



Auscitrus

**Australian Citrus Propagation Association
Incorporated**

ANNUAL REPORT

2016

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GOVERNANCE

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 MEMBER ORGANISATIONS AND DELEGATES

Member organisation	Delegate
Citrus Australia Ltd	Tania Chapman (grower)
Nursery and Garden Industry NSW & ACT	Gary Eyles (nursery)
Nursery and Garden Industry NSW & ACT	Mark Engall (nursery)
Nursery and Garden Industry Qld	Wayne Parr (nursery)
Nursery and Garden Industry VIC	Sean Arkinstall (nursery)
Queensland Citrus Improvement Scheme	Nick Ulcoq (grower)
South Australian Citrus Improvement Society	Mike Arnold (grower)
South Australian Citrus Improvement Society	Steve Burdette (grower/nursery)
Sunraysia Citrus Growers	Greg Chislett (grower/nursery)
Sunraysia Citrus Growers	Matt Cottrell (grower)
WA Citrus	Anthony Innes (nursery)

AUSCITRUS EXECUTIVE COMMITTEE

Mike Arnold (Chairman)

Wayne Parr (Vice Chairman)

Gary Eyles (Public Officer)

Steve Burdette

Greg Chislett



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CHAIRMAN'S REPORT



In last year's report I mentioned we had put in an application to the National Stronger Regions Fund, unfortunately we missed out. We learnt a lot from that application and have again applied for funds. This time we sought support from industry representatives in each state. Large packers, politicians in growing areas in some twenty districts gave us letters of support. We hope the Auscitrus name will be successful at the end of July early August.

Late last year your committee attended the opening of the new Australian Quarantine Station at Mickleham, Victoria. All industries have great facilities there and the staff seem happy to work with us. We hope our new varieties will be available through quarantine in much shorter time frames.

Citrus Certification is under way; we hope most of our nurseries will take this up over the next twelve months. With the increase in demand for citrus trees it is very important growers know that their trees are the best available.

In the early 1960's a large area was planted in the Waikerie area, trees were in short supply and growers planted anything that looked like an orange tree. The production and health of these trees was felt for many years. Those who waited and planted trees from a known source were streets ahead with correct varieties and production.

The shortage of Benton Citrange has caused some concern with one or two nurseries double ordering, this helps no one and puts bigger strains on management. Fortunately with the help of the Department, Cox mandarin seed has proved to be as good and a number of nurseries are now using this seed.

I would like to extend my thanks to Graeme Sanderson and Citrus Australia for articles in their magazine and newsletters, field days etc to growers highlighting Cox seed in place of a light supply of Benton Citrange. The articles have highlighted the use of Cox for lemon growers.

Citrus Australia now has production figures of all varieties grown in Australia. They can now estimate production of different varieties over the next ten years. Growers can now see what could be in short supply and can plan their future plantings, this will be of benefit to themselves and the industry.

The last two years have seen much better returns for growers with larger amounts going to export. This has helped younger growers to stay in the citrus industry which has been needed to keep it growing the way it is.

To Tim and the staff at Dareton and Nerida and her support at EMAI many thanks from the Directors for a very successful year. More citrus growers are now seeing the benefit of Auscitrus.

Mike Arnold A.F.S.M.

Chairman of Auscitrus

MANAGER'S REPORT



The 2015/16 year was very positive for Auscitrus, with record breaking sales of both seed and budwood. Demand for public varieties was very strong, and the uptake of newer privately owned varieties produced under contract in the Auscitrus scheme continues to increase. An ever increasing proportion of the budwood is coming from our River Road property, with the remaining plantings on the Research Station still being slowly phased out.

The rejection of funding for our future insect proof screenhouse by the National Stronger Regions fund was disappointing, but a thorough and more targeted application was resubmitted for the third and final round of funding. We are cautiously optimistic that this proposal will get funded, and are due to hear confirmation any day. I must thank all our Auscitrus delegates who gained letters of support from all the Federal Members of Parliament from the citrus growing regions, along with the support of industry organisations and businesses around Australia. I must particularly thank our Chairman, Mike Arnold, who was relentless in garnering support for this project. Even if the funding doesn't get approved, the awareness of Auscitrus and the HLB/ACP threat has been greatly increased.

Benton citrange seed continues to be in short supply as orders are triple the long term average. We have top-worked 30 trees over to Benton to add to the 60 we already have, and will plant another 30 nursery trees out in spring doubling the number of trees in our seed orchard. We will also be running some pollination trials this season to try to improve the seediness of the fruit.

I need to thank the Auscitrus Chairman (again) and Executive Committee for their support and guidance. They always operate in a professional manner and are very cognizant of any confidentiality or conflict of interest issues, and ensure impartial transparency in all strategic decisions made on behalf of Auscitrus. The dedication of this group and those before them has built Auscitrus into the successful operation it is today.

I will also take the opportunity to thank our staff - Theresa in the office, Margaret in the nursery, and Robert in budcutting/seed extraction, and of course Nerida and her team at EMAI. Without these dedicated and hardworking individuals working together the seed and budwood scheme would cease to function.

Finally, I will again thank all those nurseries who utilise the scheme and purchase disease tested budwood from us. This not only protects your nursery from disease, but it ensures we can establish and maintain a relatively disease free citrus industry, protecting the viability of growers around Australia.

Tim Herrmann
Auscitrus Manager

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BUD SALES

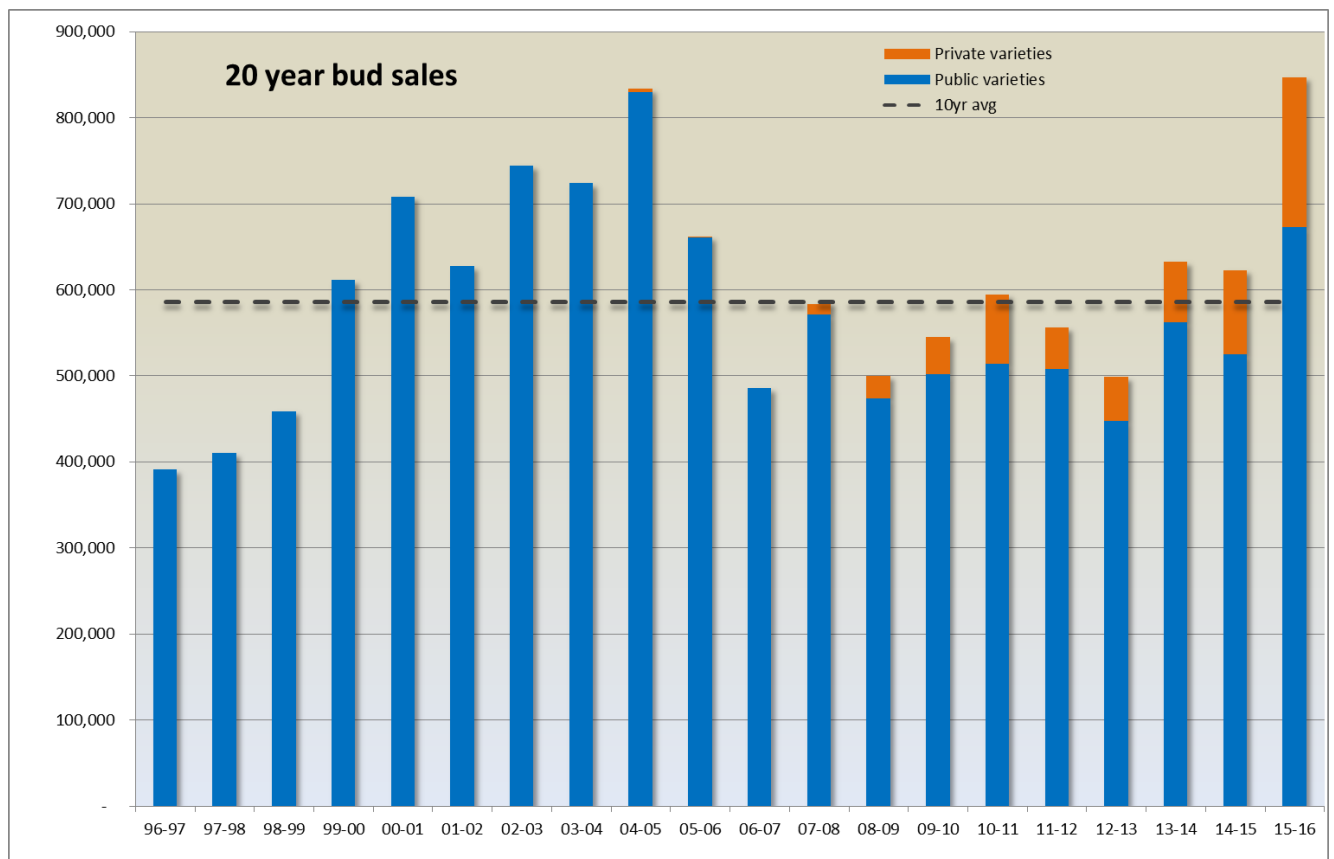
Total actual bud sales for the year came to 847,068 buds. The previous highest recorded bud sales were 833,247 in 2004/05.

Public variety bud sales for the year ended up at 672,807, with an additional 174,261 buds of private varieties sold.

Top selling varieties were:

All private varieties	174261
Mandarin W. Murcott Afourer	82350
Lemon Eureka	73522
Lime Tahiti	56586
Mandarin Murcott	36371
Navel Washington	34269
Valencia Keenan	31566
Mandarin Imperial	28578
Mandarin Emperor	27957
Satsuma Okitsu	27900
Lemon Meyer (806)	25285
Navel Cara Cara	16591
Valencia Seedless Delta	15523
Lemonade	15154
Lemon Lisbon (Prior)	13965
Lime Kaffir Eyles	13255

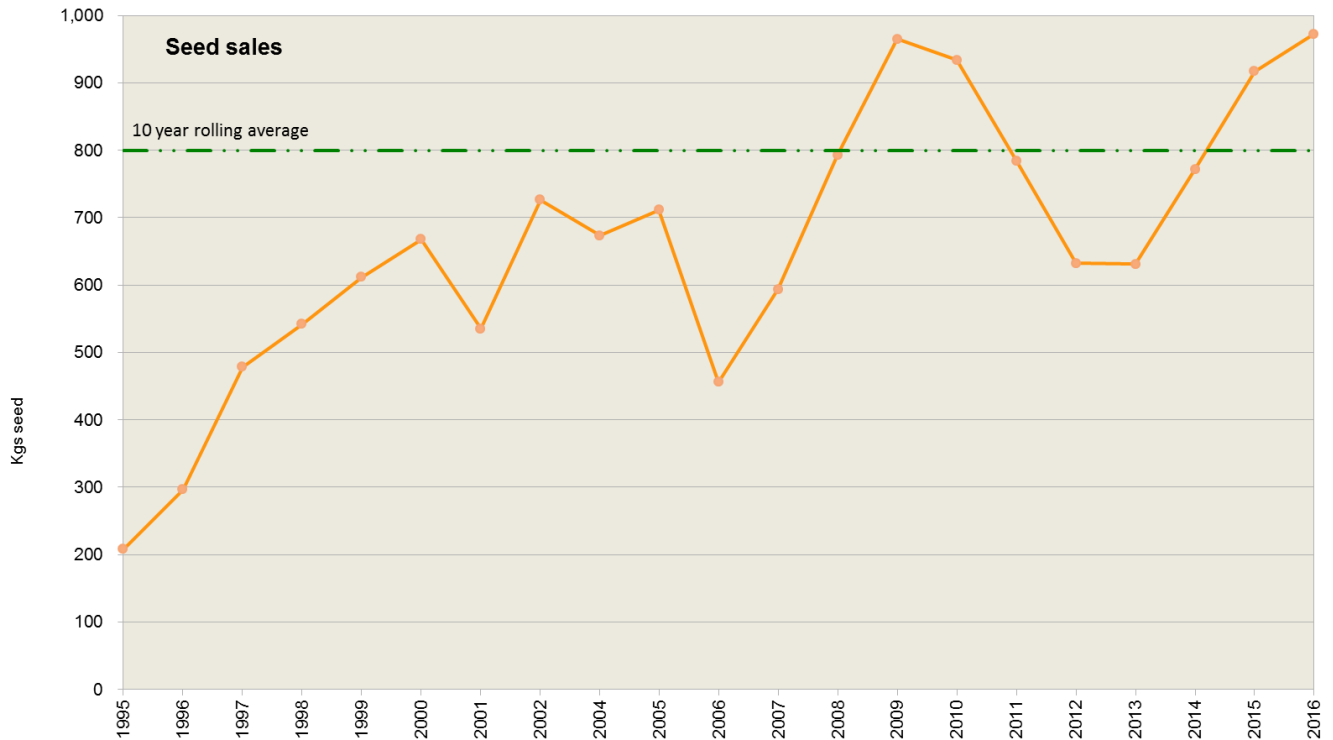
The chart below shows the increasing proportion of private varieties in total sales.



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SEED SALES

Seed sales for the full year totalled 972.17kgs, just surpassing our previous record sales of 965kg in 2009.

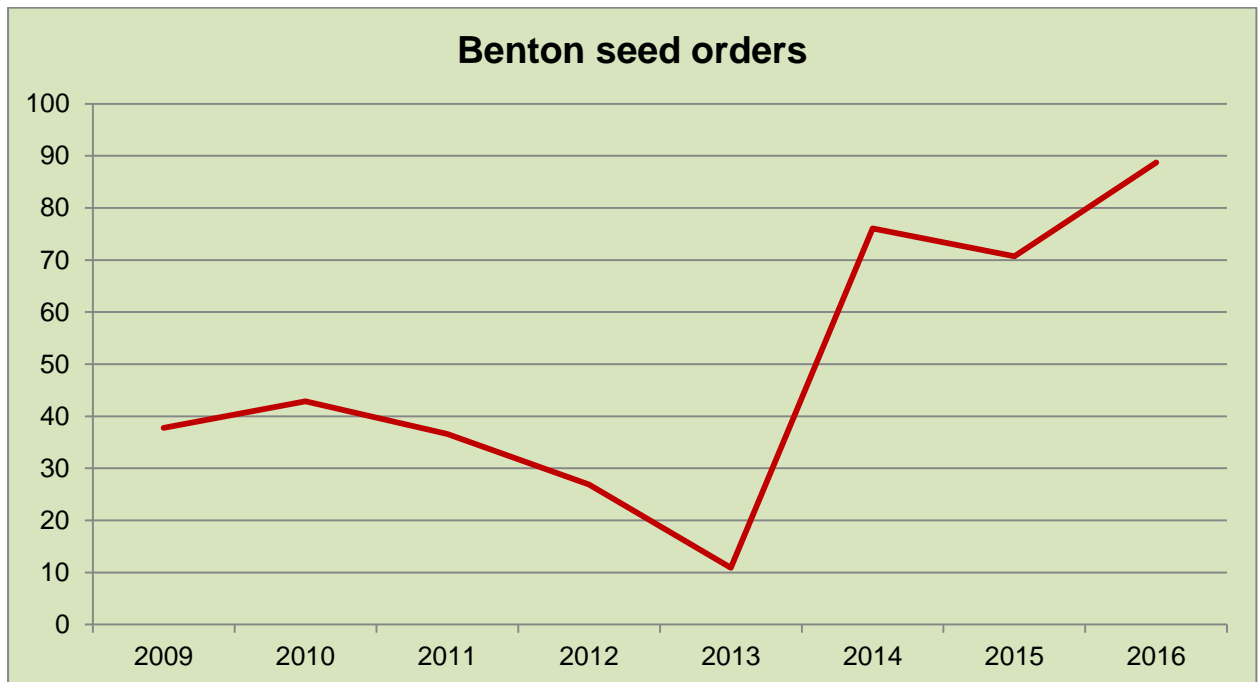


A breakdown of rootstock sales is as follows:

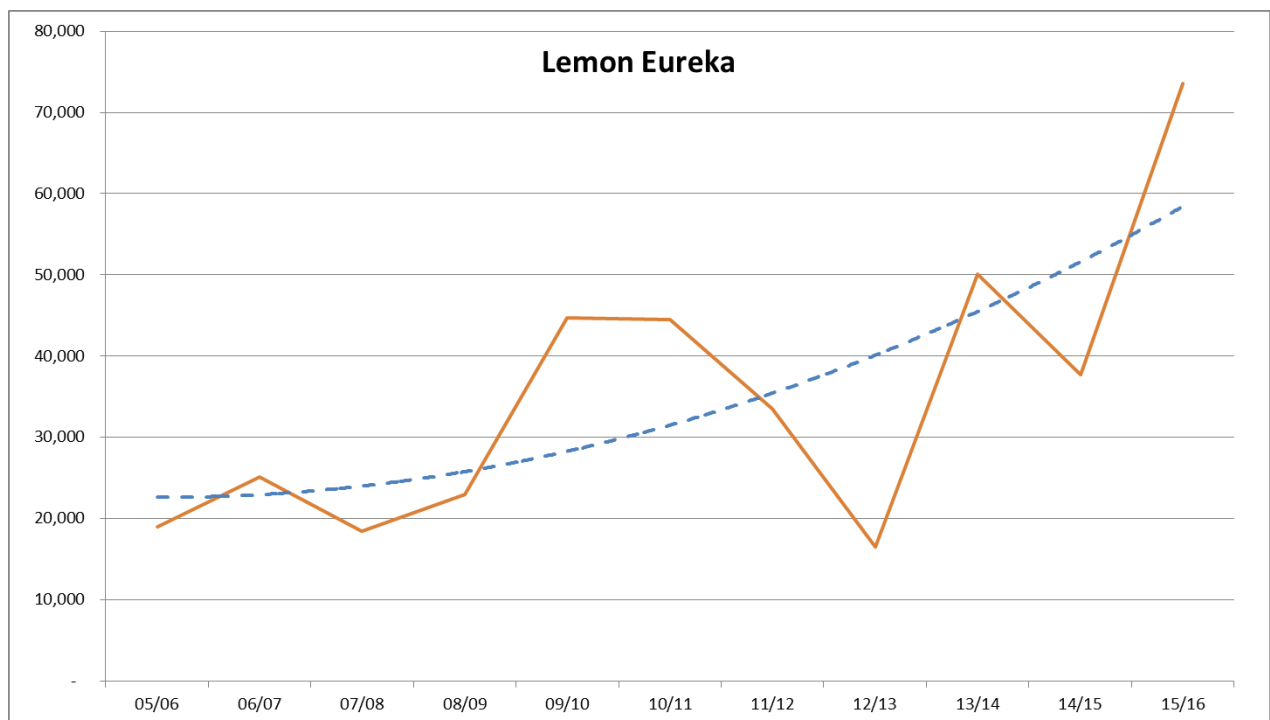
Rootstock	Kgs sold
Carrizo Citrange	251.4
P Trifoliata	218.8
Troyer Citrange	170.2
Flying Dragon	106.2
C35	71.0
Cox Mandarin Hybrid	41.2
Benton Citrange	32.3
Rough Lemon	30.8
Swingle Citrumelo	19.2
Cleopatra Mandarin	11.1
Volkameriana	8.6
Rangpur Lime	6.6
Sweet Orange	3.0
Sour orange	2.0

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All varieties were in surplus except for Benton citrange. Benton orders have tripled in past years and while supply is consistent there simply isn't enough seed to meet this unexpected demand.



The demand for Benton seed is apparently being driven by demand for Eureka lemon trees, as evidenced by sales of Eureka budwood:



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 budwood and rootstock seed trees

The following report covers activities during the 2015/16 financial year.

NATIONAL CITRUS REPOSITORY

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

The repository currently holds 215 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 (97) are held separately from the public varieties (118). Fruit are observed and photographed on EMAI repository trees and the images are maintained in a database.

During the 2015/16 year, 7 privately owned and 4 publicly owned Australian selections entered the repository system. No imported varieties entered the repository system during this period.

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 Horticulture Innovation Australia and Auscitrus via project CT15005 'Protecting Australia's citrus genetic material' from September 2015 to July 2018. 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.

HEALTH STATUS TESTING FOR CITRUS PATHOGENS

Citrus viroids

Auscitrus budwood source trees are scheduled for testing for citrus viroid infection every 3 years using biological indexing on 'Etrog' citron indicator plants. All suspect results from the biological indexing are

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investigated further using molecular techniques. Additional budwood sources may also be used, with trees tested prior to budwood supply.

Viroid testing commenced for 256 and was completed for 391 Auscitrus budwood supply trees during the 15/16 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 and Dareton screen house repositories were tested for CTV in autumn 2016. No CTV was detected in high health status repository trees using DTBIA.

All inoculated repository trees tested positive for CTV in autumn 2016 except for one orange tree. 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 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 2015/16 financial year, 79 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 is complete for 39 samples and confirms 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 15/16 year, psorosis biological indexing was completed for 462 budwood source trees. No psorosis symptoms were observed on the foliage of indicator plants. Psorosis indexing commenced for an additional 258 trees during this period.

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

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 15/16 year, 10 private varieties and 1 public variety (Poorman's orange) are currently in the variety testing program for Australian selections. Of these, 7 are undergoing pathogen elimination by shoot tip grafting.

Pathogens were successfully eliminated by heat treatment and shoot tip grafting from 5 private varieties and 1 public variety 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 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 2015/16

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financial year and maintained their NIASA accreditation and ISO certification. The 'Auscitrus / EMAI Management Committee' has also inspected the site.

RESEARCH AND DEVELOPMENT

The high health status of the Australian citrus industry is largely dependent upon accurate identification of pathogens in propagation material and their elimination. NSW DPI and Auscitrus are collaborating on an industry funded project supported by Horticulture Innovation Australia which is looking at improved diagnostic tools for screening citrus germplasm for graft-transmissible pathogens (CT14009). The project started in October 2014 and is funded until September 2017. Improvements to current protocols will be identified through the project and recommended to Auscitrus.

STAFF

NSW DPI staff involved with Auscitrus activities at EMAI during the 15/16 financial year:

Sylvia Jelinek Auscitrus Indexing Officer (1 FTE)

Allise Fail Nursery Assistant (0.4 FTE)

George Haizer Nursery Contractor (casual)

Grant Chambers Technical Advisor

Anna Englezou Technical Advisor

Nerida Donovan Citrus Pathologist



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PUBLIC VARIETIES AND CLONES IN THE CITRUS FOUNDATION REPOSITORY

Accession No.	Variety	Accession No.	Variety
Orange			
<i>Navel</i>		<i>Other oranges</i>	
I.N. 86.0600	Atwood	I.N. 92.0901	Acidless orange (Lima 156)
A.Q. 78.4021	Benyenda - thorny	A.S. 10.0985	Blood orange (Arnold blood)
I.N. 97.0924	Cara Cara	I.N. 98.0921	Blood orange (Sanguine)
I.N. 86.0597	Fisher	I.N. 08.0968	Tarocco Ippolito
I.N. 99.0912	Fukumoto	I.N. 07.0965	Tarocco Meli C8158
A.S. 75.5077	Hockney	I.N. 07.0966	Tarocco Rosso C4977
A.N. 73.0073	Houghton	I.N.06.0960	Common orange (Bintangcheng # 2)
A.S. 92.0772	Hutton	I.N. 08.0973	Common orange (Bintangcheng Renbin # 5)
A.N. 75.0032	Lanes Late 3976	I.N. 94.0902	Common orange (Delta seedless)
A.N. 73.0072	Leng	I.N. 86.0548	Common orange (Hamlin)
A.V. 94.0781	Lloyd/3 Leng	I.N.06.0959	Common orange (Jincheng 447)
I.N. 86.0550	Navelate	I.N. 94.0903	Common orange (Midnight)
I.N. 87.0546	Navelina Spain 7.5	I.N. 92.0900	Common orange (Natal)
I.N. 93.0899	Navelina 315 ex Italy	I.N. 86.0549	Common orange (Parson Brown)
A.S. 92.0773	Neilson	I.N. 90.0741	Common orange (Pera Olympia)
I.N. 86.0598	Newhall California	I.N. 90.0742	Common orange (Pera Limeira)
I.N. 87.0551	Newhall 55-1 Spanish	I.N. 87.0547	Common orange (Pineapple)
I.N. 10.0984	Palmer 1051	I.N. 93.0860	Common orange (Salustiana)
A.S. 75.5074	Thomson	A.Q. 78.4020	Common orange (Smith - Joppa)
<i>Valencia</i>			
A.S. 75.5095	B/3010		
A.Q. 75.4022	Benyenda		
A.S. 94.0782	Berri 3501		
A.V. 94.0780	CSIRO 5		
A.V. 93.0774	Jenner 4439		
A.N. 75.0029	Newton – Keenan 3125		
A.N. 75.0030	Newton – Keenan 3247		

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Accession No.	Variety	Accession No.	Variety
Mandarin		Grapefruit	
I.N. 99.0909	Afourer	I.N. 91.0736	Flame
I.N. 99.0913	Avana Tardivo	I.N. 89.0620	Henderson
I.N. 99.0914	Avana Apireno	A.N. 73.0068	Marsh (3970 Druitt)
I.N. 98.0920	Clementine (Caffin)	A.N. 91.0632	Marsh (3962 Druitt)
I.N. 89.0704	Clementine (Clementard)	I.N. 89.0619	Ray Ruby
I.N. 99.0910	Clementine (Corsica 1)	I.N. 89.0708	Rio Red
I.N. 99.0911	Clementine (Corsica 2)	I.N. 89.0709	Star Ruby
I.N. 87.0544	Clementine (Fina)	A.N.04.0950	Star Ruby (Cant)
I.N. 87.0552	Clementine (Marisol)	A.N. 91.0633	Thompson (N Eagle)
I.N.05.0957	Clementine (Nour)	Pummelo	
I.N. 87.0543	Clementine (Nules)	I.N. 01.0925	Namroi
I.N. 04.0955	Clementine (Orogrande)	I.N. 94.0786	Tambun
I.N. 87.0545	Clementine (Oroval)	Citron	
I.N. 04.0953	Clementine (Sidi Aissa)	I.N. 01.0926	Bergamia Bergamot Castagnaro
I.N. 91.0733	Daisy	I.N. 94.0904	Buddha's Hand
I.N. 90.0736	Encore	I.N. 09.0979	Etrog
I.N. 08.0974	Etna	Lemon	
I.N. 89.0707	Fallglo	I.N. 01.0927	Eureka (Allen)
I.N. 93.0859	Fortune	A.N. 75.0034	Eureka (Lambert)
A.Q. 94.0787	Fremont	A.N. 75.0035	Eureka (Taylor)
A.N. 75.0041	Hickson	I.N. 89.0703	Fino
A.N. 75.0043	Imperial 0043/2	A.Q. 93.0785	Lemonade
A.Q. 94.0778	Nova (Trott)	I.N. 00.0918	Lisbon (Limoneira 8A)
I.N. 91.0734	Nova (Spain)	I.N. 75.0036	Lisbon (Prior)
I.N. 04.0951	Parsons Special /2	A.Q. 91.0631	Lisbon (Queensland)
I.N. 86.0599	Pixie	A.N.T. 15.1032	Tropical Meyer
I.N. 04.0954	Primosole	I.N. 89.0705	Verna
A.N. 75.0065	Satsuma (Silverhill)	Lime	
I.N. 89.0706	Satsuma (Clausellina)	A.N. 08.0969	Tahiti lime
I.N. 91.0852	Satsuma (Okitsu Wase)	A.N. 90.0771	West Indian lime (Schweppes)
I.N. 91.0853	Satsuma (Miho Wase)	Papeda	
A.Q. 94.0886	Sunburst	I.N. 94.0776	Kaffir lime (Malaysia 4669)
A.N.T. 15.1034	Tropical Emperor	A.D. 97.0907	Kaffir lime (Nathanael)
Tangor/elo		I.N. 00.0916	Kaffir lime (Eyles)
A.N. 75.0090	Ellendale (Herps)	IN. 15.1020	Sudachi
	Ellendale / EM3	A.N. 13.0991	Yuzu
A.Q. 04.0952	Murcott tangor (Benham)	Cumquat	
A.Q. 90.4149	Murcott tangor (Turner)	A.N. 15.1033	Calamondin
I.N. 90.0818	Topaz tangor	I.N. 04.0956	Nagami