from growers for clean nursery trees and the support of Australian nurseries that keeps this organisation operating. As such we need to thank those nurseries that continue to support the scheme, and encourage those that aren't fully utilising tested budwood to increase their patronage and help maintain healthy and productive citrus orchards in Australia.

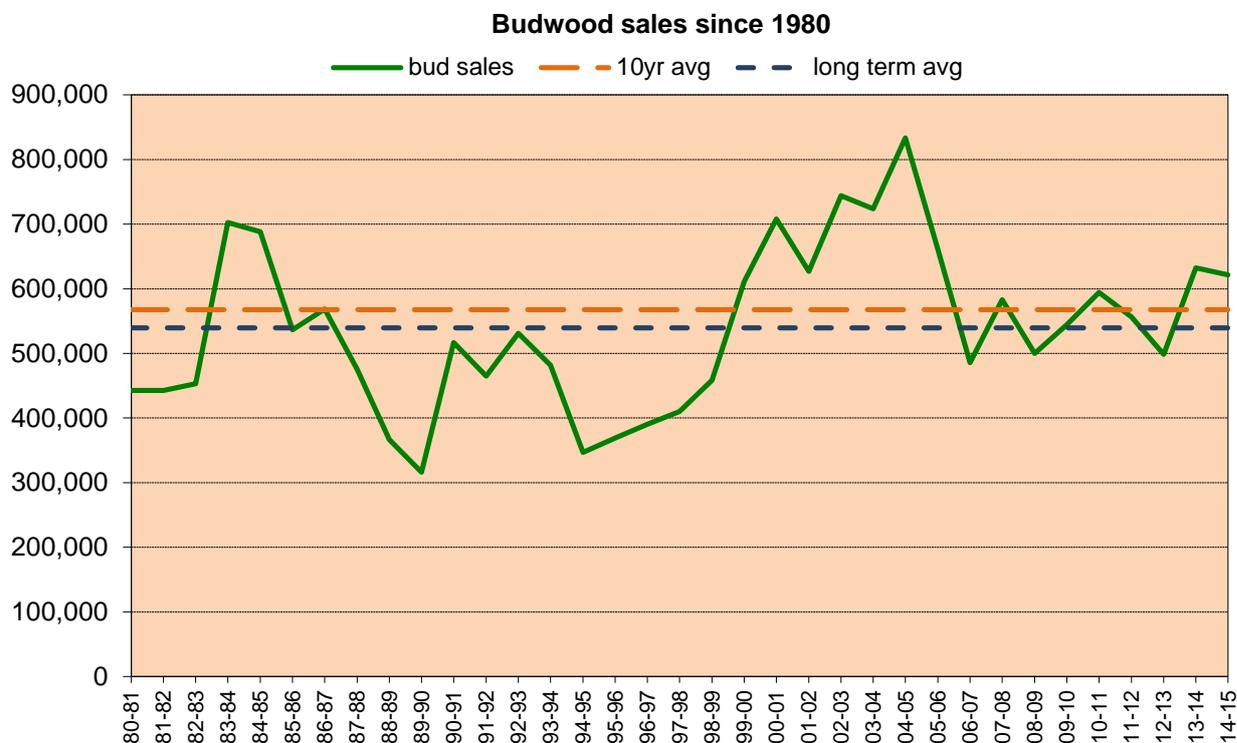
Tim Herrmann  
Auscitrus Manager



# AUSCITRUS ANNUAL REPORT 2015

## BUD SALES

Total bud sales for the entire 2014-15 year totalled 621,474 buds. Of these, 98,080 were private varieties. This compares to 2013-14 sales of 632,248 buds. Sales continue to be slightly above the long term averages.



The top ten selling varieties for 2014/15 were:

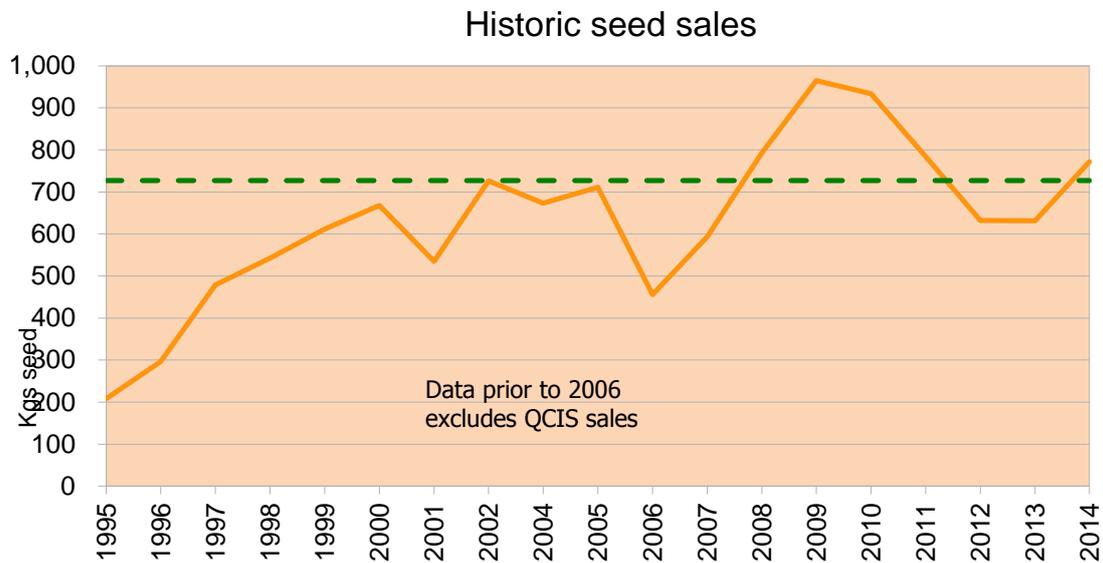
Description	Total
<b>All private varieties</b>	98,080
<b>Lime Tahiti</b>	65,865
<b>Mandarin W. Murcott Afourer</b>	64,460
<b>Lemon Eureka</b>	36,810
<b>Mandarin Imperial</b>	35,380
<b>Lemon Myer (806)</b>	32,010
<b>Navel Cara Cara</b>	29,600
<b>Navel Washington</b>	25,985
<b>Mandarin Emperor</b>	23,520
<b>Lime Kaffir Eyles</b>	13,825
<b>Valencia Keenan</b>	13,150

There were no significant shortfalls of budwood, although some minor retail varieties were temporarily unavailable as trees were removed at the Research Station and budwood trees are still being established in the River Road orchards.

# AUSCITRUS ANNUAL REPORT 2015

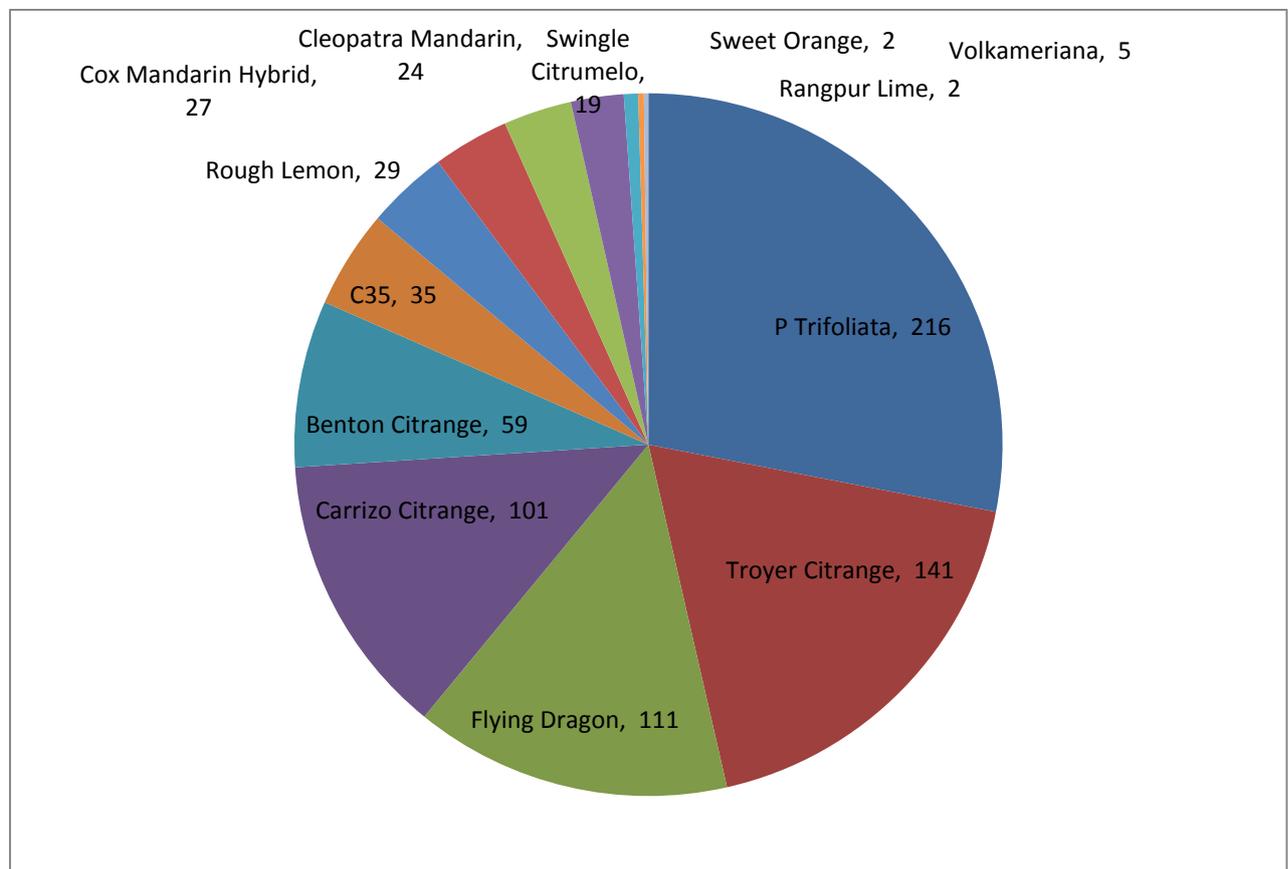
## SEED SALES

Seed sales for 2014/15 totalled 772kgs, up significantly from 631 kgs in 2013/14.



Demand for Benton citrange spiked in 2014/15, with orders almost triple normal orders. As such there was a shortfall in Benton supply. Trifoliata, Carrizo/Troyer, and Flying Dragon made up the bulk of sales, as usual.

**Seed sales 2014/15**



---

# AUSCITRUS ANNUAL REPORT 2015

## AUSCITRUS OPERATIONS AT EMAI

Elizabeth Macarthur Agricultural Institute (EMAI) is located in a non-citrus producing area at Menangle, on the outskirts of south western Sydney. At EMAI there is a NIASA accredited nursery and laboratories that are certified under ISO 9001. Auscitrus is involved in 2 main areas at EMAI:

- National Citrus Repository
- health status testing of its commercial budwood and rootstock seed trees

The following report covers activities during the 2014/15 financial year.

### **National Citrus Repository**

#### National Citrus Repository for High Health Status Clones, EMAI & Dareton

The repository currently holds 205 high health status citrus clones with at least 1 tree of each variety held in screen houses in 2 locations; one on the Auscitrus property at Dareton (in the Sunraysia citrus growing region) and the other at EMAI (not in a citrus growing region).

The high health status repository at EMAI fills 2 screen houses. Private varieties (90) are held separately from the public varieties (115). Fruit are observed and photographed on EMAI repository trees and the images are maintained in a database.

During the 2014/15 year, 30 imported varieties (1 public / 29 private) were released from post-entry quarantine and entered the repository system, along with 6 privately owned Australian selections. The imported public variety was a papeda variety called Sudachi.

#### National Citrus Repository for Inoculated Clones, EMAI

The repository for inoculated clones is housed in a controlled environment greenhouse at EMAI. This repository contains citrus clones that have been inoculated with a mild strain of citrus tristeza virus (CTV). The mild strain serves to protect against more severe strains of the virus that may be introduced to trees in the field by aphids – this control mechanism is called mild strain cross protection.

Trees in the citrus repositories are tested regularly for graft-transmissible pathogens. Refer to the section on 'Health status testing for citrus pathogens' for testing details.

The maintenance and testing of public varieties is funded by HAL and Auscitrus via VC project CT10008 'Protecting Australia's citrus genetic material' from July 2010 to June 2015. The maintenance and testing of private varieties is covered by a contract agreement between the private variety owner and Auscitrus and is paid for by the variety owner.

It is important to note that the *high health* status of repository trees means that no viruses or viroids that we test for have been detected in these trees using our current test methods. These trees have a *high health status* but pathogens may be detected in these trees through improved test methods and the discovery of new pathogens.

---

# AUSCITRUS ANNUAL REPORT 2015

## Health status testing for citrus pathogens

### Citrus viroids

All budwood source trees are scheduled for testing for citrus viroid infection every 3 years using biological indexing methods on Etrog citron indicator plants. All suspect results from the biological indexing are investigated further using molecular techniques.

Viroid testing commenced for 403 and was completed for 621 Auscitus budwood multiplication trees during the 14/15 year. *Citrus exocortis viroid* was not detected in samples from budwood source trees.

### Citrus tristeza virus

*Citrus tristeza virus* (CTV) is endemic throughout Australia. There are many strains of the virus from mild to severe causing a range of disease symptoms.

Every tree in the citrus repositories is tested annually for the presence of CTV using a serological test called direct tissue blot immunoassay (DTBIA). This test is used to confirm that the virus is not present in the high health status clones and to confirm that the virus is present in the inoculated trees.

Trees in the EMAI screen house repositories were tested for CTV in autumn 2015 and the Dareton repository trees were tested in spring 2014. The Dareton repository trees will be retested in spring 2015.

No CTV was detected in high health status repository trees using DTBIA.

All inoculated repository trees tested positive for CTV. A number of trees were weakly positive but viral particles were still detected. Budwood is only sourced from inoculated trees that have tested positive for CTV during the past year.

All grapefruit trees in the budwood multiplication blocks are tested annually to confirm the presence of a mild isolate of CTV that protects trees against more severe grapefruit stem pitting strains.

During the 2014/15 financial year, 74 grapefruit trees from budwood multiplication blocks at Dareton were inoculated onto West Indian lime indicator plants to check for the presence of the mild pre-immunising strain of CTV. Biological indexing results are complete for 35 samples and confirm the presence of a mild protective CTV strain in the trees. Note that molecular testing conducted in 2008 detected more than 1 strain of CTV in many trees.

### Citrus psorosis virus

Budwood multiplication trees are scheduled for testing for *Citrus psorosis virus* every 9-12 years via biological indexing. During the 14/15 year, psorosis biological indexing was completed for 198 budwood source trees. No psorosis symptoms were observed on the foliage of indicator plants. Psorosis indexing commenced for an additional 805 trees during this period.

After psorosis indexing was complete, the stems were peeled to look for symptoms of CTV stem pitting.

---

# AUSCITRUS ANNUAL REPORT 2015

## Pathogen elimination

Viruses and viroids can be removed from infected mother trees by heat treatment and shoot tip grafting. Successful shoot tip grafted plants then require testing to determine if the pathogens have been eliminated. Auscitrus provides the service of pathogen testing and elimination for Australian citrus selections.

At the end of the 14/15 year, 9 private varieties and 2 public varieties (Washington navel and Meyer lemon) are currently in the variety testing program for Australian selections. Of these, 8 private varieties and 1 public variety (Washington navel) are undergoing pathogen elimination by shoot tip grafting. Pathogen testing is complete but approval to proceed with pathogen elimination is pending for the 1 remaining private variety.

Pathogen testing was performed on 2 private varieties where the owner decided not to proceed with pathogen elimination.

Over the past year, no pathogens were detected in 1 private variety and that variety has entered the repository system. Pathogens were successfully eliminated by heat treatment and shoot tip grafting from 5 private varieties and trees have been placed in the National Citrus Repository for High Health Status Clones.

## Quality assurance

The EMAI nursery is NIASA accredited and the Citrus Pathology and Soil Health Team is ISO 9001:2008 certified. The EMAI repository for high health status citrus clones is also accredited as New Zealand Ministry for Primary Industries off-shore quarantine facility (renewed in April 2010). The team was inspected and audited during the 2014/15 financial year and maintained their NIASA accreditation and ISO certification. The 'Auscitrus / EMAI Management Committee' has also inspected the site.

## Staff

NSW DPI staff involved with Auscitrus activities at EMAI during the 13/14 financial year:

Sylvia Jelinek	Auscitrus Indexing Officer
Allise Fail	Nursery Assistant (2d/wk)
George Haizer	Nursery contractor (casual)
Nerida Donovan	Citrus Pathologist



# AUSCITRUS ANNUAL REPORT 2015

## PUBLIC VARIETIES AND CLONES IN THE CITRUS FOUNDATION REPOSITORY

Accession No.	Variety	Accession No.	Variety
<b>Orange</b>			
<i>Navel</i>		<i>Other oranges</i>	
I.N. 86.0600	Atwood	I.N. 92.0901	Lima 156
A.Q. 78.4021	Benyenda - thorny	A.S. 10.0985	Arnold blood
I.N. 97.0924	Cara Cara	I.N. 98.0921	Sanguine
A.N.14.0993	Cara cara new	I.N. 08.0968	Tarocco Ippolito
I.N. 86.0597	Fisher	I.N. 07.0965	Tarocco Meli C8158
I.N. 99.0912	Fukumoto	I.N. 07.0966	Tarocco Rosso C4977
A.S. 75.5077	Hockney	I.N.06.0960	Bintangcheng # 2
A.N. 73.0073	Houghton	I.N. 08.0973	Bintangcheng Renbin # 5
A.S. 92.0772	Hutton	I.N. 86.0548	Hamlin
A.N. 75.0032	Lanes Late 3976	I.N.06.0959	Jincheng 447
A.N. 73.0072	Leng	I.N. 92.0900	Natal
A.V. 94.0781	Lloyd/3 Leng	I.N. 86.0549	Parson Brown
I.N. 86.0550	Navelate	I.N. 90.0741	Pera Olympia
I.N. 87.0546	Navelina Spain 7.5	I.N. 90.0742	Pera Limeira
I.N. 93.0899	Navelina 315 ex Italy	I.N. 87.0547	Pineapple
A.S. 92.0773	Neilson	I.N. 93.0860	Salustiana
I.N. 86.0598	Newhall California	A.Q. 78.4020	Smith - Joppa
I.N. 87.0551	Newhall 55-1 Spanish		
I.N. 10.0984	Palmer 1051	<b>Lemon</b>	
A.S. 75.5074	Thomson	I.N. 01.0927	Eureka (Allen)
		A.N. 75.0034	Eureka (Lambert)
		A.N. 75.0035	Eureka (Taylor)
<i>Valencia</i>		I.N. 89.0703	Fino
A.S. 75.5095	B/3010	A.Q. 93.0785	Lemonade
A.Q. 75.4022	Benyenda	I.N. 00.0918	Lisbon (Limoneira 8A)
A.S. 94.0782	Berri 3501	I.N. 75.0036	Lisbon (Prior)
A.V. 94.0780	CSIRO 5	A.Q. 91.0631	Lisbon (Queensland)
I.N. 94.0902	Delta seedless	I.N. 89.0705	Verna
A.V. 93.0774	Jenner 4439		
I.N. 94.0903	Midknight seedless	<b>Lime</b>	
A.N. 75.0029	Newton – Keenan 3125	A.N. 08.0969	Tahiti lime
A.N. 75.0030	Newton – Keenan 3247	A.N. 90.0771	West Indian lime (Schweppes)

# AUSCITRUS ANNUAL REPORT 2015

Accession No.	Variety	Accession No.	Variety
<b>Mandarin</b>		<b>Tangor/elo</b>	
I.N. 99.0909	Afourer	A.N. 75.0090	Ellendale (Herps)
I.N. 99.0913	Avana Tardivo		Ellendale / EM3
I.N. 99.0914	Avana Apireno	A.Q. 04.0952	Murcott tangor (Benham)
I.N. 98.0920	Clementine (Caffin)	A.Q. 90.4149	Murcott tangor (Turner)
I.N. 89.0704	Clementine (Clementard)	I.N. 90.0818	Topaz tangor
I.N. 99.0910	Clementine (Corsica 1)		
I.N. 99.0911	Clementine (Corsica 2)	<b>Papeda</b>	
I.N. 87.0544	Clementine (Fina)	I.N. 94.0776	Kaffir lime (Malaysia 4669)
I.N. 87.0552	Clementine (Marisol)	A.D. 97.0907	Kaffir lime (Nathanael)
I.N.05.0957	Clementine (Nour)	I.N. 00.0916	Kaffir lime (Eyles)
I.N. 87.0543	Clementine (Nules)	IN. 15.1020	Sudachi
I.N. 04.0955	Clementine (Orogrande)	A.N. 13.0991	Yuzu
I.N. 87.0545	Clementine (Oroval)		
I.N. 04.0953	Clementine (Sidi Aissa)	<b>Cumquat</b>	
I.N. 91.0733	Daisy	I.N. 04.0956	Nagami
I.N. 90.0736	Encore		
I.N. 08.0974	Etna	<b>Grapefruit</b>	
I.N. 89.0707	Fallglo	I.N. 91.0736	Flame
I.N. 93.0859	Fortune	I.N. 89.0620	Henderson
A.Q. 94.0787	Fremont	A.N. 73.0068	Marsh (3970 Druitt)
A.N. 75.0041	Hickson	A.N. 91.0632	Marsh (3962 Druitt)
A.N. 75.0043	Imperial 0043/2	I.N. 89.0619	Ray Ruby
A.Q. 94.0778	Nova (Trott)	I.N. 89.0708	Rio Red
I.N. 91.0734	Nova (Spain)	I.N. 89.0709	Star Ruby
I.N. 04.0951	Parsons Special /2	A.N.04.0950	Star Ruby (Cant)
I.N. 86.0599	Pixie	A.N. 91.0633	Thompson (N Eagle)
I.N. 04.0954	Primosole		
A.N. 75.0065	Satsuma (Silverhill)	<b>Pummelo</b>	
I.N. 89.0706	Satsuma (Clausellina)	I.N. 01.0925	Namroi
I.N. 91.0852	Satsuma (Okitsu Wase)	I.N. 94.0786	Tambun
I.N. 91.0853	Satsuma (Miho Wase)		
A.Q. 94.0886	Sunburst	<b>Citron</b>	
		I.N. 01.0926	Bergamia Bergamot Castagnaro
		I.N. 94.0904	Buddha's Hand
		I.N. 09.0979	Etrog