Citrus National Plantings Database - Update 2011

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Citrus Australia Limited

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Citrus National Plantings Database – Update 2011
Final Report

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Citrus Australia Ltd

Project Number: CT10035

Project CT10035: Citrus National Plantings Database – Update 2011

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Megan Connelly (Northern Territory Primary Industry & Fisheries)

Purpose

This report is an update on previous national citrus plantings databases in 2003 and 2008 (HAL projects CT02033 and CT07055). It is intended to inform the Australian citrus industry of trends in tree plantings by variety and region, thereby strengthening individual and collective industry decisions on future plantings and market development.

Funding:

This umbrella project was funded by the national citrus levy. Data collection in the Riverina, Murray Valley and Riverland was funded either through state board levies, or through voluntary contribution projects.

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Media Summary

Sound industry planning rests on the quality of information an industry has of its production base.
With this in mind, Citrus Australia has coordinated this project to provide the citrus industry with an updated national plantings database (NPD) of trees of each citrus variety growing in each region.

This information will allow for accurate analysis of industry production trends, and will strengthen decision making for future market development.

This project updates the NPD surveys previously carried out in 2003 and 2008. These three surveys have provided significant benefits to the industry, such as:

- Short-term and long-term crop forecasting by growers, packers and marketers.
- Decision making by individual growers on their future planting and tree removal choices.
- Planning for logistical requirements throughout the supply chain at a company, regional and national level.
- Information for processors, wholesalers, retailers and exporters on future market development directions.

And, although not a prime aim of the project, the NPD can also provide a record of citrus planting locations for biosecurity purposes.

Technical Summary

Regional changes:

- The bulk of the industry (75%) is still located in the Murray-Darling Basin.
- Total planted area has fluctuated over the past 8 years but appears to be relatively stable.
- The Riverina is Australia's largest citrus producing region, with the Riverland (22%) and Murray Valley (23%) regions almost equal second.
- Riverina shows a steady increase since 2003, but 2011 data needs to be verified.
- Murray Valley hectares declined after 2003 but have remained steady since 2008.
- South Australia/Riverland – the decline in this region is mostly drought related.
- Queensland has seen the biggest drop in hectares.
- Western Australia - growth is driven mainly by two new large properties in the Midlands region, north of Perth.
- Central New South Wales – growth has been in mid-season juicing varieties.
- Coastal New South Wales continues to steadily decline.
- Northern Territory – the collapse of managed investment schemes has led to a shaky start for the red grapefruit industry.

Property sizes:

- Average property sizes are larger in Central NSW and Queensland.
- The tri state area, which is 75% of the total growing area, has an average property size smaller than 20 ha.
- The Riverland has the largest number of small units (although some more will have dropped out since 2008).
- Nationally the total number of citrus properties is declining, this is mostly due to small orchards removing and not replacing trees.
- Overall, average property size is steadily increasing – apparently because bigger units are surviving better than smaller units.
- Smaller growers are exiting the industry.
- 362 growers have exited since 2003 – the direct impact of exit grants/drought and falling returns.
- But around 50% of the national planted area is still made up of units of 20 ha or less.

Variety share:

- Australia's predominant citrus types and varieties have remained constant: Valencias, mid-season navels (mostly Washington), late navels (mostly Late Lane), Imperial mandarin & Murcott mandarin.
- As a category, navels are by far the dominant product planted (10,445 ha or 37% of the total national area).
- Valencia area continues to decline steadily (1,787 ha removed since 2003) but 156 ha of seedless Valencias have been planted.
- Mandarins now make up 17% of the national area (4,909 ha).

Big new planting trends:

- 1,217 new hectares in Queensland, mostly Murcotts and Imperials.
- 746 new hectares in Murray Valley, mostly Afourer and Imperial mandarins.
- 630 new hectares in WA, mostly navels.
- 496 new hectares of mid-season juicing oranges in Central NSW.

- As growers strive for a quicker return on investment, planting densities are changing: 2003 – 418 trees/ha; 2008 – 439 trees/ha; 2011 – 443 trees/ha.

Mandarin trends in Queensland:

- Queensland still dominates the mandarin industry at 55% but its share of area has declined since 2003 (66%) and 2008 (58%).
- Mandarin area in Qld has declined 18% since 2003 from 3,492 ha to 2,860 ha.
- Part of the reason for the mandarin decline in Qld was the canker outbreak in 2005 – one big property has replanted but another has not, plus mid-season varieties are being steadily removed.
- Seeded Murcotts have been removed & replaced with low seeded Murcotts (now 19% of total Murcott ha).
- Decline in mid-season mandarins due to increase in southern supply and consumer preference for lower seeded easy peel fruit: Ellendale, Hickson, Taylor Lee & Sunburst (492 ha removed since 2003).
- After Murcotts, Imperial is the second biggest non-bearing variety in Queensland (228 ha out of 917 ha).

Other mandarin trends:

- Of the estimated 570 ha of Afourer mandarins in the ground 287 ha (50%) are non-bearing.
- The majority are planted in the Murray Valley (286 ha) and the Riverland (153 ha)
- Production will reach approximately 25,000 tonnes in 3 – 5 years.
- Afourers (and Imperials) from the Riverland/Murray Valley are competing in the same market time slot as Queensland mid-season and Murcott mandarins.

Navel trends:

- Steady removal of Washington continues (618 ha).
- Older varieties with production issues are also being removed: Thomson (49 ha), Navelina (226ha) and Leng (266ha).
- Some of this area is being replaced by M7 early navel (200 ha).
- Significant new plantings of late/summer navels: Chislett 153 ha, Late Lane 120 ha (all still non-bearing).
- Cara Cara red-fleshed navel plantings have increased by 112 ha since 2003 to 179 ha following good export opportunities.

Changes in juicing oranges:

- Over 600 ha of Hamlin and Salustiana are in the ground, replacing some of the 1,600 ha of Valencias that have been removed.
- These mid-season/common oranges are narrowing the already limited use of navels for fresh juice, and are producing a superior juice product.

Alerts for industry:

- Imperials, Imperials, Imperials - where will they all go? This variety is suitable for the domestic market only and presents potential ongoing quality issues.
- Early navels - M7 is a superior early variety and will likely overtake the Navelina – volumes will clash with imported navels and this must be communicated to retailers.

- Mid-season navels: despite removals there are still too many in the ground unless new markets can be found.

Introduction

The aim of the National Citrus Plantings Database 2011 is to provide the citrus industry with an updated database of citrus plantings by region and variety. This survey follows on from previous plantings database surveys undertaken in 2003 and 2008.

This information is needed to allow analysis of industry production trends, and will strengthen decision making related to future market development.

The project was structured as a cooperative approach between Citrus Australia, Riverina Citrus, the Murray Valley Citrus Board and the South Australian Citrus Development Board. SunRISE 21 was appointed to provide mapping and a database using spatial information technologies.

Methodology & Results

Please see Appendix 1: *2011 National Citrus Plantings Database – Report 12 October 2011*

Recommendations

- The National Plantings Database provides statistical data that when overlaid with seasonal data from InfoCitrus gives industry a tool for making important and meaningful decisions on future supply & demand.

- Citrus Australia will update the national plantings database every 3 years.

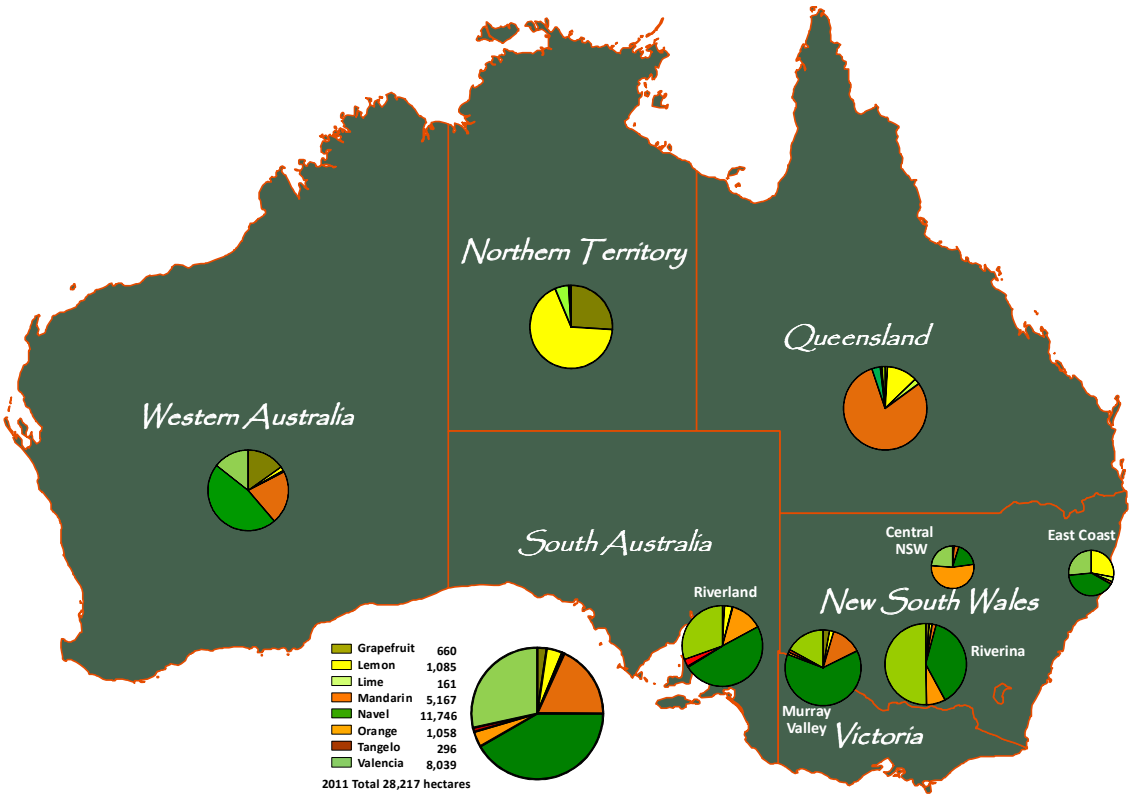
- The completed, detailed database will be posted on our website www.citrusaustralia.com or hard copy supplied on request – available December 2011 onwards.

Technology Transfer

The results of the 2011 NPD will be made available to industry in several ways:

- A written report to the same format as the 2008 NPD report.
- A presentation of the updated NPD at the Citrus Australia national conference in October 2011.
- An article on the key results of the updated NPD in the *Australian Citrus News*.
- The final NPD report will be posted on the Citrus Australia website.
- Hard copy or PDF email copy will be supplied on request.
- The findings of the NPD will be used in market planning exercises, such as the variety gap analysis planned by Citrus Australia's Variety Committee.

2011 National Citrus Plantings Database



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Disclaimer

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Acknowledgements

The 2011 National Citrus Plantings Database (2011 NPD) was commissioned by Citrus Australia Limited. Funding was administered by Horticulture Australia Limited through the Citrus Research and Development Levy under project code CT10035.

Accuracy of the planting statistics in this report is dependent on input from citrus growers, and over 740 growers across Australia are to be acknowledged for their time and consideration in returning the 2011 census.

The following agencies and personnel are acknowledged for their collaboration in compiling the 2011 NPD.

Murray Valley Citrus Board

Hugh Flett, Chief Executive
Mary Cannard, Industry Development Officer
Deb Scott, Office Administrator

2011 aggregated planting statistics for 477 Murray Valley citrus growers

Riverina Citrus

Dominic Testoni, Chief Executive Officer
Melanie Garbett, Industry and Promotions Manager

2008-2011 aggregated planting statistics for 474 Riverina citrus growers

Northern Territory Primary Industry and Fisheries

Megan Connelly, Extension Officer

Coordination of NT grower surveys

Citrus Australia Ltd

Andrew Harty, General Manager Market Development
Nathan Hancock, Manager Market Information & Domestic Market Liaison

Coordination of Western Australia, Queensland, Central NSW and East Coast NSW grower surveys

Executive Summary

The 2011 National Citrus Plantings Database (2011 NPD) was commissioned by Citrus Australia Limited. Funding was administered by Horticulture Australia Limited (HAL) through the Citrus Research and Development Levy.

The 2011 NPD (HAL project code CT10035) follows on from the 2003 NPD (CT02033) and 2008 NPD (CT07055) which have all been completed by SunRISE 21 Inc. using spatial information technologies.

Aim of the project

The project was undertaken to update the 2008 NPD and provide planting statistics and trends (2003 to 2011) across the Australian citrus industry. This information allows analysis of industry production trends, and strengthens decision making related to market development.

The project has linkages to Citrus Industry Strategic Plan imperatives:

- Improve industry communication and information systems; and
- Improve industry competitiveness

It also aligns with three program areas recommended in the Industry Development Needs Assessment:

- Market development;
- Information and data management; and
- Communications

Outcomes

The citrus planting mapping and databases assist the industry at grower, regional and national levels with:

- Short and long term crop forecasting;
- Decision making by growers on future plantings and tree removal;
- Planning for logistical requirements throughout the supply chain; and
- Information for processors, wholesalers, retailers and exporters on future market development directions.

Although not a prime aim of the project, the NPD also provides a record of citrus planting locations for biosecurity purposes.

Status of regional information

The three regional boards; Murray Valley, Riverina and South Australia manage their region's grower and plantings databases, encompassing 76% of Australia's citrus. At the time of compiling this report the status of aggregated statistics from the regional boards for input to the 2011 NPD was as follows:

- Murray Valley 2011 statistics were complete and are included in this report
- Riverina 2011 statistics were 50% complete. Figures in this report are compiled from aggregated data comprising 50% 2011 data and 50% 2008 data
- South Australia 2011 statistics were unavailable. To more closely approximate a national total 2008 Riverland data from the 2008 NPD has been used where national totals or summaries are presented.

Background

Analysis of the 2003, 2008 and 2011 citrus databases identifies change over an eight year period encompassing drought and low water allocations, floods, containment of a citrus canker outbreak, globalisation of markets and a rigorous trading environment. In this period, over 410 citrus growers (18%) exited the citrus industry. And while well over 5,000 hectares of Australia's citrus has been removed in the past five years 3,150 hectares, which does not include Riverina and Riverland non-bearing areas, has been planted or reworked.

Results overview

The 2011 NPD comprises 28,217 hectares of citrus (12.5 million trees) from 1,867 citrus properties.

The following table shows citrus area and property numbers per region, custodianship of the regional database and percentage of area surveyed. Area surveyed is the area that the 2011 variety or sub-category (such as navel) is recorded. It is the area of 2011 grower surveys plus areas of earlier grower surveys where it is visually interpreted from imagery that no change has since occurred.

Table 1 – 2011 citrus per region

Region	Properties mapped		Citrus mapped		% of area surveyed	Database custodian
	number	% of total	ha	% of total		
Riverina NSW	474	25%	8,800	31%	*not available*	Riverina Citrus
Murray Valley	477	26%	6,580	23%	97%	MVCB
Riverland	557	30%	6,303	22%	*not available*	SA CIDB
Queensland	84	4%	3,591	13%	99%	CAL
Western Australia	184	10%	1,561	6%	93%	CAL
Central NSW	15	1%	875	3%	99%	CAL
East Coast NSW	69	4%	368	1%	96%	CAL
Northern Territory	7	0%	137	0%	100%	CAL
Total	**1,867**	**100%**	**28,217**	**100%**		
Average			**15.1 ha per property**			

Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008

Method

The project methodology is based on GIS (Geographical Information System) technology comprising ESRI ArcGIS software used in conjunction with orthophoto imagery to map citrus plantings. This provides accurate areas (hectares) of citrus and a user-friendly spatial format for citrus growers to record, and update, their planting details of; variety, tree numbers, age, rootstock, inter-plantings and irrigation method. A sample 'crop plan' is shown in Appendix A.

The system maps citrus plantings to the individual crop patch level and stores details on citrus variety, rootstock, year planted, number of trees, area (hectares) and inter-plantings. Details on property ownership are also collected. See Appendix A for a sample 'Property Crop Plan' and Appendix B for 'Crop Database Fields' and 'Property Database Fields'.

NPD tasks

There are five key activities in updating the National Plantings Database (NPD):

- Acquisition of the most recent, affordable, imagery (may include Google Earth)
- Preparation and mail-out of grower survey maps
- Grower surveys
- Data entry and mapping based on grower survey returns
- Analysis of the citrus mapping databases

The process and responsibility of undertaking these activities varied from region to region as summarised in Table 2.

Table 2 – 2011 citrus capture by region

Region	Imagery source	Survey maps	Grower surveys	Data entry	Planting statistics
Riverina NSW	2011 satellite imagery acquired by Riverina Citrus	Riverina Citrus	Riverina Citrus	Riverina Citrus	Riverina Citrus
Murray Valley VIC & NSW	2009 & 2011 orthophoto imagery acquired by MVCB, SR21 & partners	SunRISE 21 & MVCB	MVCB	SunRISE 21 & MVCB	SunRISE 21 & MVCB
Queensland	2009 SPOT imagery and 2010 Google Earth	SunRISE 21	SunRISE 21 and CAL	SunRISE 21	SunRISE 21
Western Australia	2010 Landgate Imagery, 2010 Google Earth, 2011 NearMap	SunRISE 21	SunRISE 21 and CAL	SunRISE 21	SunRISE 21
East Coast NSW	2010 Google Earth and 2010 NearMap	SunRISE 21	SunRISE 21	SunRISE 21	SunRISE 21
Central NSW	2010 and 2004 Google Earth	SunRISE 21 and CAL	SunRISE 21 and CAL	SunRISE 21	SunRISE 21
Northern Territory	2010 and 2006 Google Earth	SunRISE 21	SunRISE 21 & NT gov.	SunRISE 21	SunRISE 21

Orthophoto imagery

Orthophoto imagery is scale accurate, map referenced (i.e. with easting and northing coordinates) imagery processed from aerial photography or satellite imagery. The currency of available orthophoto imagery for each region varies considerably. For some regions, such as East Coast NSW, Google Earth provides free access to more recent satellite imagery and this has been used to check for visual changes to plantings. Where a visual change is identified, the mapping is edited to reflect the change which may be a new citrus patch, redeveloped citrus or citrus removed. Visual interpretation of the imagery provides information on citrus areas, estimates of tree numbers and sometimes the age of the planting and the irrigation method. It is only through grower surveys, however, that crucial details on varieties and rootstocks is captured.

The following is a sample of high resolution 2008 orthophoto imagery[1]. It clearly identifies where drought and low water allocations are impacting on citrus.

citrus not irrigated *irrigated citrus*

Planting Statistics

Regional planting statistics were generated using Microsoft Access software which was developed by Grant Hamence Software Design Pty Ltd specifically for the citrus mapping databases. This software tool is used by and licensed to the main citrus organisations, MVCB, Riverina Citrus, SACIDB and Citrus Australia Ltd.

It enables each of the regions to assign their own aliases to different citrus varieties; as each region and its growers often have different names and spelling for the same variety. A master citrus variety list was compiled in the 2003 NPD study; however it is in need of review and updating with many new varieties having since been planted.

New properties mapped

New properties not previously mapped in the 2003 and 2008 NPD projects, were mapped this year where Google Earth, NearMaps or Western Australia's Landgate imagery was available:

- Queensland – nine new properties including six at Mareeba and one at Eliott
- Central NSW - five new properties (516 ha) mapped at Moree, Forbes and Gunnedah
- Western Australia – six new properties

Where new areas are located and mapped, the previous mapping, i.e. 2003 and 2008 mapping, is back-filled, if relevant to the age of the plantings, to maintain consistency in monitoring trends over time.

[1] Image sourced from SAMRIC – South Australian Murray-Darling Basin Resource Information Centre Inc.

Changes to 2003 NPD and 2008 NPD statistics

For over 3,000 hectares of citrus mapped in the 2003 NPD and 1,450 hectares mapped in the 2008 NPD, the varieties were unknown due to the property owner not having been surveyed.

Many of these properties have since been surveyed and the earlier citrus mapping has been amended (back-filled) to include relevant details. Hence, the 2003 and 2008 citrus mapping has been improved and figures in this report may not cross reference with those in the 2003 and 2008 NPD reports.

Data Limitations

The areas (hectares) of plantings have been derived from scale accurate, high resolution (generally less than half metre pixel) imagery. This provides accurate areas where the terrain is relatively flat, but areas calculated for extensive citrus plantings on hilly terrain may be less than the actual terrain surface area.

Tree numbers are less reliable than the hectares as they are derived from a range of sources; counts from imagery, calculation from row and plant spacings or specified by the grower. Tree numbers should be treated as estimates only.

Whilst citrus in all the main citrus regions in Australia has been mapped, there are scattered properties that aren't mapped, such as lime growing properties along the Queensland coast ; therefore figures in this report should not be considered as absolute.

The 2011 national planting statistics presented are NOT complete in that they have been compiled from 2008 Riverland data (2011 data was not available) and 2008-2011 Riverina data where fifty percent of the 2008 Riverina data has been updated to 2011.

1. Results

1.1 National Citrus

The 2011 national planting statistics presented are NOT complete in that they have been compiled from 2008 Riverland data (2011 data was not available) and 2008-2011 Riverina data where fifty percent of the 2008 Riverina data has been updated to 2011. As such, the national total comprises 28,217 hectares of citrus (an estimated 12.49 million trees); with 95% of this area recorded to the variety level.

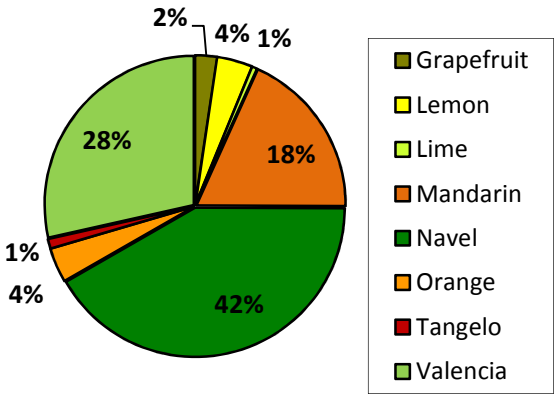
A listing of all varieties mapped with areas and tree numbers is provided in Appendix C.

1.1.1 National citrus summary

In summary for Australian citrus:

- In 2011; 28,217 hectares of citrus (12.49 million trees) across 1,867 citrus properties were mapped in the main citrus growing regions of Australia
- The area of citrus declined from 29,885 hectares in 2003 to 27,810 hectares in 2008, then increased to 28,217 hectares in 2011
- The number of citrus trees declined from 12,494,858 in 2003 to 12,196,866 in 2008, then increased to 12,490,205 trees in 2011
- Valencia oranges are the dominant plantings (27%) followed by Washington and Late Lane navels (23%) then Imperial mandarins (6%). (See Appendix C)
- While the number of citrus growers declined from 2,276 in 2003 to 1,963 in 2008 and to 1,867 in 2011 (a 18% decline), the average citrus area per property increased from 13.1 in 2003 to 14.2 in 2008 and to 15.1 hectares in 2011
- The average trees /ha increased from 418 in 2003 to 443 in 2011
- Australian citrus is predominantly grown on a Trifoliata rootstock and irrigated with low level sprinklers

Figure 1 – National citrus



2011 National citrus categories
excluding citron (<1%), cumquat (<1%), and pummelo (<1%)

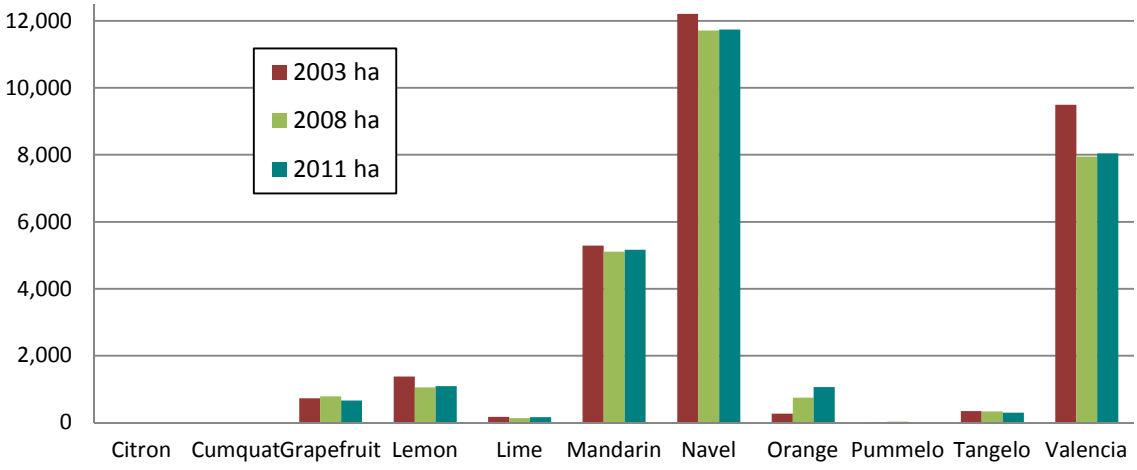
Australian citrus 2003 to 2011

The area of Australian citrus declined from 29,885 hectares in 2003 to 27,810 hectares in 2008 then increased slightly to 28,217 hectares in 2011. The overall change from 2003 to 2011 is a 6% decline in area planted (-1,668 hectares) as shown in Table 3.

Apart from some minor plantings of cumquat and citron (Buddha's Hand), the only citrus category that has increased in area since 2003 is 'Orange', largely influenced by plantings of Salustiana and Hamlin sweet oranges.

Table 3 – National citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	1,000 trees	ha	1,000 trees	ha	1,000 trees	ha	1,000 trees
Citron	0	0	<1	0.05	<1	0.05	+<1	+0.05
Cumquat	0	0	0	0	1	0.04	+1	+0.04
Grapefruit	725	295	777	305	660	265	-64	-30
Lemon	1,374	572	1,052	415	1,085	430	-289	-142
Lime	165	71	127	50	161	65	-4	-6
Mandarin	5,286	2,375	5,101	2,427	5,167	2,496	-119	+121
Navel	12,215	5,285	11,714	5,271	11,746	5,288	-468	+3
Orange	268	162	743	461	1,058	658	+791	+496
Pummelo	18	6	21	7	3	2	-14	-4
Tangelo	342	174	329	168	296	151	-46	-23
Valencia	9,493	3,556	7,947	3,091	8,039	3,136	-1,454	-420
Total	**29,885**	**12,495**	**27,810**	**12,197**	**28,217**	**12,490**	**-1,668 -6%**	**-5 0%**
Average	418 trees/ha		439 trees/ha		443 trees/ha			



Note: A total of 5% of citrus categories are unknown. A linear extrapolation was applied on a region by region basis to account for unknown citrus categories.

Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008

Australian dominant citrus varieties

The national dominant citrus variety remains Valencia, followed by Washington and Late Lane navels.

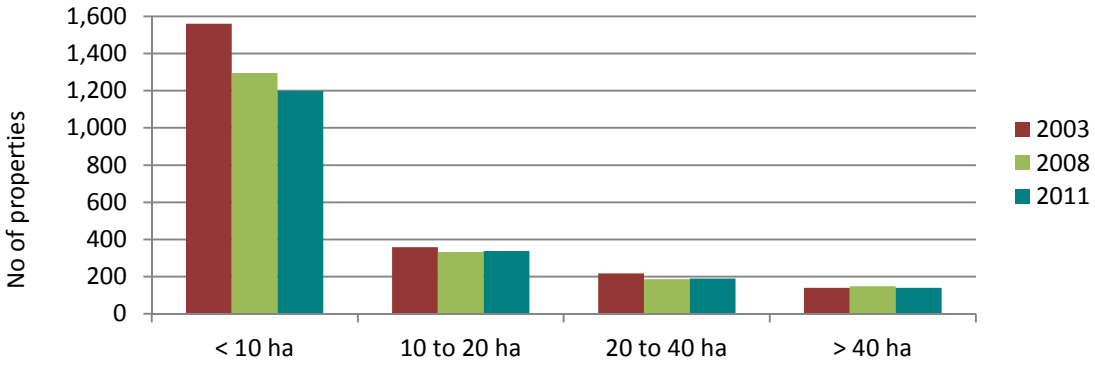
	Dominant variety		
	2003	**2008**	**2011**
1	Valencia	Valencia	Valencia
2	Washington	Washington	Washington
3	Late Lane	Late Lane	Late Lane
4	Imperial	Imperial	Imperial
5	Navelina	Murcott	Murcott

Australian citrus properties

While the number of citrus growers declined by 409 between 2003 and 2011; the average property size increased from 13.1 to 15.1 hectares of citrus as shown in the following table.

Table 4 – National citrus property size

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	1,560	1,294	1,198	-362	-16%
10 to 20 ha	358	333	338	-20	-1%
20 to 40 ha	217	187	190	-27	-1%
> 40 ha	141	149	141	0	0%
Total properties	**2,276**	**1,963**	**1,867**	**-409**	**-18%**
Average property size (ha of citrus)	**13.1**	**14.2**	**15.1**		



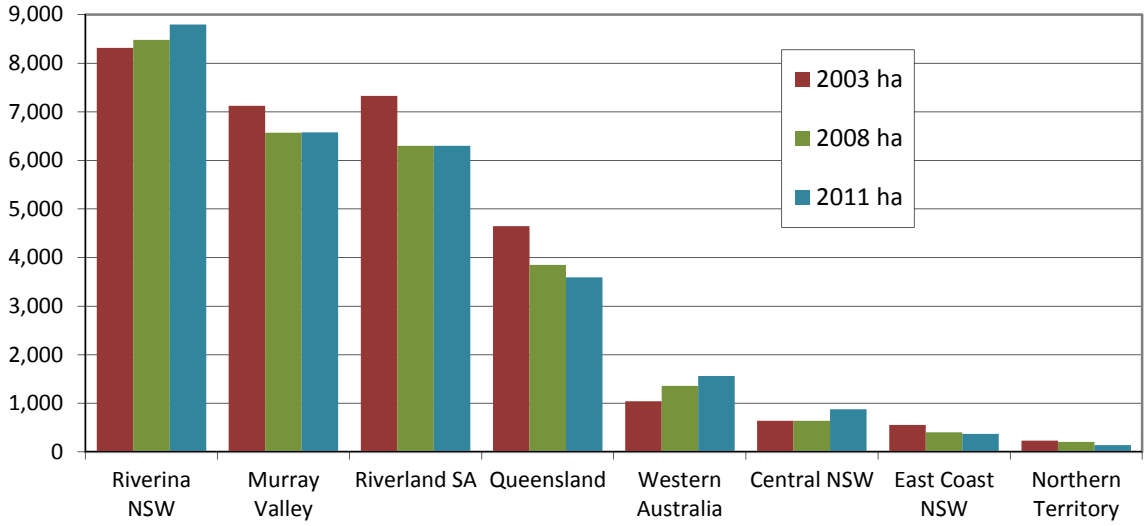
Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008

1.1.2 Australian citrus by region

Australian citrus has declined by 1,669 hectares (4,600 trees) since 2003. Citrus in the Riverina, Western Australia and Central NSW has increased since 2003, while Murray Valley, Riverland, Queensland, East Coast NSW and Northern Territory have all had a reduction in citrus plantings.

Table 5 – Citrus 2003 to 2011 per region

Region	2003		2008		2011		Change 2003-2011	
	ha	1,000 trees	ha	1,000 trees	ha	1,000 trees	ha	1,000 trees
Riverina NSW	8,317	3,314	8,480	3,457	8,800	3,586	+483	+272
Murray Valley	7,128	3,144	6,569	3,084	6,580	3,095	-547	-49
Riverland SA	7,327	2,917	6,303	2,747	*6,303*	*2,747*	-1,024	-170
Queensland	4,645	1,904	3,850	1,561	3,591	1,483	-1,054	-421
Western Australia	1,042	464	1,356	672	1,561	813	+519	+350
Central NSW	638	344	643	373	875	516	+237	+172
East Coast NSW	555	325	403	231	368	202	-187	-123
Northern Territory	233	83	206	73	137	48	-96	-35
Total	**29,885**	**12,495**	**27,810**	**12,197**	**28,216**	**12,490**	**-1,669**	**-4.6**
Average	418 trees/ha		439 trees/ha		443 trees/ha			



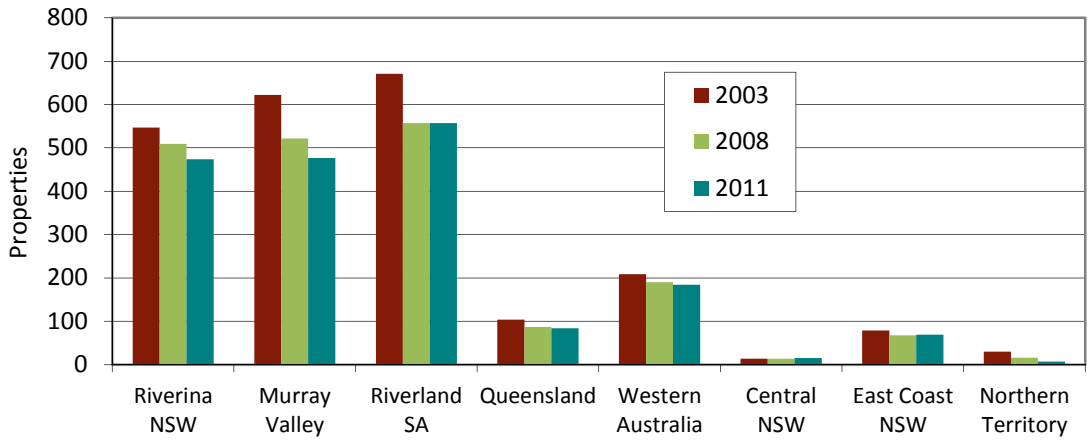
Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008

Citrus properties by region

Citrus properties have declined in all regions other than Central NSW where the additional properties mapped at Moree, Forbes and Gunnedah have increased the region by one.

Table 6 – Citrus properties by region

Region	2011			Change 2003 - 2011	
	No. properties	% of Total	Ave. citrus ha/property	No. properties	% of Region
Riverina	474	25%	18.6	-73	-13%
Murray Valley	477	26%	13.8	-145	-23%
Riverland	557	30%	11.3	-114	-17%
Queensland	84	4%	42.7	-20	-19%
Western Australia	184	10%	8.5	-25	-12%
Central NSW	15	1%	58.3	+1	+7%
East Coast NSW	69	4%	5.3	-10	-13%
Northern Territory	7	0%	19.6	-23	-77%
Total	**1,867**	**100%**	**15.1**	**-409**	**-18%**



Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008

Australian non-bearing citrus by region

Region	2011 ha	Non-bearing	% of Region	Main non-bearing varieties
Riverina	8,800	unavailable		
Murray Valley	6,580	746	11%	Afourer, Imperial, Late Lane
Riverland	6,303	unavailable		
Queensland	3,591	1,217	34%	Murcott, Murcott LS, Imperial
Western Australia	1,561	630	40%	Late Lane, Washington, Newhall
Central NSW	875	496	57%	Salustiana, Hamlin, McMahon
East Coast NSW	368	13	4%	Eureka
Northern Territory	137	45	33%	Eureka, Tahitian
Total	**28,217**	**3,147**	**11%**	

Note: non-bearing refers to citrus plantings after 2005 or reworks after 2008

1.2 Riverina

Grower surveys, data entry and planting statistics for the Riverina region were undertaken by Riverina Citrus. The mapping was based on 2011 satellite imagery acquired by Riverina Citrus and partner agencies.

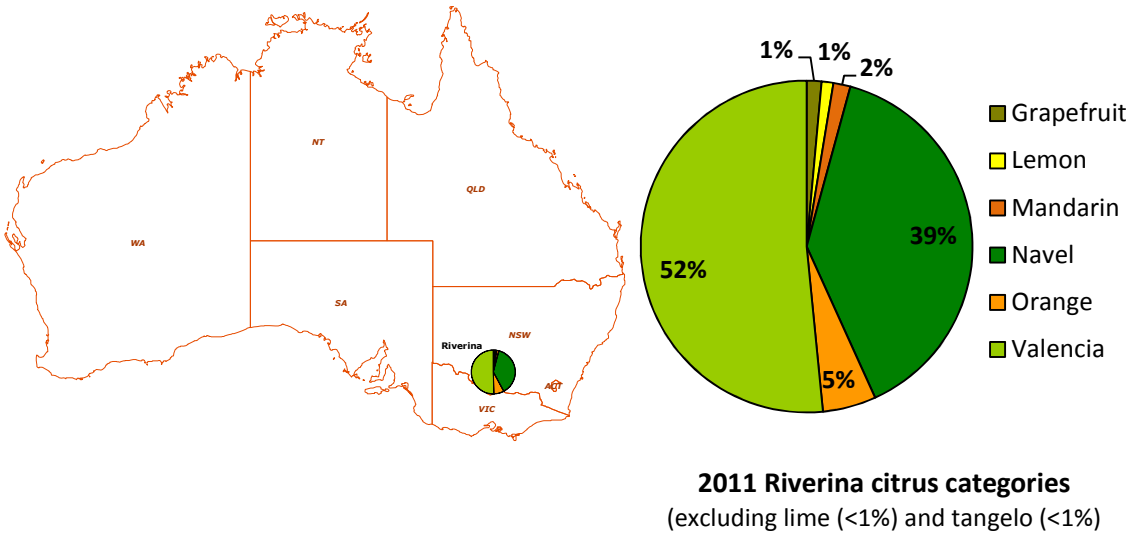
At the time of compiling this report Riverina Citrus had not completed updating its 2008 citrus mapping to 2011. Hence, the '2011' statistics presented in this report comprise 50% of 2011 citrus and 50% of 2008 citrus yet to be updated.

1.2.1 Riverina citrus

In summary for Riverina citrus:

- In 2011; 8,800 hectares of citrus (3,586,241 trees) across 513 citrus properties were mapped
- Riverina predominantly grows Valencia oranges
- The area of citrus increased from 8,317 hectares in 2003 to 8,480 hectares in 2008 and 8,800 hectares in 2011
- The number of citrus trees increased from 3,313,777 in 2003 to 3,456,661 in 2008 to 3,586,241 in 2011
- The number of citrus growers declined from 547 in 2003 to 509 in 2008 and increased to 513 in 2011; the average citrus area per property increased from 15.2 hectares in 2003 to 16.7 hectares in 2008 and 17.2 hectares in 2011
- Riverina citrus is predominantly drip irrigated and grown on a Trifoliata rootstock

Figure 2 – Riverina citrus



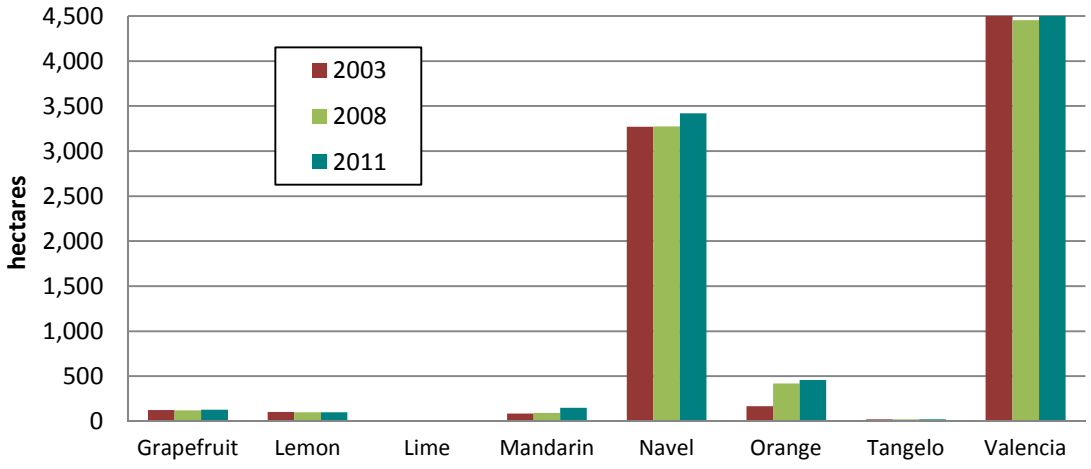
2011 Riverina citrus categories
(excluding lime (<1%) and tangelo (<1%)

Riverina citrus 2003 to 2011

The area of citrus in the Riverina has increased from 8,317 hectares in 2004 to 8,480 hectares in 2008 then to 8,800 hectares in 2011. The overall change from 2003 to 2011 is a 6% increase in area planted (483 hectares) and an 8% increase in tree numbers (272,464 trees) as shown in Table 7.

Table 7 – Riverina citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Citron	-	-	-	-	-	-	-	-
Cumquat	-	-	-	-	-	-	-	-
Grapefruit	125	48,303	120	46,910	126	51,263	+1	+2,960
Lemon	102	39,779	98	38,016	101	41,072	-2	+1,293
Lime	1	682	2	1,428	3	1,609	+1	+927
Mandarin	86	33,320	91	38,530	147	72,665	+61	+39,345
Navel	3,270	1,329,567	3,275	1,343,702	3,420	1,399,124	+150	+69,557
Orange	166	110,582	417	256,692	458	278,742	+292	+168,160
Pummelo	-	-	-	-	-	-	-	-
Tangelo	21	7,646	20	7,618	21	7,673	0	+27
Valencia	4,546	1,743,897	4,455	1,723,765	4,525	51,263	-21	-9,805
Total	**8,317**	**3,313,777**	**8,480**	**3,456,661**	**8,800**	**3,586,241**	**+483 +6%**	**+272,464 +8%**
Average	398 trees/ha		408 trees/ha		408 trees/ha			



Note: 6% of citrus categories are unknown. A linear extrapolation was applied to account for the 6%. Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

The dominant Riverina citrus variety was Valencia from 2003 to 2011.

	Dominant variety		
	2003	**2008**	**2011**
1	Valencia	Valencia	Valencia
2	Washington	Washington	Washington
3	Late Lane	Late Lane	Late Lane
4	Navel *unspecified*	Navel *unspecified*	Navel *unspecified*
5	Navelina	Navelina	Navelina

Riverina citrus rootstocks, irrigation and properties

Riverina citrus is predominantly drip irrigated and grown on Trifoliata rootstock as shown in Table 8.

Table 8 – Riverina dominant rootstock and irrigation type

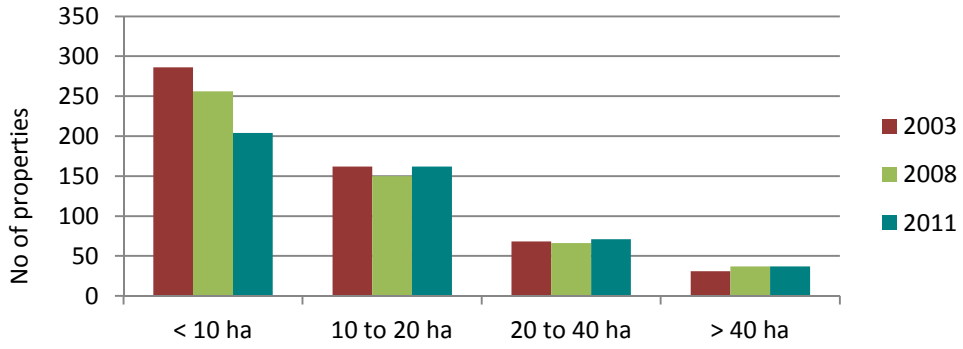
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Grapefruit	Trifoliata	Drip	Drip	Drip
Lemon	Trifoliata	Drip	Drip	Drip
Lime	Citrange	Drip	Drip	Drip
Mandarin	Trifoliata	Mini sprinkler	Mini sprinkler	Mini sprinkler
Navel	Trifoliata	Drip	Drip	Drip
Orange	Trifoliata	Drip	Drip	Drip
Tangelo	Citrange	Mini sprinkler	Mini sprinkler	Mini sprinkler
Valencia	Trifoliata	Furrow	Furrow	Furrow - Drip
Total	**Trifoliata**	**Furrow**	**Drip**	**Drip**

Riverina citrus properties

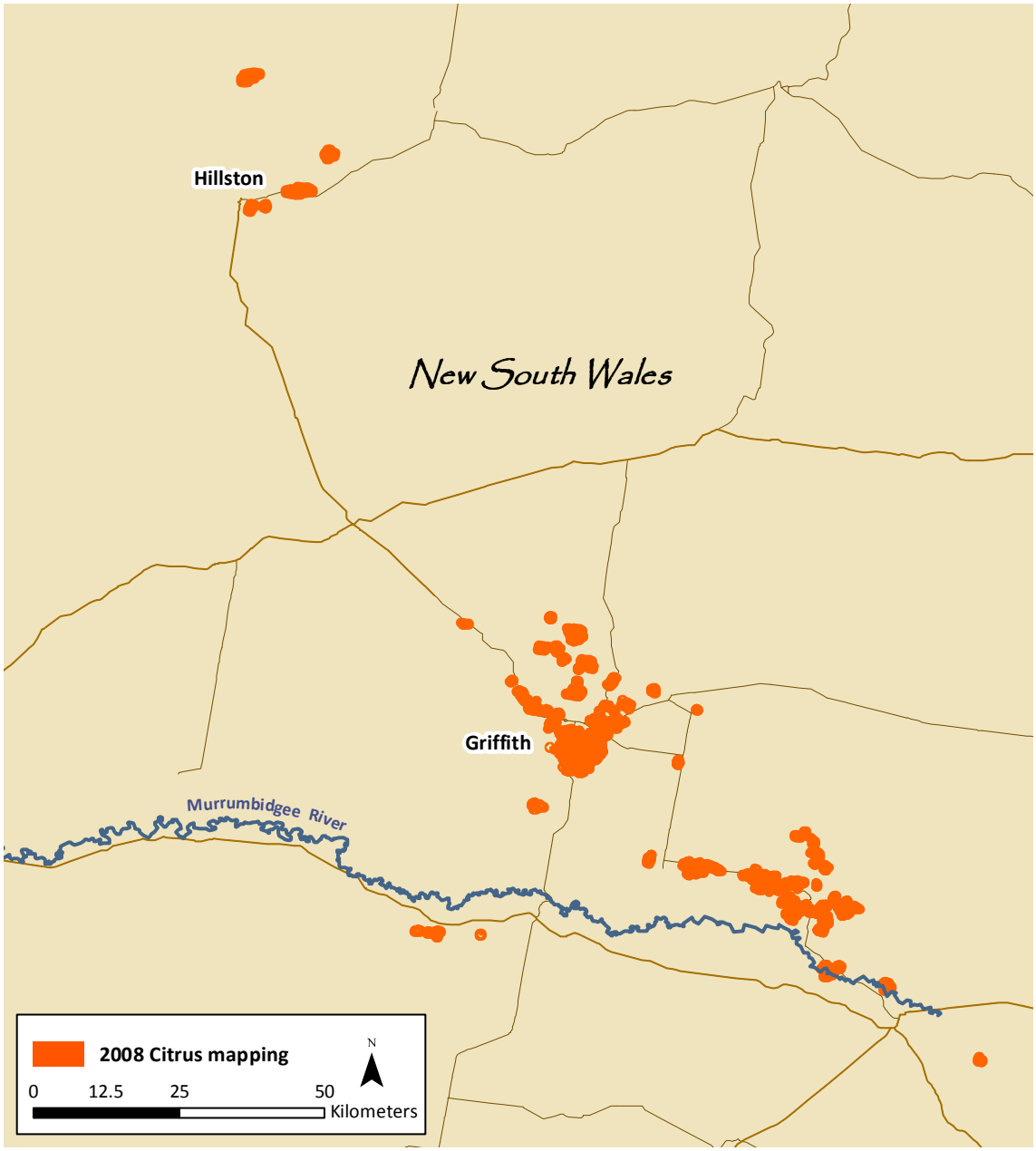
While the number of citrus growers declined by 34 between 2003 and 2011; the average property size increased from 15.2 to 17.2 hectares of citrus.

Table 9 – Riverina citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	286	256	243	-43	-8%
10 to 20 ha	162	150	162	0	0%
20 to 40 ha	68	66	71	+3	+1%
> 40 ha	31	37	37	+6	+1%
Total properties	**547**	**509**	**513**	**-34**	**-6%**
Average property size (ha of citrus)	**15.2**	**16.7**	**17.2**		



Map 1 – Riverina citrus map



1.2.2 Riverina 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing	Non- bearing	Total	
Citrus		***not surveyed***			**567**	**6%**
Grapefruit	Grapefruit white flesh	*unspecified grapefruit*			78	1%
		Marsh			15	0%
	Grapefruit pink & red flesh	Rio Red (Rio Star)			1	0%
		Ruby (Red,Pink)			6	0%
		Star Ruby			19	0%
		Thompson (Eagle)			0	0%
Lemon		*unspecified lemon*			56	1%
		Eureka			36	0%
		Lisbon			2	0%
		Meyer			0	0%
Lime		*unspecified lime*			1	0%
		Tahitian (Persian)			1	0%
Mandarin		*unspecified mandarin*			42	0%
	Mandarin early season	Dekopon			5	0%
		Tangerine			1	0%
		Imperial			40	0%
		Nules Clementine			4	0%
		Okitsu Wase Satsuma			0	0%
		Satsuma unspecified			1	0%
	Mandarin mid season	Afourer			36	0%
		Daisy			2	0%
		Ellendale			5	0%
	late season	Murcott			3	0%
Navel		*unspecified navel*			196	2%
	Navel early season	*unspecified early navel*			5	0%
		Atwood			29	0%
		Fisher			5	0%
		Fukumoto			8	0%
		Leng			66	1%
		M7 Navel			6	0%
		Navelina(Italian,Spanish)			189	2%
		Nucellar Leng			4	0%
		Pasin			18	0%
		Rosey Red			2	0%
		Ryan			10	0%
		Thomson			0	0%
		Winter Navel			1	0%
	Navel mid season	Cara Cara (Red Navel)			87	1%
		Palmer			3	0%
		Washington			1,205	14%
	Navel late season	*unspecified late navel*			213	2%
		Autumn Gold			3	0%
		Barnfield			72	1%
		Chislett			117	1%
		Clark (Doug Clarke)			23	0%
		Late Lane			857	10%
		Powell			73	1%
		Summer Gold (Marrows)			2	0%
		Toc			12	0%
		Wiffen			3	0%

Riverina citrus varieties *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing	Non- bearing	Total	
Orange misc.	Blood Orange	*unspecified*			6	0%
		Arnold (Moro)			29	0%
		Maltese			0	0%
		Ruby			1	0%
		Tarocco			3	0%
	Sweet Orange	Acidless (Non Acid)			0	0%
		Common Orange			1	0%
		Hamlin			128	1%
		Lima acidless			3	0%
		Parson Brown			27	0%
		Pera (Bianchi, Limeria)			19	0%
		Pineapple			35	0%
		Salustiana			174	2%
		Seleta (Siletta)			0	0%
	Sour	Seville			3	0%
Tangelo	Tangelo	*unspecified Tangelo*			14	0%
		Minneola			6	0%
Valencia	Valencia	Dwarf			7	0%
		Pecta			2	0%
		Valencia			4,105	47%
	Seedless Valencia	Delta			28	0%
		McMahon			13	0%
		Midknight			13	0%
		Valencia Seedless			66	1%
		Total			**8,800**	**100%**

1.2.3 Riverina change since 2003

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Citrus		***not surveyed***	**567**	**+154**	**216,132**	**+27,441**
Grapefruit	white	*unspecified grapefruit*	78	-12	30,656	-4,848
	flesh	Marsh	15	0	5,304	-155
		Oroblanco	0	-2	0	-487
	pink & red	Flame	0	0	652	+652
	flesh	Rio Red (Rio Star)	1	0	234	0
		Ruby(Red,Pink),Redblush	6	0	3,560	+2,636
		Star Ruby	19	+10	7,768	+5,023
		Thompson (Eagle)	0	-1	0	-200
Lemon		*unspecified lemon*	56	-24	23,235	-8,060
		Eureka	36	+23	14,555	+10,035
		Lisbon	2	-1	807	-325
		Meyer	0	-2	0	-567
Lime		*unspecified lime*	1	0	504	+160
		Tahitian	1	+1	1,008	+709
Mandarin		*unspecified mandarin*	42	+28	15,291	+9,947
	early	Dekopon	5	+5	2,700	+2,700
	season	Tangerine	1	0	407	0
		Imperial	40	+7	18,247	+5,960
		Nules Clementine	4	0	1,482	0
		Okitsu Wase Satsuma	0	0	246	0
		Satsuma unspecified	1	+1	119	0
	mid	Afourer	36	+36	26,145	+26,145
	season	Daisy	2	-1	529	-256
		Ellendale	5	-9	1,833	-3,035
	late	Murcott	3	-12	1,287	-4,598
Navel	Navel	*unspecified navel*	196	-51	84,121	-23,191
	early	*unspecified early navel*	5	+1	2,469	+427
	season	Atwood	29	+18	15,755	+10,111
		Fisher	5	0	2,138	0
		Fukumoto	8	+7	6,745	+5,698
		Leng	66	-22	28,061	-12,810
		M7 Navel	6	+6	3,590	+3,590
		Navelina(Italian,Spanish)	189	0	81,655	-2,058
		Nucellar Leng	4	+4	3,372	+3,372
		Pasin	18	+1	10,498	+806
		Rosey Red	2	0	1,054	0
		Ryan	10	0	4,458	0
		Thomson	0	-2	200	-779
		Winter Navel	1	0	275	-12
	mid	Cara Cara	87	+43	40,872	+20,880
	season	Palmer	3	+1	2,622	+841
		Washington	1,205	-40	469,528	-12,115
	late	*unspecified late navel*	213	+20	85,354	+14,535
	season	Autumn Gold (Pollock Late)	3	0	1,329	0
		Barnfield	72	+24	26,951	+11,009
		Chislett	117	+45	47,657	+16,622
		Clark (Doug Clarke)	23	0	5,695	+133
		Late Lane	857	+12	355,473	+9,431
		Powell	73	+38	32,859	+18,898

Riverina change since 2003 *continued*

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Navel	late	Summer Gold (Marrows)	2	-1	831	-156
	season	Toc	0	-12	0	-4,289
		Wiffen	3	0	1,241	0
Orange misc.	Blood Orange	*unspecified*	6	-3	2,679	-1,106
		Arnold (Moro)	29	+29	24,243	+24,135
		Maltese	0	0	0	-155
		Ruby	1	0	498	0
		Tarocco	3	+3	1,030	+1,030
	Sweet Orange	Acidless (Non Acid)	0	0	0	0
		Common Orange	1	-4	418	-2,947
		Hamlin	128	+61	79,854	+36,655
		Lima acidless	3	0	3,175	+1,450
		Parson Brown	27	+18	18,537	+9,884
		Pera (Bianchi, Limeria)	19	0	5,994	0
		Pineapple	35	+34	16,956	+16,251
		Salustiana	174	+138	106,237	+73,672
		Seleta (Siletta)	0	-2	0	-1,069
	Sour	Seville	3	-3	1,080	-1,384
Tangelo	Tangelo	*unspecified Tangelo*	14	0	5,028	0
		Minneola	6	0	2,183	0
Valencia	Valencia	Dwarf	7	0	8,587	0
		Pecta	2	0	544	0
		Valencia	4,105	-126	1,573,117	-33,058
	Seedless Valencia	Delta	28	+24	13,164	+10,446
		McMahon	13	+10	7,063	+4,939
		Midknight	13	0	5,263	+521
		Valencia Seedless	66	+6	22,329	+2,622
		Total	**8,800**	**+483**	**3,586,241**	**+272,464**

1.3 Murray Valley

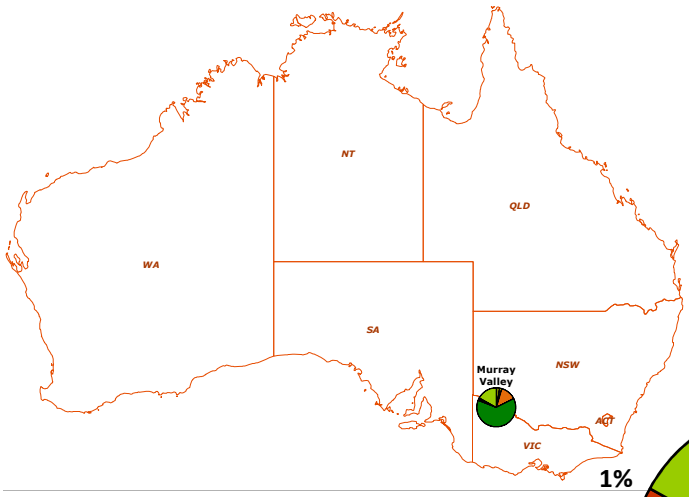
Murray Valley citrus growers were surveyed by the Murray Valley Citrus Board (MVCB) in October 2010. Property survey maps were prepared by SunRISE 21 using February 2009 aerial photography as the map base. Survey returns were collected by the MVCB, and updating of the citrus mapping and plantings database was undertaken by the MVCB and SunRISE 21.

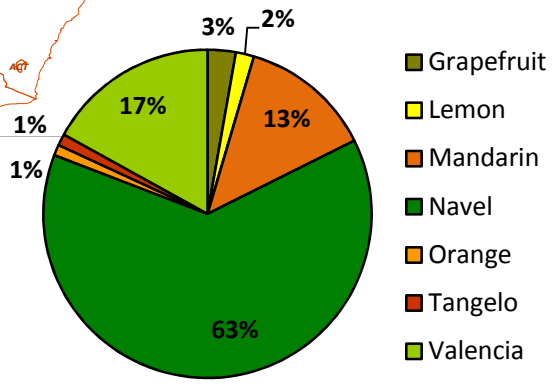
1.3.1 Murray Valley citrus

In summary for Murray Valley citrus:

- In 2011; 6,580 hectares of citrus (3,095,349 trees) across 477 citrus properties were mapped and 263 hectares were new plantings since 2008. New plantings are predominantly navels and Imperial mandarin
- The area of citrus declined from 7,128 hectares in 2003 to 6,569 hectares in 2008 (-8%), then increased slightly to 6,580 hectares in 2011
- The number of citrus trees declined from 3,144,407 in 2003 to 3,083,834 in 2008, then increased to 3,095,349 trees in 2011
- Murray Valley predominantly grows Late Lane navels, Valencia oranges, Washington navels, Imperial mandarins and Leng navels
- Murray Valley citrus is predominantly drip irrigated and grown on a citrange rootstock
- The number of citrus growers continues to decline with 622 growers in 2003, 522 in 2008 and 477 growers in 2011.
- The average citrus area per property increased from 11.5 hectares in 2003 to 12.6 hectares in 2008 and 13.8 hectares in 2011

Figure 3 – Murray Valley citrus





2011 Murray Valley citrus categories

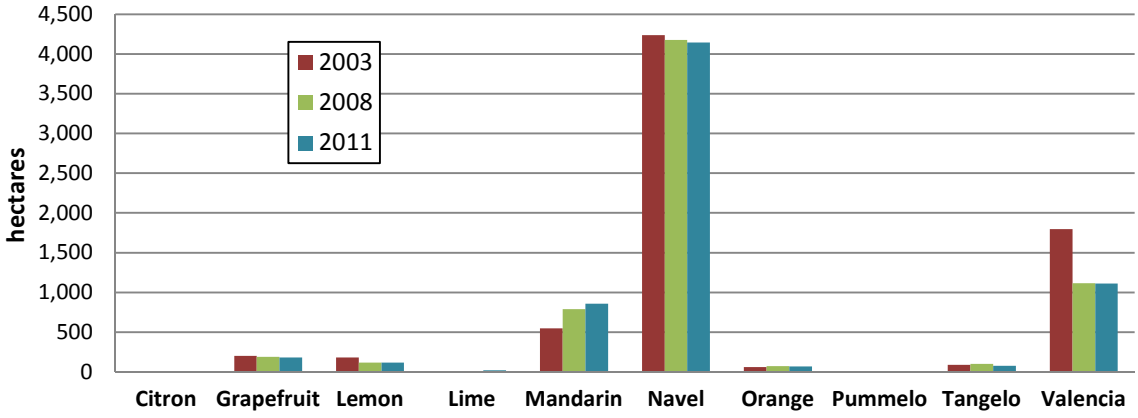
(excluding citron (<1%), lime (<1%) and pummelo (<1%))

Murray Valley citrus 2003 to 2011

The area of citrus in the Murray Valley declined from 7,128 hectares in 2003 to 6,569 hectares in 2008 then increased slightly to 6,580 hectares in 2011. The overall change from 2003 to 2011 is an 8% decline in area planted (-548 hectares) and a 2% decrease in tree numbers (49,058 trees) as shown in Table 10.

Table 10 – Murray Valley citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Citron	0	0	<1	49	<1	49	<1	+49
Cumquat	-	-	-	-	-	-	-	-
Grapefruit	202	99,319	188	87,058	184	84,624	-19	-14,695
Lemon	180	76,222	119	48,527	117	49,652	-63	-26,570
Lime	10	4,882	6	2,874	21	9,838	+11	+4,956
Mandarin	547	255,925	790	449,674	858	490,242	+310	+234,3
Navel	4,238	1,919,066	4,177	1,945,506	4,144	1,926,456	-95	+7,390
Orange	62	29,588	72	38,037	69	37,630	+7	+8,043
Pummelo	1	493	1	506	1	511	0	+17
Tangelo	89	44,640	101	51,383	75	38,884	-14	-5,756
Valencia	1,797	714,273	1,115	460,220	1,113	457,463	-684	-
Total	**7,128**	**3,144,407**	**6,569**	**3,083,834**	**6,580**	**3,095,349**	**-548 -8%**	**-49,058 -2%**
Average		441 trees/ha		469 trees/ha		470 trees/ha		



Note: 3% of citrus categories are unknown. A linear extrapolation was applied to account for the 3%
Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

The dominant Murray Valley citrus variety changed from Valencia in 2003 to Late Lane navel in 2008 and 2011.

	Dominant variety		
	2003	**2008**	**2011**
1	Valencia	Late Lane	Late Lane
2	Late Lane	Valencia	Valencia
3	Washington	Washington	Washington
4	Leng	Leng	Imperial
5	Navelina	Imperial	Leng

Murray Valley citrus rootstocks, irrigation and properties

Murray Valley citrus is predominantly drip irrigated and grown on a Citrange rootstock as shown in Table 11.

Table 11 – Murray Valley dominant rootstock and irrigation type

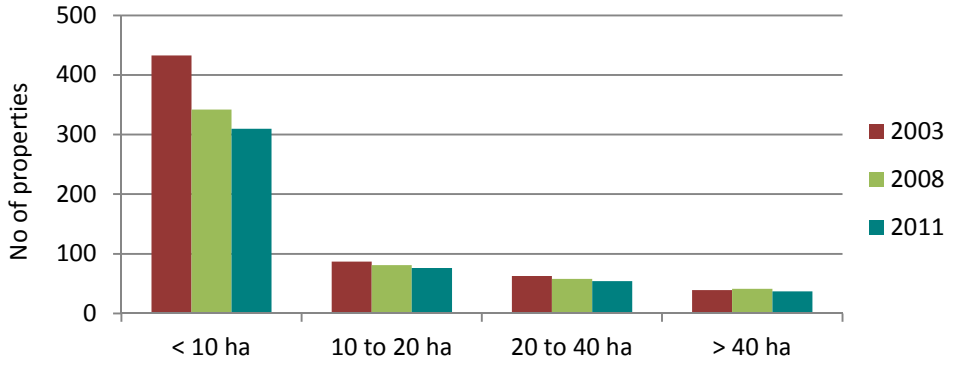
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Citron	Citrange		Low level	Low level
Grapefruit	Citrange	Overhead	Overhead	Low level
Lemon	Citrange	Overhead	Overhead	Drip
Lime	Citrange	Drip	Drip	Low level
Mandarin	Citrange	Overhead	Drip	Drip
Navel	Citrange	Overhead	Drip	Drip
Orange	Citrange	Low level	Drip	Drip
Pummelo	Sweet Orange	Overhead	Overhead	Overhead
Tangelo	Citrange	Low level	Low level	Drip
Valencia	Citrange	Overhead	Overhead	Overhead
Total	**Citrange**	**Overhead**	**Drip**	**Drip**

Citrus properties

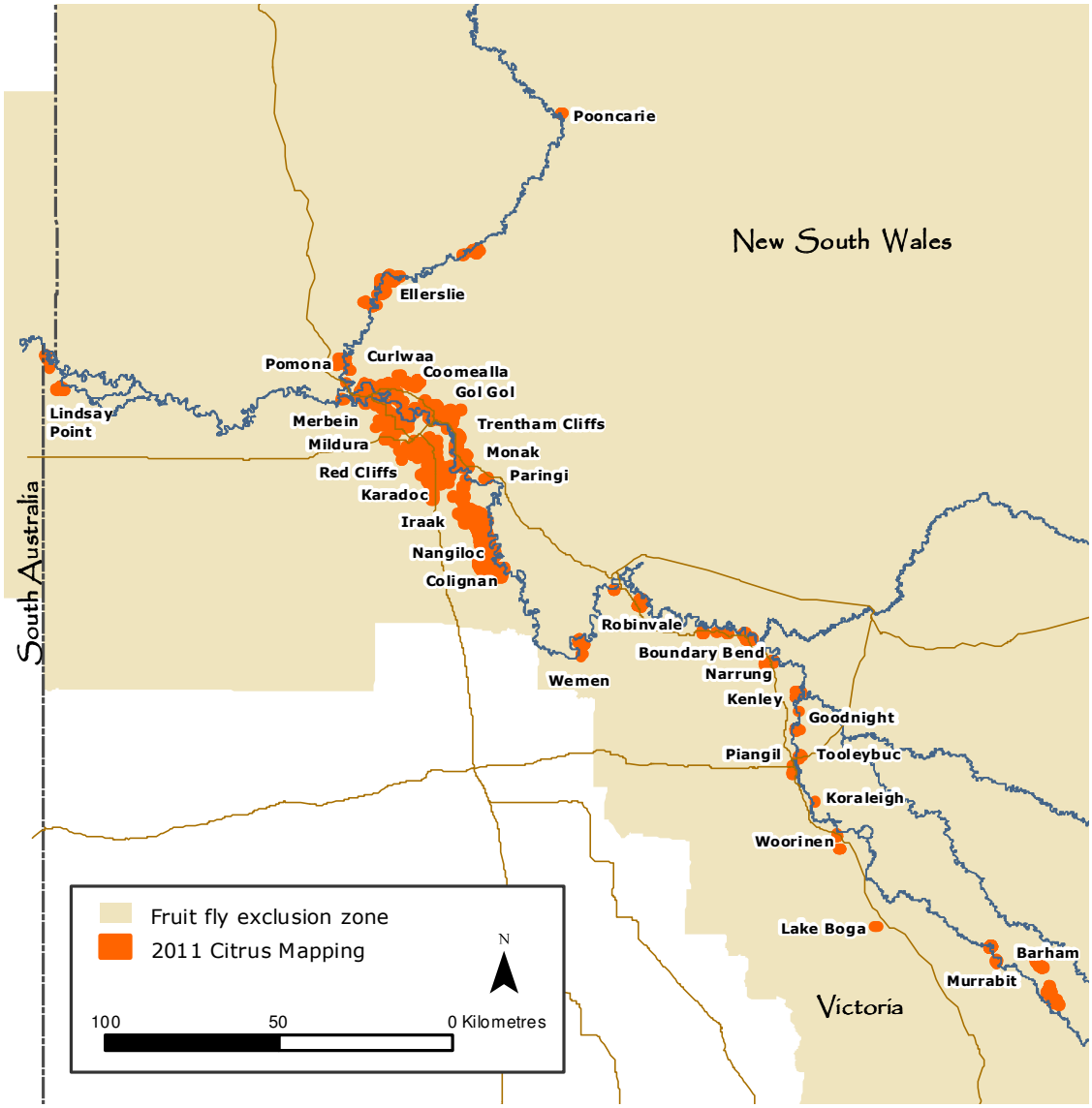
While the number of citrus growers declined by 145 between 2003 and 2011; the average property size increased from 11.5 to 13.8 hectares of citrus as shown in Table 12.

Table 12 – Murray Valley citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	433	342	310	-123	-20%
10 to 20 ha	87	81	76	-11	-2%
20 to 40 ha	63	58	54	-9	-1%
> 40 ha	39	41	37	-2	0%
Total properties	**622**	**522**	**477**	**-145**	**-23%**
Average property size (ha of citrus)	**11.5**	**12.6**	**13.8**		



Map 2 – Murray Valley citrus map



1.3.2 Murray Valley 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing	Non Bearing	Total	
Citrus		***not surveyed***	**111**	**116**	**227**	**3%**
Citron		Buddha's Hand	0	0	0	0%
Grapefruit	Grapefruit white flesh	*unspecified*	35	0	35	1%
		Marsh	62	0	62	1%
		Oroblanco	1	0	1	0%
	Grapefruit pink & red flesh	Flame	0	0	0	0%
		Rio Red	2	1	4	0%
		Ruby, Redblush	7	1	8	0%
		Star Ruby	23	6	29	0%
		Thompson	37	0	37	4%
Lemon		*unspecified*	34	3	37	1%
		Eureka	20	0	20	0%
		Fino	0	0	0	0%
		Francovielo	1	0	1	0%
		Lisbon	39	12	52	1%
		Meyer	1	0	1	0%
		Verna	1	0	1	0%
		Yen Ben	0	0	0	0%
Lime		*unspecified*	1	14	15	0%
		Blood	0	0	0	0%
		Desert	0	0	0	0%
		Finger	1	0	1	0%
		Kaffir	0	0	0	0%
		Outback	0	0	0	0%
		Sunrise	0	0	0	0%
		Tahitian	2	3	5	0%
Mandarin	Mandarin	*unspecified*	3	3	6	0%
	Mandarin early season	Amigo	2	0	2	0%
		Caffin Clementine	0	0	0	0%
		Clementine	1	0	1	0%
		Fallglo	0	0	0	0%
		Feutrell	1	0	1	0%
		Fremont	0	1	1	0%
		Imperial	332	94	426	6%
		Miho Wase Satsuma	1	0	1	0%
		Nova	0	0	0	0%
		Okitsu Wase Satsuma	1	0	1	0%
		Satsuma *unspecified*	0	0	0	0%
	Mandarin mid season	Afourer	167	119	286	4%
		Avana	1	0	1	0%
		Daisy	17	8	25	0%
		Dancy	0	0	0	0%
		Ellendale	33	0	33	0%
		Hickson	2	0	2	0%
	Mandarin late season	Emperor	1	0	1	0%
		Kara	1	0	1	0%
		Murcott	35	0	35	1%
		Sunset	0	0	0	0%
		Topaz, Ortanique	4	3	7	0%

Murray Valley citrus varieties *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing	Non Bearing	Total	
Navel	Navel	*unspecified*	44	0	44	1%
		Cellaline	0	0	0	0%
		Follett	0	0	0	0%
		Langdon	10	0	10	0%
		Salisbury	2	0	2	0%
	Navel early season	Atwood	12	19	31	0%
		Biggs Leng	2	0	2	0%
		Early Bird	0	0	0	0%
		Fisher	18	7	25	0%
		Fuko Mozonau	5	0	5	0%
		Fukumoto	3	1	4	0%
		Golden Nugget	1	0	1	0%
		Hammet	1	0	1	0%
		Leng	398	17	415	6%
		Lloyd Leng	1	0	1	0%
		M7	2	52	53	1%
		Navelina	334	1	335	5%
		Newhall	7	0	7	0%
		Nucellar Leng	22	0	22	0%
		Pasin	3	3	6	0%
		Riverside	1	1	2	0%
		Ryan	57	0	57	1%
		Thomson	16	2	18	0%
		Whitely	6	0	6	0%
	Navel mid season	Bellamy	0	0	0	0%
		Cara Cara	19	24	43	1%
		Hockney	2	0	2	0%
		Navelate	1	0	1	0%
		Palmer	0	0	0	0%
		Washington	627	39	665	10%
	Navel late season	*unspecified*	20	0	20	0%
		Autumn Gold	71	4	75	1%
		Barnfield	187	6	193	3%
		Chislett	282	41	323	5%
		Christensen	3	0	3	0%
		Christmas	0	0	0	0%
		Clark	8	0	8	0%
		Edwards	2	0	2	0%
		Garraway	0	0	0	0%
		Honey Gold	2	0	2	0%
		Hutton	1	0	1	0%
		Late Lane	1,257	92	1,350	21%
		Pillar	0	0	0	0%
		Powell	106	1	107	2%
		Ravens Choice	5	0	5	0%
		Rohde	41	2	43	1%
		Scopelliti	6	0	6	0%
		Summer Gold	89	1	90	1%
		Taylor	1	0	1	0%
		Toomey	3	0	3	0%
		Wiffen	8	0	8	0%

Murray Valley citrus varieties *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing	Non Bearing	Total	
Orange misc.	Blood Orange	*unspecified*	10	3	12	0%
		Arnold Blood	11	4	15	0%
		Maltese	0	0	0	0%
	Sweet	Common Orange	1	0	1	0%
		Hamlin	11	0	11	0%
		Parson Brown	2	0	2	0%
		Pera	0	0	0	0%
		Salustiana	1	2	4	0%
	Sour	Seville	21	0	21	0%
		Smooth Seville	1	0	1	0%
Pummelo		*unspecified*	1	0	1	0%
Tangelo		*unspecified*	35	1	36	1%
		Minneola	36	0	36	1%
		Seminole	0	0	0	0%
Valencia		Appleby	1	0	1	0%
		Ben Yenda	0	0	0	0%
		Berri	4	0	4	0%
		Casey	8	0	8	0%
		Keenan	0	2	2	0%
		Newton	36	0	36	1%
		Owen	0	0	0	0%
		Smith	9	0	9	0%
		Valencia	963	12	976	15%
	Seedless Valencia	Delta	7	1	9	0%
		McMahon	2	3	5	0%
		Midknight	0	4	4	0%
		Valencia Seedless	7	14	21	0%
		TOTAL	**5,835**	**746**	**6,580**	**100%**

Note: Bearing trees were planted six or more years ago (i.e. planted in 2005 or earlier) or were reworked three or more years ago (i.e. reworked in 2008 or earlier).

1.3.3 Murray Valley change since 2003

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Citrus		***not surveyed***	**227**	**+177**	**125,193**	**+103,240**
Citron		Buddha's Hand	0	0	47	+47
Grapefruit	Grapefruit white flesh	*unspecified*	35	-23	15,791	-10,460
		Marsh	62	-31	27,426	-20,660
		Oroblanco	1	-4	756	-3,228
	Grapefruit pink & red flesh	Flame	0	0	231	0
		Rio Red	4	+3	1,669	+982
		Ruby, Redblush	8	0	3,302	0
		Star Ruby	29	+6	14,167	+3,686
		Thompson	37	+23	17,859	+11,293
Lemon		*unspecified*	37	-23	16,587	-9,308
		Eureka	20	-12	7,887	-7,849
		Fino	0	-1	14	-340
		Francovielo	1	0	541	0
		Lisbon	52	-28	21,683	-9,825
		Meyer	1	0	210	-31
		Verna	1	-2	459	-693
		Yen Ben	0	0	263	0
Lime		*unspecified*	15	+14	6,597	+6,175
		Blood	0	-4	0	-1,907
		Desert	0	-1	0	-696
		Finger	1	+1	442	+392
		Kaffir	0	0	0	-50
		Outback	0	-1	0	-583
		Sunrise	0	-1	0	-397
		Tahitian	5	+3	2,401	+1,658
Mandarin	Mandarin	*unspecified*	6	+3	2,617	-119
	Mandarin early season	Amigo	2	-3	926	-1,598
		Caffin Clementine	0	0	145	+145
		Clementine	1	-3	281	-1,294
		Fallglo	0	-3	289	-2,142
		Feutrell	1	0	139	0
		Fremont	1	+1	380	+380
		Imperial	426	+91	216,110	+64,314
		Miho Wase Satsuma	1	+1	450	+90
		Nova	0	0	0	-72
		Okitsu Wase Satsuma	1	-1	692	-68
		Satsuma *unspecified*	0	-1	0	-446
	Mandarin mid season	Afourer	286	+277	193,870	+ 186,908
		Avana	1	+1	430	+336
		Daisy	25	+11	14,672	+7,149
		Dancy	0	0	0	-32
		Ellendale	33	-48	14,470	-19,875
		Hickson	2	0	479	0
	Mandarin late season	Emperor	1	-1	300	-412
		Kara	1	-1	700	-14
		Murcott	35	-40	19,716	-17,673
		Sunset	0	0	0	-100
		Topaz, Ortanique	7	+1	3,748	+798

Murray Valley change since 2003 *continued*

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Navel	Navel	*unspecified*	44	-1	25,505	-969
		Cellaline	0	0	40	0
		Follett	0	0	120	0
		Langdon	10	+2	3,895	+696
		Salisbury	2	0	648	0
	Navel early season	Atwood	31	+23	17,752	+11,748
		Biggs Leng	2	0	664	0
		Early Bird	0	0	98	+98
		Fisher	25	+24	12,178	+11,928
		Fuko Mozonau	5	+5	4,490	+4,490
		Fukumoto	4	-5	2,206	-2,436
		Golden Nugget	1	0	418	0
		Hammet	1	-1	600	-440
		Leng	415	-161	157,494	-61,563
		Lloyd Leng	1	-1	482	-288
		M7	53	+53	31,184	+31,184
		Navelina	335	-77	169,243	-40,370
		Newhall	7	-6	3,287	-2,909
		Nucellar Leng	22	-1	10,677	-469
		Pasin	6	+3	2,812	+1,388
		Riverside	2	+1	653	+314
		Ryan	57	+10	24,124	+4,844
		Thomson	18	-23	7,541	-10,552
		Whitely	6	-1	3,212	-440
	Navel mid season	Bellamy	0	0	138	-54
		Cara Cara	43	+43	24,248	+23,548
		Hockney	2	+1	1,060	+560
		Navelate	1	-3	330	-1,167
		Palmer	0	0	83	0
		Washington	665	-128	286,437	-55,592
	Navel late season	*unspecified*	20	-1	9,337	-635
		Autumn Gold	75	+1	42,078	+1,739
		Barnfield	193	-11	88,169	-5,616
		Chislett	323	+93	170,507	+52,742
		Christensen	3	0	1,356	0
		Christmas	0	0	200	0
		Clark	8	-1	4,714	+356
		Edwards	2	0	1,036	0
		Garraway	0	0	0	-161
		Honey Gold	2	0	1,329	0
		Hutton	1	0	341	0
		Late Lane	1,350	+5	610,222	+8,053
		Pillar	0	0	0	-147
		Powell	107	-14	46,305	-7,236
		Ravens Choice	5	+3	1,601	+729
		Rohde	43	-3	19,366	-1,069
		Scopelliti	6	-1	2,976	-866
		Summer Gold	90	-35	52,026	-18,438
		Taylor	1	0	356	0
		Toomey	3	0	1,423	0
		Wiffen	8	+1	3,578	-127

Murray Valley change since 2003 *continued*

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Orange misc.	Blood Orange	*unspecified*	12	0	6,620	+721
		Arnold Blood	15	+5	9,403	+3,762
		Maltese	0	0	31	+31
	Sweet	Common Orange	1	-1	363	-178
		Hamlin	11	+1	6,572	+ 144
		Parson Brown	2	+2	1,224	+1,224
		Pera	0	0	65	0
		Salustiana	4	+3	3,443	+3,160
	Sour	Seville	21	-6	7,429	-2,137
		Smooth Seville	1	0	959	0
Pummelo		*unspecified*	1	0	490	0
Tangelo		*unspecified*	36	+2	16,946	+1,785
		Minneola	36	-18	20,334	-8,695
		Seminole	0	0	31	-107
Valencia		Appleby	1	-2	463	-330
		Ben Yenda	0	0	422	0
		Berri	4	+2	3,438	+1,730
		Casey	8	-13	3,082	-5,580
		Keenan	2	0	1,111	+257
		Newton	36	-40	14,858	-21,619
		Owen	0	0	53	0
		Smith	9	-2	5,155	-561
		Valencia	976	-682	391,099	-257,750
	Seedless Valencia	Delta	9	+2	4,921	+1,446
		McMahon	5	+4	2,308	+1,906
		Midknight	4	+4	2,280	+1,947
		Valencia Seedless	21	+17	9,772	+8,228
		TOTAL	**6,580**	**-548**	**3,095,349**	**-49,058**

1.4 Riverland

South Australia 2011 citrus mapping and statistics were unavailable for incorporation in this report. The 2003 and 2008 information presented in this section is reproduced from the 2008 NPD report.

1.4.1 Riverland citrus

In summary for Riverland citrus:

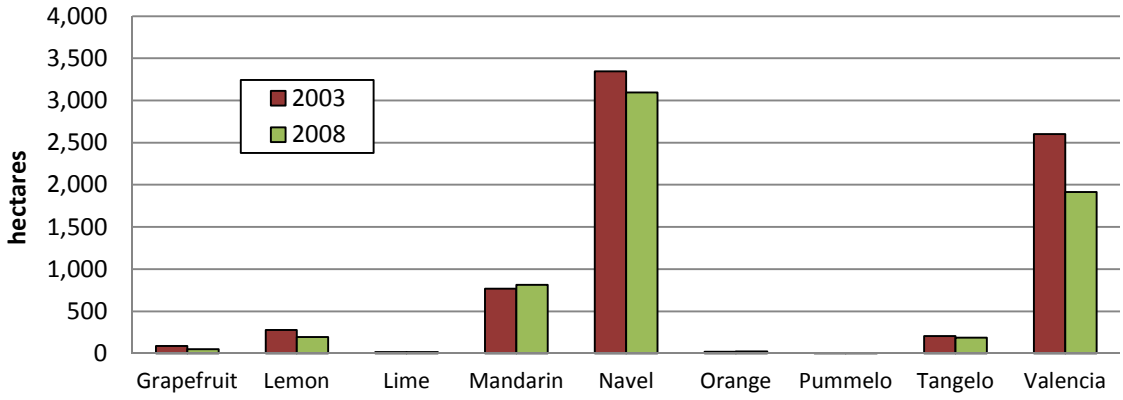
- In 2008; 6,303 hectares of citrus (2,746,859 trees) across 557 citrus properties were mapped
- Riverland predominantly grows navel oranges; the dominant variety in 2008 being Washington
- The area of citrus declined from 7,327 hectares in 2003 to 6,303 hectares in 2008 (a 14% decline)
- The number of citrus trees declined from 2,917,354 in 2003 to 2,746,859 in 2008 (a 6% decline)
- The number of citrus growers declined from 671 in 2003 to 557 in 2008 (a 17% decline); however the average citrus area per property increased from 10.9 hectares in 2003 to 11.3 hectares in 2008
- Riverland citrus is predominantly on a Citrange rootstock and irrigated with low level sprinklers

Riverland citrus 2003 to 2011

The area of citrus in the Riverland declined from 7,327 hectares in 2003 to 6,303 hectares in 2008. The overall change from 2003 to 2011 is unknown as 2011 figures are unavailable.

Table 13 – Riverland citrus 2003 to 2008

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Grapefruit	87	35,225	52	24,086				
Lemon	278	100,466	196	75,971				
Lime	18	6,608	16	5,233				
Mandarin	770	393,454	815	455,625				
Navel	3,347	1,375,758	3,095	1,378,294				
Orange	20	12,402	23	18,033				
Pummelo	0	120	2	889				
Tangelo	206	107,416	188	100,238				
Valencia	2,601	885,905	1,916	688,490				
Total	**7,327**	**2,917,354**	**6,303**	**2,746,859**			%	%
Average		398 trees/ha		436 trees/ha		trees/ha		



Note: 7% of citrus categories were unknown in 2008. A linear extrapolation was applied to account for the 7%.
Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery.

Dominant variety

There was no change in the order of dominant citrus varieties in the Riverland between 2003 and 2008.

	Dominant variety		
	2003	2008	2011
1	Valencia	Valencia	
2	Washington	Washington	
3	Late Lane	Late Lane	
4	Navelina	Navelina	
5	Imperial	Imperial	

Riverland citrus rootstocks, irrigation and properties

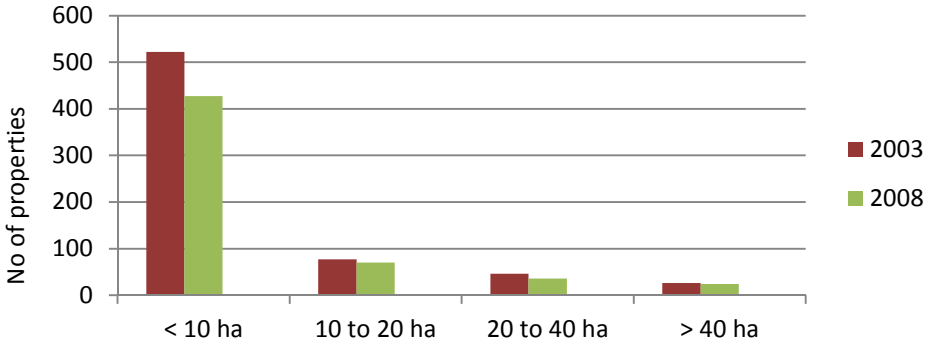
Table 14 – Riverland dominant rootstock and irrigation type

	Dominant rootstock	Dominant irrigation		
	2008	2003	2008	2011
Grapefruit	Citrange	Low level	Low level	
Lemon	Citrange	Low level	Low level	
Lime	Citrange	Low level	Low level	
Mandarin	Citrange	Low level	Drip	
Navel	Citrange	Low level	Low level	
Orange	Citrange	Low level	Drip	
Pummelo	Citrange	Micro Sprinkler	Low level	
Tangelo	Citrange	Drip	Drip	
Valencia	Rough Lemon	Low level	Low level	
Total	**Citrange**	**Low level**	**Low level**	

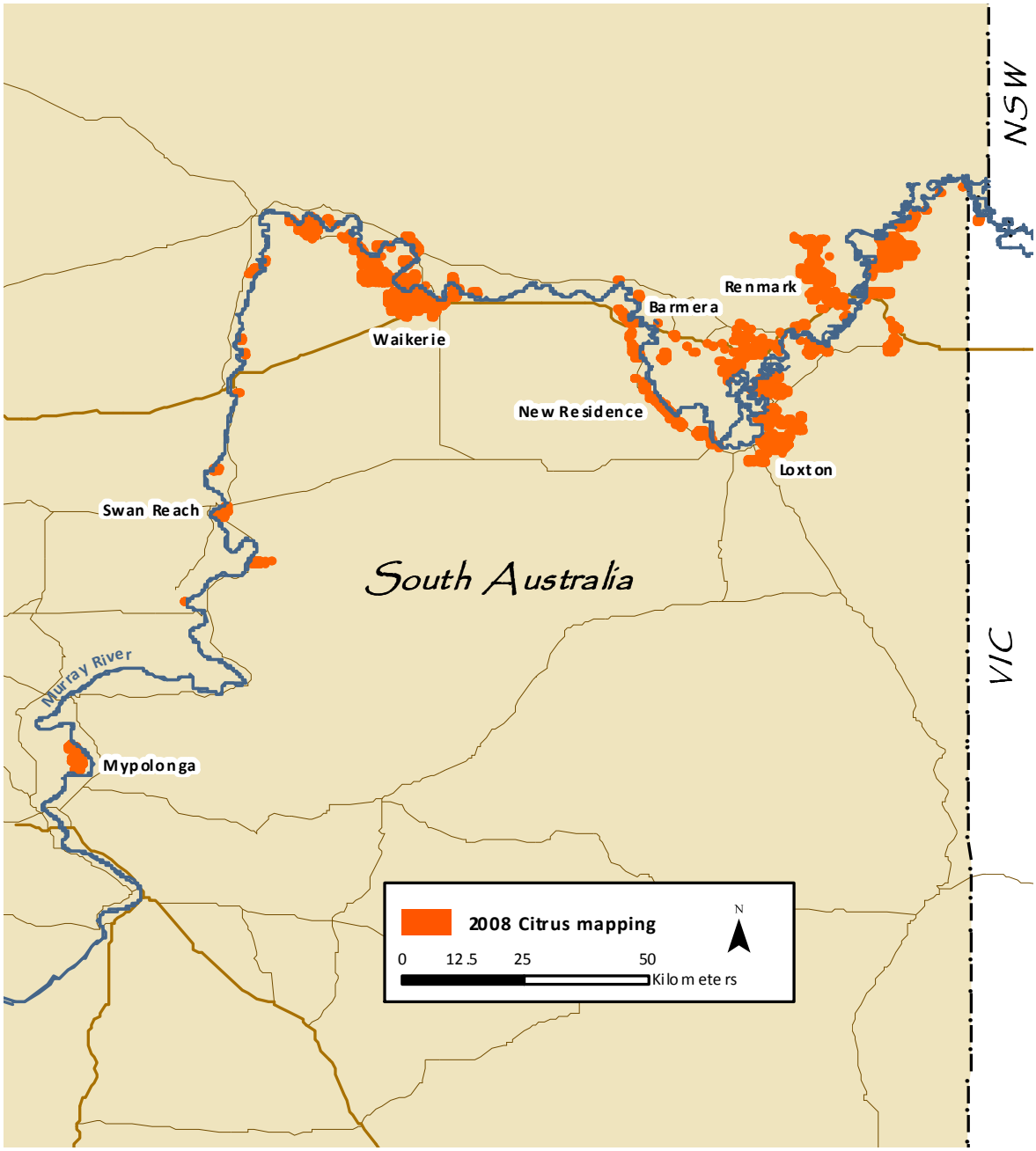
Riverland citrus properties

Table 15 – Riverland citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	522	427			%
10 to 20 ha	77	70			%
20 to 40 ha	46	36			%
> 40 ha	26	24			%
Total properties	**671**	**557**			**%**
Average property size (ha of citrus)	**10.9**	**11.3**			



Map 3 – Riverland citrus map



1.4.2 Riverland 2008 citrus varieties

CATEGORY		VARIETY	2008 HECTARES			
			Bearing*	Non-Bearing	Total	
Citrus		***not surveyed***	232	231	463	7%
Grapefruit	Grapefruit	Grapefruit	9	0	9	0%
		Marsh	19	1	20	0%
		Oroblanco	0	0	0	0%
		Thompson	0	0	0	0%
	Grapefruit-Red	Flame	0	0	0	0%
		Ray Ruby	0	0	0	0%
		Rio Red	4	0	4	0%
		Ruby	0	0	0	0%
		Ruby Red	2	0	2	0%
		Star Ruby	13	1	13	0%
Lemon		Eureka	74	11	85	1%
		Fino	4	0	4	0%
		Lambert	0	0	0	0%
		Lemonade	2	0	2	0%
		Lisbon	78	7	85	1%
		Verna	6	0	6	0%
		Villa franca	1	0	1	0%
Lime		Blood Lime	0	0	0	0%
		Outback	1	0	1	0%
		Sunrise	0	0	0	0%
		Tahitian	11	4	14	0%
Mandarin	Mandarin	Hansen	0	0	0	0%
		Mandarin	1	0	1	0%
	Mandarin early season	Amigo	5	1	6	0%
		Clementine	32	12	44	1%
		Fallglo	10	1	12	0%
		Feutrell	0	0	0	0%
		Imperial	209	33	241	4%
		Miho Satsuma	0	2	2	0%
		Nova	0	16	16	0%
		Nules	49	2	51	1%
		Okitsu	5	0	5	0%
		Satsuma	20	0	20	0%
	Mandarin mid season	Afourer	7	93	100	2%
		Avana Tardivo	0	7	7	0%
		Daisy	11	45	56	1%
		Dancy	1	0	1	0%
		Ellendale	69	0	69	1%
	Mandarin late season	Emperor	0	0	0	0%
		Kara	5	0	5	0%
		Murcott	84	0	84	1%
		Ortanique	12	4	15	0%
		Topaz	5	16	21	0%
Navel	Navel	Navel	0	0	0	0%
	Navel early season	Cara Cara	11	10	21	0%
		Fisher	1	0	1	0%
		Fukumoto	1	2	3	0%
		Fulwood	2	0	2	0%
		Italian Navelina	1	0	1	0%

Riverland 2008 citrus varieties *continued*

CATEGORY		VARIETY	2008 HECTARES			
			Bearing	Non Bearing	Total	
		Leng	175	40	215	3%
		Navelina	294	68	362	6%
		Newhall	12	0	12	0%
		Pasin	3	0	3	0%
		Ryan	4	1	5	0%
		Spanish Navelina	1	0	1	0%
		Thomson	45	0	45	1%
		Winter Navel	5	0	5	0%
	Navel mid season	Atwood	1	1	2	0%
		Hockney	3	0	3	0%
		Navelate	1	0	1	0%
		Washington	1,021	94	1,114	18%
	Navel late season	Albanese	0	0	0	0%
		Autumn Gold	9	0	9	0%
		Barnfield	110	17	126	2%
		Chislett	68	21	89	1%
		Hutton	26	12	38	1%
		Late Lane	459	154	613	10%
		Murray Gold	2	0	2	0%
		Navel-Late	18	6	24	0%
		Pollock	0	0	0	0%
		Powell	14	1	15	0%
		Rohde	0	1	1	0%
		Summer Gold	9	0	9	0%
		Summer Navel	55	21	76	1%
		Whiffen	3	1	4	0%
		Wilson	66	0	66	1%
Orange	Orange	Hamlin	4	0	5	0%
		Parramatta	0	0	0	0%
		Pera	0	0	0	0%
		Poorman	0	0	0	0%
		Salustiana	0	6	6	0%
		Seville	1	0	1	0%
	Blood Orange	Arnold Blood	2	2	4	0%
		Blood Orange	6	0	6	0%
Pummelo		Pummelo	0	1	2	0%
Tangelo		Minneola	135	4	138	2%
		Orlando	0	0	0	0%
		Seminole	2	0	2	0%
		Tangelo	22	11	33	1%
Valencia	Valencia	Berri	1	0	1	0%
		Lord Howe	6	0	6	0%
		Valencia	1,727	15	1,743	28%
	Seedless Valencia	Delta	5	5	10	0%
		Midnight	7	9	16	0%
		Valencia Seedless	1	0	1	0%
		TOTAL	**5,317**	**986**	**6,303**	**100%**

*Bearing trees were planted six or more years ago (i.e. planted in 2005 or earlier) or were reworked three or more years ago (i.e. reworked in 2008 or earlier).

1.4.3 Riverland change 2003 to 2008

CATEGORY		VARIETY	2008 hectare	Change 2003-08	2008 trees	Change 2003-08
Citrus		***not surveyed***	463	+194	261,303	+150,732
Grapefruit	Grapefruit	*unspecified*	9	0	3,646	+13
		Marsh	20	-34	6,256	-11,852
		Oroblanco	0	0	66	-80
		Thompson	0	-2	0	-415
	Grapefruit red/pink flesh	Flame	0	0	55	0
		Ray Ruby	0	0	266	0
		Rio Red	4	0	2,447	+25
		Ruby	0	0	132	+75
		Ruby Red	2	0	750	-151
		Star Ruby	13	+1	8,177	+290
Lemon		Eureka	85	-44	33,914	-15,751
		Fino	4	0	1,388	-129
		Lambert	0	0	0	-140
		Lemonade	2	0	1,337	-78
		Lisbon	85	-40	29,504	-10,399
		Verna	6	-3	2,370	-1,552
		Villa Franca	1	0	231	+135
Lime		Blood Lime	0	0	44	0
		Outback	1	0	116	0
		Sunrise	0	-2	0	-806
		Tahitian	14	-1	4,575	-817
Mandarin	Mandarin	Hansen	0	-1	30	-418
		Mandarin	1	0	191	+72
	Mandarin early season	Amigo	6	+1	2,541	+494
		Clementine	44	-9	28,190	-4,075
		Fallglo	12	-7	8,349	-7,230
		Feutrell	0	0	17	-44
		Imperial	241	-9	107,145	+5,047
		Miho Satsuma	2	0	1,650	0
		Nova	16	+15	10,320	+9,940
		Nules	51	-2	36,250	-1,071
		Okitsu	5	0	5,155	+320
		Satsuma	20	0	18,812	-38
	Mandarin mid season	Afourer	100	+85	59,833	+47,947
		Avana Tardivo	7	+7	3,907	+3,907
		Daisy	56	+16	27,701	+10,581
		Dancy	1	-4	367	-972
		Ellendale	69	-52	30,245	-20,655
	Mandarin late season	Emperor	0	0	0	-5
		Kara	5	-13	1,341	-6,694
		Murcott	84	-26	50,563	-11,472
		Ortanique	15	+3	5,888	+1,199
		Topaz	21	+10	13,787	+6,907
Navel		*unspecified*	0	-46	8	-16,888
	Navel early season	Cara Cara	21	+9	8,712	+3,835
		Fisher	1	-1	594	-550
		Fukumoto	3	-3	1,745	-899
		Fulwood	2	0	1,342	0
		Italian Navelina	1	0	242	0

Riverland change 2003 to 2008 *continued*

CATEGORY		VARIETY	2008 hectare	Change 2003-08	2008 trees	Change 2003-08
	Navel	Leng	215	-30	86,654	-5,421
	early	Navelina	362	-7	188,343	-4,754
	season	Newhall	12	-2	9,462	-1,302
	continued	Pasin	3	-3	1,365	-1,662
		Ryan	5	+2	1,923	+1,010
		Spanish Navelina	1	0	261	0
		Thomson	45	-22	16,564	-7,842
		Winter Navel	5	0	1,442	-109
	Navel	Atwood	2	+1	790	+630
	mid	Hockney	3	0	1,397	-72
	season	Navelate	1	+1	213	+213
	Navel	Albanese	0	0	96	0
	late	Autumn Gold	9	0	4,691	-101
	season	Barnfield	126	-1	57,372	-1,020
		Chislett	89	+7	46,997	+4,106
		Hutton	38	+9	17,923	+4,235
		Late Lane	613	+32	273,606	+25,688
		Murray Gold	2	0	1,167	-75
		Navel-Late	24	-83	8,141	-30,002
		Pollock	0	-1	0	-499
		Powell	15	0	6,683	-57
		Rohde	1	+1	486	+486
		Summer Gold	9	0	6,144	-18
		Summer Navel	76	+76	29,775	+29,775
		Whiffen	4	+1	2,165	+233
		Wilson	66	-12	29,137	-5,811
Orange	Orange	Hamlin	5	0	3,640	+200
		Parramatta	0	-1	0	-333
		Pera	0	0	110	+110
		Poorman	0	0	50	0
		Salustiana	6	+6	5,940	+5,940
		Seville	1	-2	271	-813
	Blood Orange	Arnold Blood	4	+1	1,516	+310
		Blood Orange	6	-2	4,791	-1,028
Pummelo		Pummelo	2	+1	804	+689
Tangelo		Minneola	138	-19	68,726	-10,443
		Orlando	0	-3	104	-1,240
		Seminole	2	0	737	0
		Tangelo	33	-2	21,136	-959
Valencia	Valencia	Berri	1	0	212	0
		Lord Howe	6	+3	1,825	+1,024
		Valencia	1,743	-738	608,941	-233,122
	Seedless	Delta	10	+3	4,603	+1,800
	Valencia	Midnight	16	+2	7,089	+965
		Valencia Seedless	1	0	325	0
		TOTAL	**6,303**	**-1,024**	**2,746,859**	**-170,495**

1.5 Queensland

Surveys of Queensland citrus growers were undertaken by SunRISE 21 in collaboration with Nathan Hancock, Citrus Australia. Survey maps were prepared by SunRISE 21 and mailed out to growers. The survey maps and 2011 data entry were based on 2009 SPOT satellite imagery (2.5m resolution) and 2010 Google Earth.

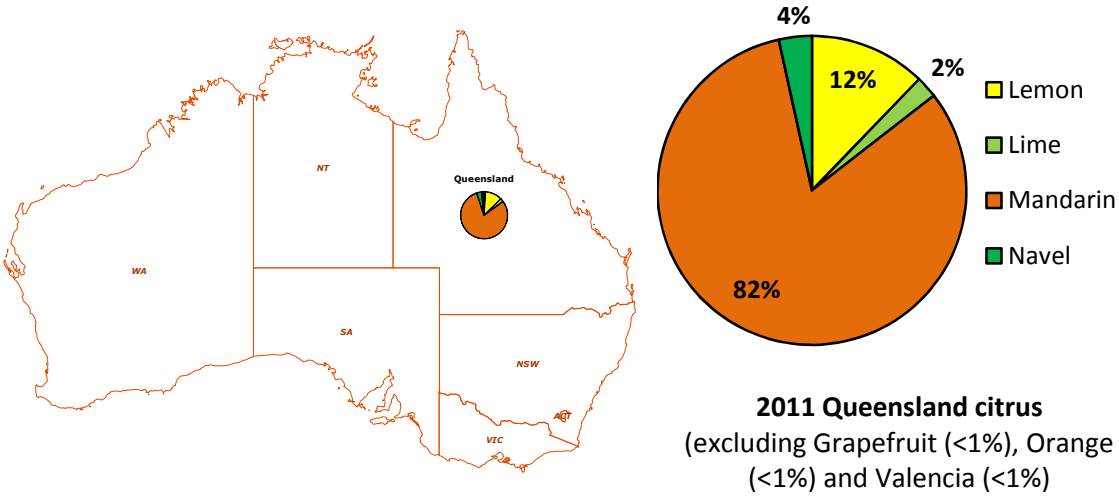
The main Queensland citrus growing regions are mapped, along with six new citrus properties at Mareeba and one at Eliott. There are mixed farms scattered along the Queensland coast that account for a significant proportion of Australia's lime production, but these have not been mapped for inclusion in the NPD.

1.5.1 Queensland citrus

In summary for Queensland citrus:

- In 2011; 3,592 hectares of citrus (1.48 million trees) across 84 citrus properties were mapped and 420 hectares were new plantings since 2008. New plantings are predominantly Murcott and Imperial mandarins
- The area of citrus declined from 4,645 hectares in 2003 to 3,850 hectares in 2008, then 3,592 hectares in 2011 (-27%)
- The number of citrus trees declined from 1.90 million in 2003 to 1.56 million in 2008, then to 1.48 million trees in 2011
- Gayndah and Mundubbera predominantly grow Imperial and Murcott mandarins, while the remainder of Queensland are predominanty lemon and lime.
- Queensland citrus is predominantly 'undertree' irrigation and grown on Troyer rootstock.
- The number of citrus growers declined from 104 growers in 2003 to 87 in 2008, then to 84 growers in 2011
- The average citrus area per property has also decreased from 44.7 hectares of citrus per property in 2003 to 44.3 hectares in 2008 and 42.7 hectares in 2011

Figure 4 – Queensland citrus



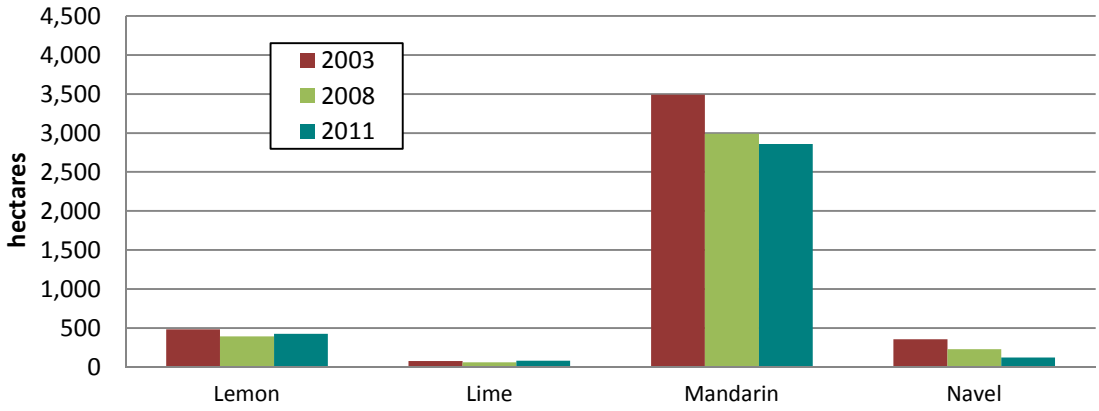
2011 Queensland citrus
(excluding Grapefruit (<1%), Orange (<1%) and Valencia (<1%)

Queensland citrus 2003 to 2011

The area of citrus in Queensland declined from 4,645 hectares in 2003 to 3,850 hectares in 2008 then to 3,592 hectares in 2011. The overall change from 2003 to 2011 is a 23% decline in area planted (-1,054 hectares) and a 22% decrease in tree numbers (-421,301 trees) as shown in Table 16.

Table 16 – Queensland citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Citron								
Cumquat	0	0	0	0	1	362	+1	+362
Grapefruit	78	27,884	62	22,198	31	10,770	-46	-17,114
Lemon	484	196,783	394	142,061	425	157,839	-59	-38,944
Lime	74	32,357	61	22,065	80	29,142	+5	-3,215
Mandarin	3,492	1,486,658	2,990	1,258,479	2,860	1,213,792	-632	-272,866
Navel	353	106,827	226	71,525	120	40,812	-234	-66,015
Orange	9	3,255	21	10,892	19	10,188	+10	+6,933
Pummelo	1	112	0	0	0	144	-1	+32
Tangelo	20	10,415	18	9,545	9	4,113	-11	-6,302
Valencia	135	39,604	79	24,308	47	15,431	-87	-24,173
Total	**4,645**	**1,903,895**	**3,850**	**1,561,073**	**3,592**	**1,482,594**	**-1,054 23%**	**-421,301 22%**
Average	410 trees/ha		405 trees/ha		413 trees/ha			



Note: 1% of citrus categories are unknown. A linear extrapolation was applied to account for the 1%
Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

Murcott mandarin has remained the dominant citrus variety in Queensland 2003 to 2011

	Dominant variety		
	2003	2008	2011
1	Murcott	Murcott	Murcott
2	Imperial	Imperial	Imperial
3	Eureka	Eureka	Eureka
4	Washington	Hickson	Murcott LS
5	Hickson	Murcott LS	Hickson

Queensland citrus rootstocks, irrigation and properties

Queensland citrus is predominantly low level irrigation and grown on a Troyer rootstock as shown in Table 17.

Table 17 – Queensland dominant rootstock and irrigation type

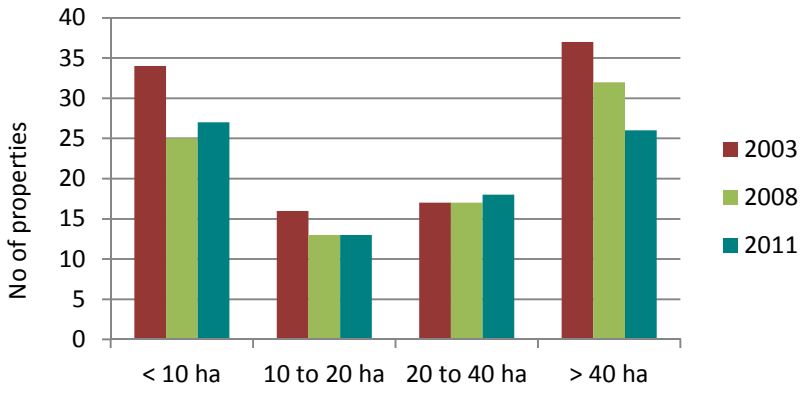
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Grapefruit	Swingle	Low level	Low level	Low level
Lemon	Benton	Low level	Low level	Low level
Lime	Troyer	Low level	Low level	Low level
Mandarin	Troyer	Low level	Low level	Low level
Navel	Troyer	Low level	Low level	Low level
Orange	Troyer	Low level	Low level	Low level
Pummelo	Troyer	Low level		Low level
Tangelo	Troyer	Low level	Low level	Low level
Valencia	Troyer	Low level	Low level	Low level
Total	**Troyer**	**Low level**	**Low level**	**Low level**

Queensland citrus properties

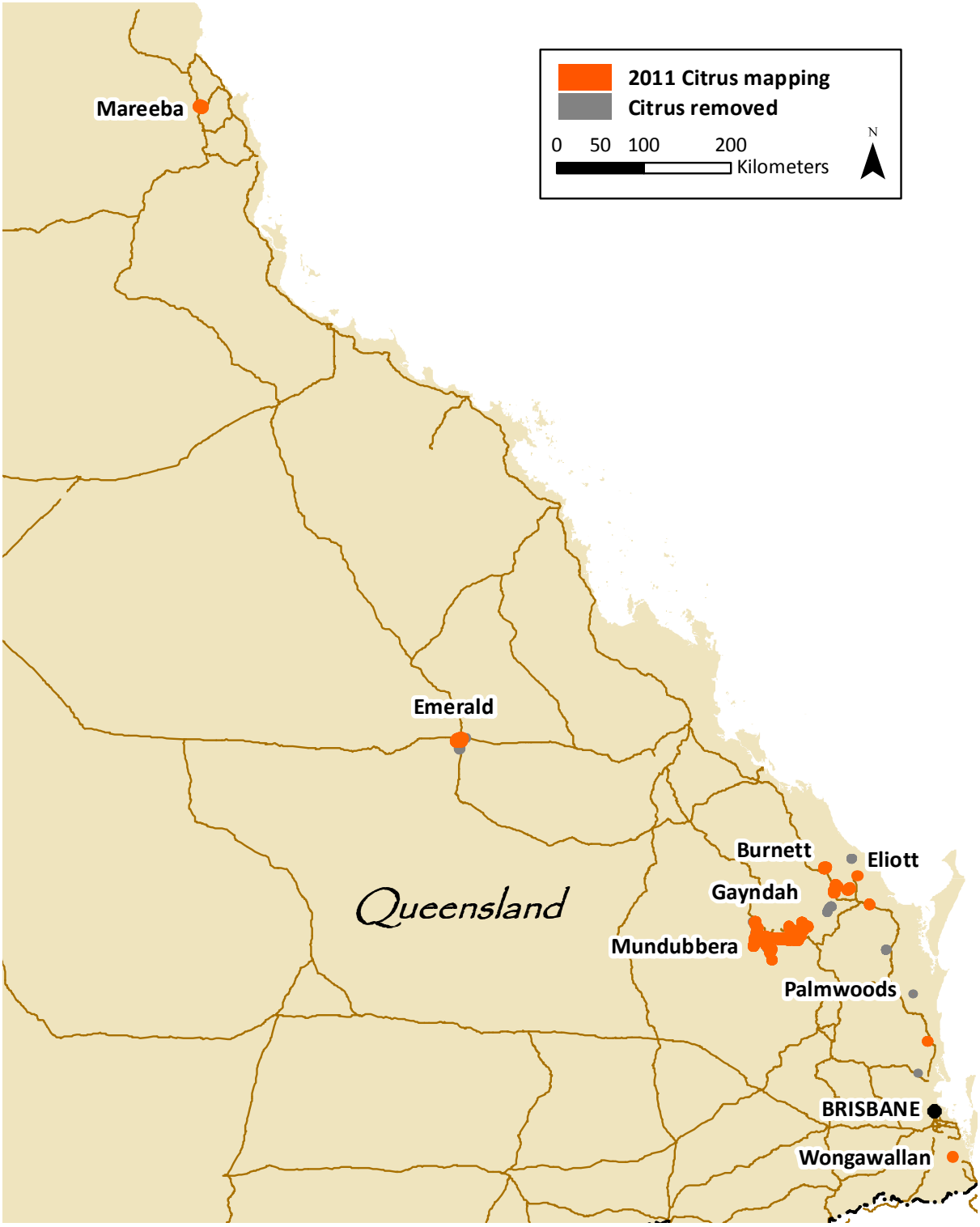
The number of citrus growers declined by 20 between 2003 and 2011, and the average property size also decreased from 44.7 hectares to 42.7 hectares of citrus per property as shown in Table 18.

Table 18 – Queensland citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	34	25	27	-7	-7%
10 to 20 ha	16	13	13	-3	-3%
20 to 40 ha	17	17	18	+1	+1%
> 40 ha	37	32	26	-11	-11%
Total properties	**104**	**87**	**84**	**-20**	**-19%**
Average property size (ha of citrus)	**44.7**	**44.3**	**42.7**		



Map 4 – Queensland citrus map



1.5.2 Queensland 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-Bearing	Total	
Citrus		***Not Surveyed***	**9**	**16**	**25**	**1%**
Cumquat		Cumquat	0	1	1	**0%**
Grapefruit	white flesh	Marsh	9	0	9	0%
		Oroblanco	0	0	0	0%
	pink & red flesh	Henderson	0	0	0	0%
		Rio Red	4	0	4	0%
		Ruby, Redblush	8	0	8	0%
		Star Ruby	9	1	10	0%
Lemon		*Unspecified*	2	16	18	1%
		Eureka	210	82	292	8%
		Eureka Seedless	3	43	46	1%
		Fino	3	0	3	0%
		Lemonade	0	0	0	0%
		Limonera	2	0	2	0%
		Lisbon	60	0	60	2%
Lime		*Unspecified*	3	20	23	1%
		Tahitian	28	28	56	2%
Mandarin	Mandarin	*Unspecified*	0	0	0	0%
		Golden Nugget	0	4	4	0%
		Empress	44	3	46	1%
		Monarch	3	0	3	0%
		Success	9	0	9	0%
	Mandarin early season	Fremont	28	0	28	1%
		Imperial	689	228	917	26%
		Miho Wase Satsuma	0	0	0	0%
		Nova	40	0	40	1%
	Mandarin mid season	Afourer	3	90	93	3%
		Avana	2	28	30	1%
		Daisy	18	8	26	1%
		Ellendale	24	0	24	1%
		Ellenor	7	0	7	0%
		Hickson	141	0	141	4%
		Page	0	0	0	0%
		Sunburst	20	0	20	1%
		Taylor Lee	59	0	59	2%
	Mandarin late season	Murcott	742	318	1,060	30%
		Murcott Honey	2	24	26	1%
		Murcott LS	14	248	262	7%
		Topaz	1	0	1	0%
Navel	Navel early season	Navelina	19	0	19	1%
		Nucellar Leng	1	0	1	0%
		Pasin	0	0	0	0%
	mid season	Washington	95	4	98	3%
	late season	Late Lane	0	0	0	0%
Orange	Orange	*Unspecified*	0	0	0	0%
		Honey Ball	3	9	12	0%
		Joppa	5	0	5	0%
	Blood orange	Arnold Blood	1	1	2	0%
		Blood Orange	0	0	0	0%
Tangelo		Minneola	9	0	9	0%
Valencia	Valencia	Valencia	12	0	12	0%
		Valencia Late	23	0	23	1%
	Seedless Valencia	Midknight	11	1	12	0%
		TOTAL	**2,375**	**1,217**	**3,592**	**100%**

*Bearing trees were planted six or more years ago (i.e. planted in 2005 or earlier) or were reworked three or more years ago (i.e. reworked in 2008 or earlier).

1.5.3 Queensland change since 2003

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Citrus		***not surveyed***	**25**	**+7**	**9,735**	**+3,532**
Cumquat		Cumquat	1	+1	360	+360
Grapefruit	white flesh	Marsh	9	-26	3,461	-8,511
		Oroblanco	0	-1	0	-288
	pink & red flesh	Henderson	0	0	0	-63
		Rio Red	4	-4	1,560	-1,328
		Ruby, red blush	8	-4	2,157	-2,177
		Star Ruby	10	-11	3,521	-4,707
Lemon		*Unspecified*	19	+16	6,411	+5,500
		Eureka	292	-115	110,136	-64,171
		Eureka Seedless	46	+46	21,834	+21,834
		Fino	3	0	964	0
		Lemonade	0	0	50	-63
		Limonera	2	0	890	0
		Lisbon	60	0	16,518	-195
Lime		*Unspecified*	23	+22	11,470	+10,520
		Tahitian	56	-17	17,481	-13,821
Mandarin	Mandarin	*Unspecified*		-1		-550
		Golden Nugget	4		1,849	+1,849
		Empress	46	+9	15,165	+2,750
		Monarch	3	0	1,094	0
		Success	9	-12	3,457	-4,273
	Mandarin early season	Fremont	28	-25	14,283	-11,864
		Imperial	917	-165	367,999	-93,379
		Miho Satsuma	0	-1		-600
		Nova	40	-79	16,896	-36,563
	Mandarin mid season	Afourer	93	+85	41,887	+37,488
		Avana Tardivo	30	+30	10,921	+10,921
		Daisy	26	+14	13,224	+7,308
		Ellendale	24	-166	8,635	-47,009
		Ellenor	7	-34	3,787	-11,042
		Hickson	141	-102	53,552	-37,234
		Page	0	-5	0	-1,243
		Sunburst	20	-35	11,730	-17,764
		Taylor Lee	59	-71	27,129	-27,214
	Mandarin late season	Murcott	1,060	-415	465,771	-195,509
		Murcott Honey	26	+26	15,666	+15,666
		Murcott LS	261	+261	116,203	+116,203
		Topaz	1	-1	200	-307
Navel	Navel early season	Navelina	19	-36	9,242	-15,875
		Nucellar Leng	1	0	280	0
		Pasin	0	0	200	+200
	mid season	Washington	99	-195	30,822	-49,676
	late season	Late Lane	0	-2		-584
Orange	Orange	*Unspecified*				
		Honey Ball	12	+12	7,443	+7,443
		Joppa	5	-3	1,576	-1,039
	Blood orange	Arnold Blood	0	0	0	0
		Blood Orange	0	0	0	0
Pummelo		Pummelo	0	-1	143	+31
Tangelo		Minneola	9	-11	4,086	-6,295
Valencia	Valencia	Valencia	12	-31	3,278	-8,021
		Valencia Late	23	-57	6,591	-16,787
	Seedless Valencia	Midknight	12	+1	5,461	+663
		TOTAL	**3,592**	**-1,057**	**1,482,594**	**-421,301**

1.6 Western Australia

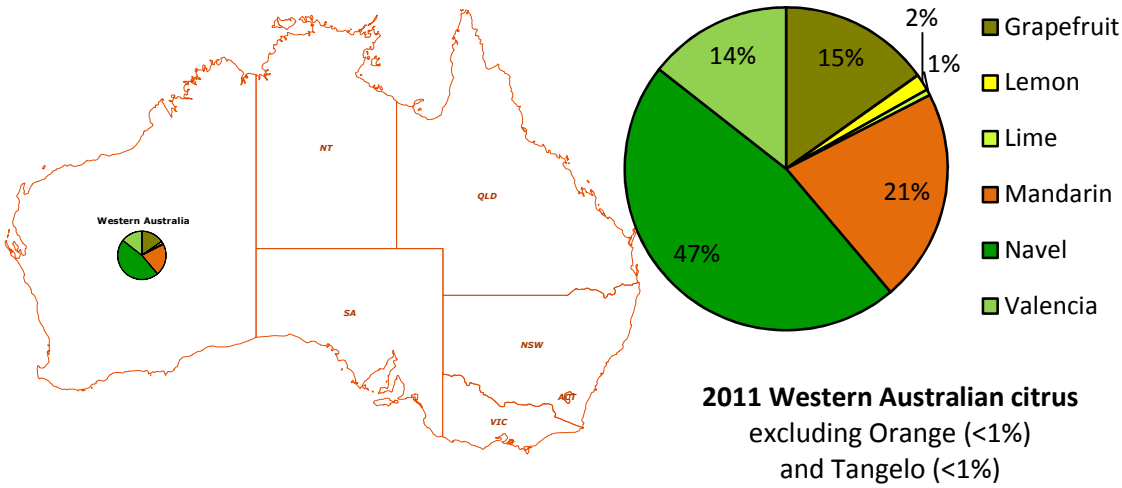
The 2011 citrus census of Western Australian was undertaken by SunRISE 21 in collaboration with Citrus Australia. Census survey maps, mapping and data entry were based on 2010 Landgate imagery, 2010 and 2011 NearMaps, and 2010 and 2011 Google Earth.

1.6.1 Western Australia citrus

In summary for Western Australian citrus:

- In 2011; 1,561 hectares of citrus (813,433 trees) across 184 citrus properties were mapped and 292 hectares were new plantings since 2008. New plantings are predominantly navels
- The area of citrus has increased from 1,042 hectares in 2003 to 1,356 hectares in 2008, then 1,561 hectares in 2011; a 38% increase from 2003 to 2011
- The number of citrus trees has increased from 463,702 in 2003 to 671,748 in 2008, then to 813,433 trees in 2011; a 52% increase from 2003 to 2011
- Western Australia citrus growers predominantly grow Late Lane and Washington navels, Valencia oranges and Imperial mandarins
- Western Australian citrus is predominantly drip irrigation and grown on Troyer rootstock.
- The number of citrus growers has declined from 209 growers in 2003 to 190 in 2008, then 184 growers in 2011
- The average citrus area per property has increased from 5 hectares in 2003 to 7 hectares in 2008 then to 9 hectares in 2011

Figure 5 – Western Australia citrus



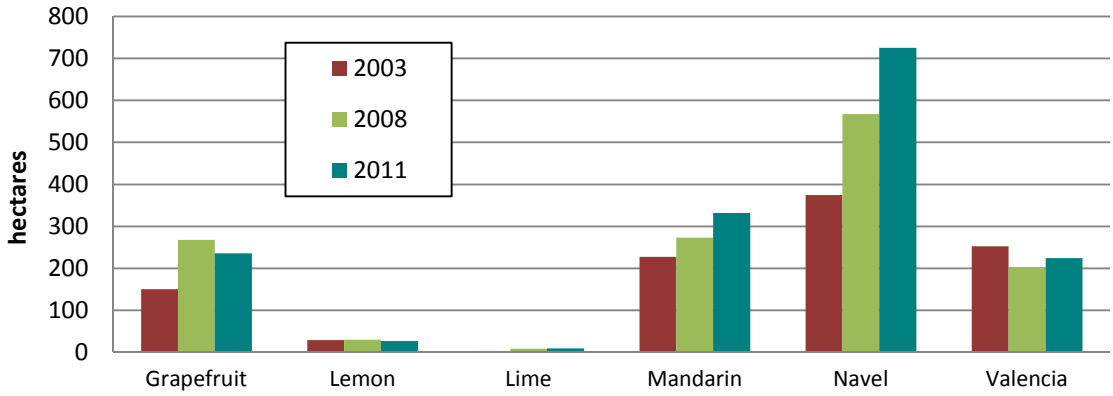
2011 Western Australian citrus
excluding Orange (<1%)
and Tangelo (<1%)

Western Australia citrus 2003 to 2011

The area of citrus in Western Australia has increased from 1,042 hectares in 2003 to 1,356 hectares in 2008 and then to 1,561 hectares in 2011. The overall change from 2003 to 2011 is a 50% increase in area planted (519 hectares) and an increase of 75% in tree numbers (349,731 trees) as shown in Table 19.

Table 19 – Western Australia citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Grapefruit	150	50,473	268	89,228	235	79,062	+85	+28,589
Lemon	28	15,590	30	15,601	26	14,460	-2	-1,130
Lime	3	979	8	3,171	9	3,689	+6	+2,710
Mandarin	227	112,341	273	147,165	332	189,285	+104	+76,944
Navel	375	184,293	568	314,080	726	410,431	+351	+226,137
Orange	1	446	2	1,279	2	1,230	+1	+785
Pummelo	0	10	0	10	0	9	0	-1
Tangelo	5	2,405	5	2,213	7	3,576	+2	+1,172
Valencia	252	97,165	203	99,004	224	111,690	-29	+14,525
Total	**1,042**	**463,702**	**1,356**	**671,748**	**1,561**	**813,433**	**+519 +50%**	**+349,731 +75%**
Average	445 trees/ha		495 trees/ha		521 trees/ha			



Note: 7% of citrus categories are unknown. A linear extrapolation was applied to account for the 7%
Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

The dominant citrus variety in Western Australia changed from Valencia in 2003 to Late Lane navel in 2008 and 2011

	Dominant variety		
	2003	2008	2011
1	Valencia	LateLane	LateLane
2	Washington	Valencia	Washington
3	LateLane	Washington	Valencia
4	Imperial	RioRed	Imperial
5	Flame	Flame	RioRed

Western Australia citrus rootstocks, irrigation and properties

Western Australia citrus is predominantly drip irrigated and grown on a Troyer rootstock as shown in Table 20.

Table 20 – Western Australia dominant rootstock and irrigation type

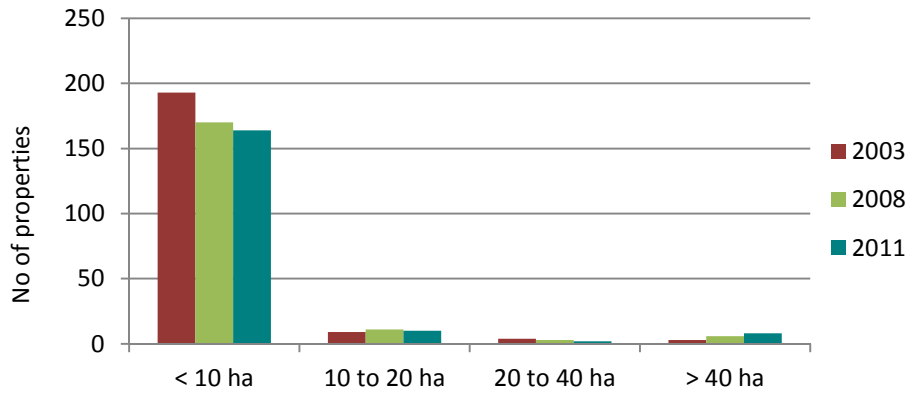
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Grapefruit	Swingle	Low level	Low level	Low level
Lemon	Rough Lemon	Low level	Low level	Low level
Lime	Troyer	Low level	Drip	Drip
Mandarin	Troyer	Drip	Drip	Drip
Navel	Troyer	Low level	Low level	Drip
Orange	Swingle	Low level	Drip	Drip
Pummelo	Trifoliata	Drip	Drip	Drip
Tangelo	Troyer	Low level	Low level	Low level
Valencia	Troyer	Drip	Drip	Drip
Total	**Troyer**	**Low level**	**Drip**	**Drip**

Western Australia citrus properties

While the number of citrus growers declined by 25 between 2003 and 2011; the average property size increased from 5.0 hectares to 8.5 hectares of citrus per property as shown in Table 21.

Table 21 – Western Australia citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	193	170	164	-29	-14%
10 to 20 ha	9	11	10	+1	0%
20 to 40 ha	4	3	2	-2	-1%
> 40 ha	3	6	8	+5	+2%
Total properties	**209**	**190**	**184**	**-25**	**-12%**
Average property size (ha of citrus)	**5.0**	**7.1**	**8.5**		



Map 5 – Western Australia citrus map

1.6.2 Western Australia 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-Bearing	Total	
Citrus		***not surveyed***	**102**	**9**	**111**	**7%**
Grapefruit	Grapefruit white flesh	*unspecified*	0	0	0	0%
		Marsh	2	0	2	0%
	Grapefruit pink & red flesh	Flame	98	1	98	6%
		Henderson	1	0	1	0%
		Ray Ruby	9	0	9	1%
		Rio Red	99	3	103	7%
		Ruby, Redblush	0	0	0	0%
		Star Ruby	4	0	4	0%
Lemon		*unspecified*	4	0	4	0%
		Eureka	14	6	20	1%
		Meyer	1	0	1	0%
		Verna	0	0	0	0%
Lime		*unspecified*	0	0	0	0%
		Tahitian	2	7	8	1%
		West Indian	0	0	0	0%
Mandarin	Mandarin	*unspecified*	3	0	3	0%
		Darling	1	0	1	0%
	Mandarin early season	Caffin Clementine	0	1	1	0%
		Clementine	5	3	8	1%
		Imperial	72	41	113	7%
		Marisol Clementine	1	0	1	0%
		Miho Wase Satsuma	0	0	1	0%
		Nules	8	18	27	2%
		Okitsu Wase Satsuma	0	0	1	0%
		Satsuma	1	0	2	0%
	Mandarin mid season	Afourer	0	37	38	2%
		Avana Tardivo	0	0	0	0%
		Daisy	3	13	16	1%
		Dancy	1	0	1	0%
		Ellendale	6	0	6	0%
		Hickson	26	23	49	3%
		Oroval	0	0	0	0%
		Parker	0	0	0	0%
		TDE Mandarin	0	0	0	0%
	Mandarin late season	Emperor	2	0	3	0%
		Hansen	0	0	0	0%
		Kara	0	0	0	0%
		Murcott	10	0	10	1%
		Murcott Honey	1	0	1	0%
		Mystique	14	13	28	2%
		Topaz	0	0	0	0%

Western Australia 2011 citrus varieties *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-Bearing		Total
Navel	Navel	*unspecified*	0	0	0	0%
	Navel	Atwood	0	2	2	0%
	early season	Fukumoto	2	0	2	0%
		Leng	6	11	17	1%
		M7	0	15	15	1%
		Navelina	46	38	84	5%
		Newhall	13	42	55	3%
		Pasin	0	0	0	0%
		Rosey Red	1	3	5	0%
		Ryan	0	0	0	0%
		Thomson	0	0	0	0%
	Navel	Cara Cara	9	18	27	2%
	mid season	Washington	81	114	195	13%
	Navel	Autumn Gold	3	0	3	0%
	late season	Barnfield	11	0	11	1%
		Chislett	8	24	32	2%
		Late Lane	91	118	209	13%
		Powell	5	0	5	0%
		Rohde	0	11	11	1%
		Summer Gold	0	0	0	0%
		Wilson	0	0	0	0%
Orange	Blood Orange	*unspecified*	0	0	0	0%
	Sweet	Acidless Orange	0	0	0	0%
		Salustiana	1	0	1	0%
	Sour	Seville	0	0	0	0%
Pummelo	Pummelo	Pummelo	0	0	0	0%
Tangelo	Tangelo	*unspecified*	0	0	0	0%
		Minneola	4	3	6	0%
Valencia	Valencia	Benyenda	0	0	0	0%
		Berri	1	0	1	0%
		Keenan	0	0	0	0%
		Smith	0	0	0	0%
		Valencia	154	20	174	11%
	Valencia Seedless	Midknight	0	32	32	2%
		Valencia Seedless	1	0	1	0%
		TOTAL	**931**	**630**	**1,561**	**100%**

*Bearing trees were planted six or more years ago (i.e. planted in 2005 or earlier) or were reworked three or more years ago (i.e. reworked in 2008 or earlier).

1.6.3 Western Australia change since 2003

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Citrus		***not surveyed***	111	-53	35,817	-12,691
Grapefruit	Grapefruit white flesh	*unspecified*	0	0	161	0
		Marsh	2	-4	972	-1,550
	Grapefruit Red flesh	Flame	98	+48	37,907	+18,788
		Henderson	1	-1	400	-275
		Ray Ruby	9	-2	2,179	-554
		Rio Red	103	+52	32,688	+14,148
		Ruby, Redblush	0	0	64	-10
		Star Ruby	4	0	1,210	-159
Lemon		*unspecified*	4		1,846	+130
		Eureka	20	0	11,599	-198
		Meyer	1	0	300	0
		Verna	0	0	78	-68
Lime		*unspecified*	0	0	90	+90
		Tahitian	8	+6	3,437	+2,685
		West Indian	0	0	0	-125
Mandarin	Mandarin	*unspecified*	3	0	541	0
		Darling	1	0	260	0
	Mandarin Early season	Caffin Clementine	1	0	800	+800
		Clementine	8	+5	4,001	+2,753
		Imperial	113	+18	64,270	+15,526
		Marisol Clementine	1	0	540	-126
		Miho Wase Satsuma	1	0	430	+200
		Nules	27	+18	15,291	+10,403
		Okitsu Wase Satsuma	1	-1	200	-450
		Satsuma	2	0	948	-139
	Mandarin Mid season	Afourer	38	+38	25,296	+25,296
		Avana Tardivo	0	0	244	+244
		Daisy	16	+13	10,020	+7,580
		Dancy	1	0	492	-40
		Ellendale	6	-4	2,567	-1,518
		Hickson	49	+17	28,912	+11,257
		Parker	0	0	0	-40
		Oroval	0	0	300	0
		TDE Mandarin	0	0	400	+400
	Mandarin late season	Emperor	3	-2	1,095	-766
		Hansen	0	0	21	-115
		Kara	0	0	40	-25
		Murcott	10	-3	6,323	-1,288
		Murcott Honey	1	0	650	0
		Mystique	28	+16	17,129	+10,409
		Topaz	0	0	180	0

Western Australia change since 2003 *continued*

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Navel	Navel	*unspecified*	0	0	90	+90
	Navel	Atwood	2	+2	900	+900
	early season	Fukumoto	2	0	1,000	0
		Leng	17	+10	11,139	+8,400
		M7	15	+15	11,000	+11,000
		Navelina	84	+31	46,140	+18,100
		Newhall	55	+50	31,697	+28,410
		Pasin	0	0	0	-125
		Rosey Red	5	+4	2,679	+2,373
		Ryan	0	0	200	0
		Thomson	0	0	25	0
	Navel	Cara Cara	27	+18	16,603	+11,048
	mid	Washington	195	+87	114,201	+59,677
	Navel	Autumn Gold	3	+1	1,350	+350
	late season	Barnfield	11	0	6,552	-126
		Chislett	32	+24	17,860	+12,628
		Late Lane	209	+112	122,770	+73,236
		Powell	5	-5	2,221	-3,061
		Rohde	11	+11	5,471	+5,319
		Summer Gold	0	-2	0	-1,000
		Wilson	0	0	336	0
Orange	Blood Orange	*unspecified*	0	0	29	0
	Sweet	Acidless Orange	0	0	230	+110
		Salustiana	1	+1	892	+667
	Sour	Seville	0	0	25	0
Pummelo	Pummelo	Pummelo	0	0	9	0
Tangelo		*unspecified*	0	0	68	0
		Minneola	6	+2	3,351	+1,266
Valencia	Valencia	Benyenda	0	0	125	0
		Berri	1	+1	500	+500
		Keenan	0	0	94	0
		Smith	0	0	120	0
		Valencia	174	-37	81,869	-4,386
	Seedless Valencia	Midknight	32	+32	23,733	+23,733
		Valencia Seedless	1	0	332	-75
		TOTAL	**1,561**	**+519**	**813,433**	**+349,731**

1.7 Central NSW

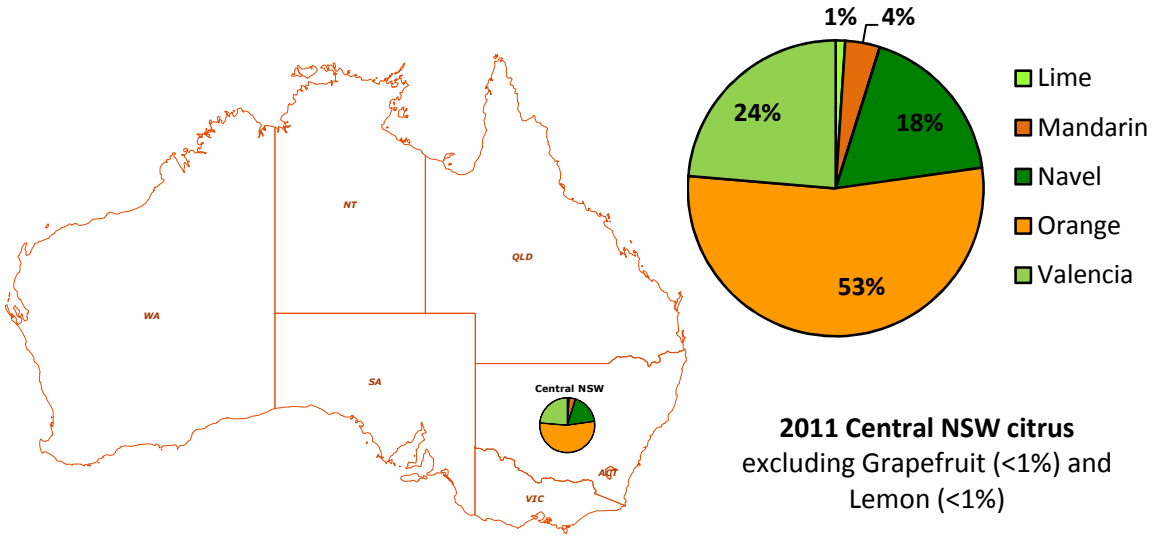
Surveys of Central NSW citrus growers were undertaken in collaboration with Nathan Hancock from Citrus Australia. The survey maps were printed by SunRISE 21, emailed to Nathan who contacted growers from these regions. Growers marked changes on the maps and emailed or faxed to Nathan, then he forwarded to SunRISE21 for data entry. The survey maps and 2011 data entry were based on 2004 and 2010 Google Earth. Five new properties (516 hectares) at Moree, Forbes and Gunnedah were added to the National Plantings Database.

1.7.1 Central NSW citrus

In summary for Central NSW citrus:

- In 2011; 875 hectares of citrus (515,561 trees) across 15 citrus properties were mapped and 230 hectares were new plantings since 2008. New plantings are predominantly Common Orange and Valencia
- The area of citrus has increased from 638 hectares in 2003 to 643 hectares in 2008 and a further increase to 875 hectares in 2011. This increase is due to the additional regions of Moree, Forbes and Gunnedah
- The number of citrus trees has increased from 343,929 in 2003 to 372,842 in 2008, and 515,561 trees in 2011
- Central NSW predominantly grow Salustiana and Hamlin Common Orange
- Central NSW citrus is predominantly drip irrigated and grown on a Trifoliata rootstock
- The number of citrus growers remained the same at 14 growers in 2003 and 2008, then increased by 1 to 15 growers in 2011
- The average citrus area per property remained the same at 46 hectares in 2003 and 2008 then increased to 58 hectares in 2011

Figure 6 – Central NSW citrus



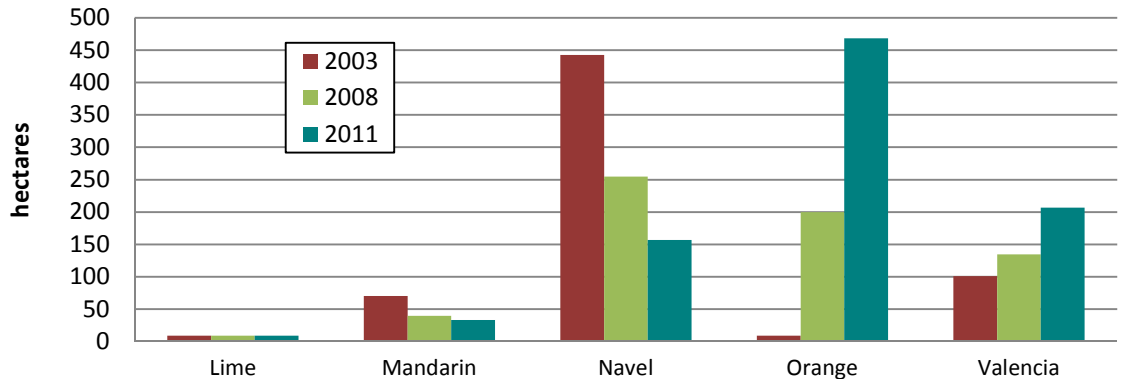
2011 Central NSW citrus
excluding Grapefruit (<1%) and Lemon (<1%)

Central NSW citrus 2003 to 2011

The area of citrus in central NSW increased from 638 hectares in 2003 to 643 hectares in 2008 and 875 hectares in 2011. The overall change from 2003 to 2011 is a 37% increase in area planted (237 hectares) and a 50% increase in tree numbers (171,632 trees) as shown in Table 22.

Table 22 – Central NSW citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Grapefruit	1	423	1	421	1	417	0	-6
Lemon	4	2,034	4	2,023	0	0	-4	-2,034
Lime	9	4,068	9	4,046	9	4,010	0	-58
Mandarin	71	45,920	40	28,312	33	23,532	-37	-22,388
Navel	443	256,276	255	148,158	157	86,739	-286	-169,537
Orange	9	6,669	200	130,362	468	297,410	+459	+290,742
Pummelo	-	-	-	-	-	-	-	-
Tangelo	-	-	-	-	-	-	-	-
Valencia	101	28,538	135	59,520	207	103,452	+106	+74,914
Total	**638**	**343,929**	**643**	**372,842**	**875**	**515,561**	**+237 +37%**	**+171,632 +50%**
Average	539 trees/ha		580 trees/ha		589 trees/ha			



Note: Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

The dominant Central NSW citrus variety changed from Navelina in 2003 to Hamlin in 2008 and Salustiana in 2011

	Dominant variety		
	2003	2008	2011
1	Navelina	Hamlin	Salustiana
2	Washington	Navelina	Hamlin
3	Valencia	Washington	Washington
4	Leng	Salustiana	Valencia
5	Late Lane	Valencia	McMahon

Central NSW citrus rootstocks, irrigation and properties

Central NSW citrus is predominantly drip irrigated and grown on a trifoliata rootstock as shown in Table 23.

Table 23 – Central NSW dominant rootstock and irrigation type

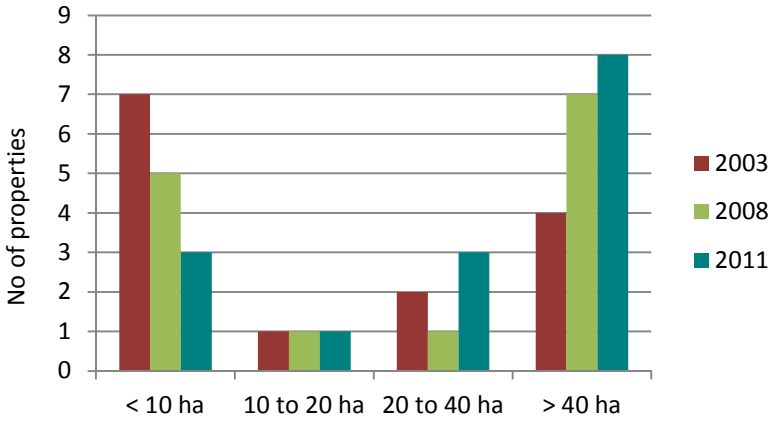
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Grapefruit	Troyer	Overhead	Overhead	Overhead
Lemon		Drip	Drip	
Lime	Trifoliata	Drip	Drip	Drip
Mandarin	Troyer	Drip	Drip	Drip
Navel	Trifoliata	Drip	Drip	Drip
Orange	Citrange	Drip	Drip	Drip
Pummelo	-	-	-	-
Tangelo	-	-	-	-
Valencia	Citrange	Overhead	Overhead	Drip
Total	**Trifoliata**	**Drip**	**Drip**	**Drip**

Central NSW citrus properties

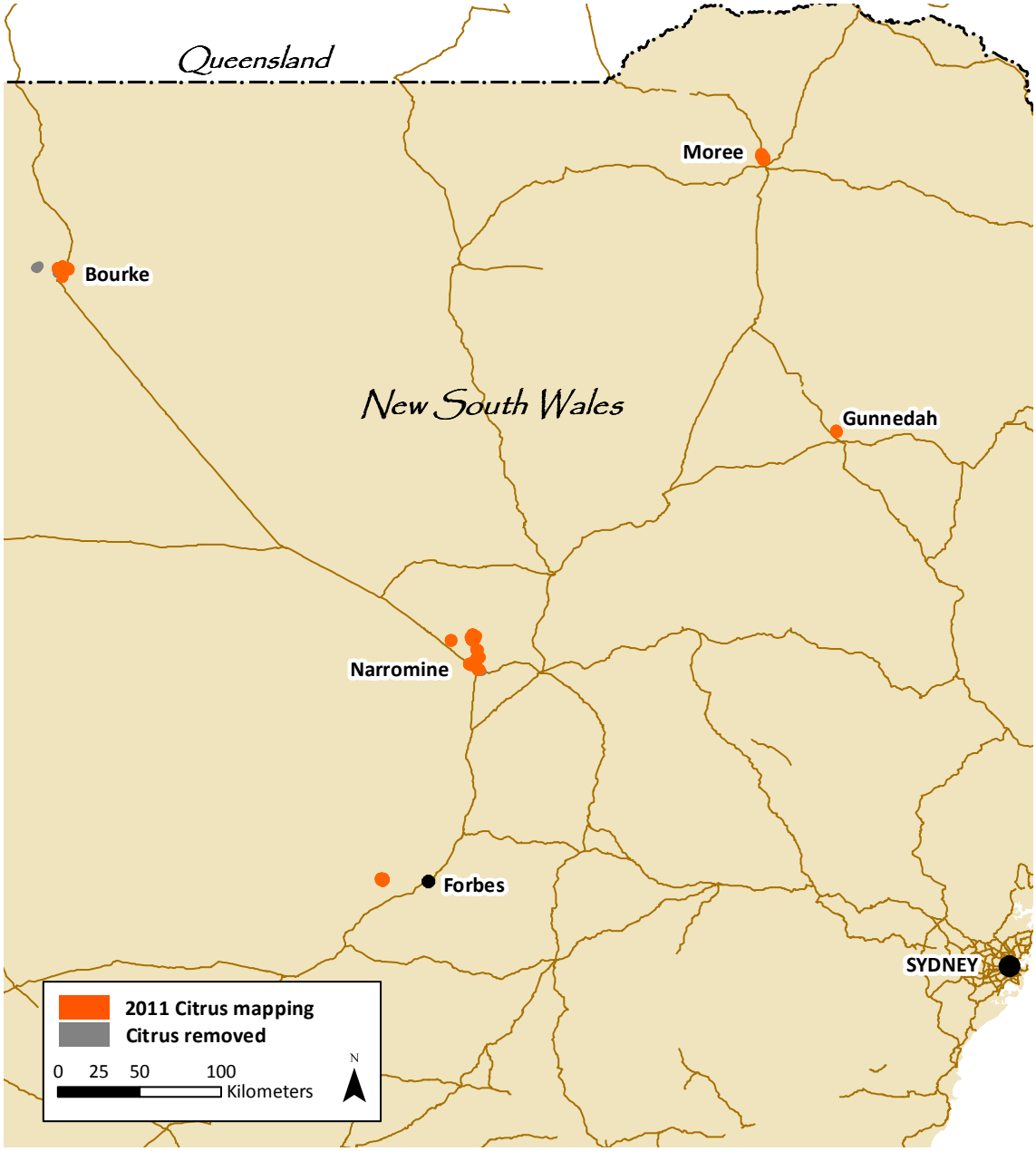
While the number of citrus growers increased by one; the average property size increased from 45.6 to 58.3 hectares of citrus as shown in Table 24.

Table 24 – Central NSW citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	7	5	3	-4	-29%
10 to 20 ha	1	1	1	0	0%
20 to 40 ha	2	1	3	+1	+7%
> 40 ha	4	7	8	+4	+29%
Total properties	**14**	**14**	**15**	**+1**	**+7%**
Average property size (ha of citrus)	**45.6**	**45.9**	**58.3**		



Map 6 – Central NSW citrus map



1.7.2 Central NSW 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-bearing	Total	
Citrus		***not surveyed***	4	0	4	0%
Grapefruit		Marsh	1	0	1	0%
Lime		Tahitian	9	0	9	1%
Mandarin	Mandarin-Early	Imperial	25	0	25	3%
	Mandarin-Late	Murcott	8	0	8	1%
Navel	Navel-Early	Fisher	13	0	13	1%
		Leng	11	0	11	1%
		Navelina	38	0	38	4%
		Newhall	6	0	6	1%
		Ryan	4	0	4	0%
	Navel-Mid	Palmer	2	0	2	0%
		Washington	62	0	62	7%
	Navel-Late	Chislett	3	0	3	0%
		Late Lane	17	0	17	2%
Orange	Orange	Hamlin	12	174	186	21%
		Pineapple	0	39	39	4%
		Salustiana	73	168	241	28%
	Blood Orange	Blood Orange	<1	0	<1	0%
Valencia	Valencia	Ben Yenda	0	32	32	4%
		Keenan	0	31	31	4%
		Valencia	68	0	68	8%
	Valencia-Seedless	McMahon	0	52	52	6%
		Valencia Seedless	23	0	23	3%
		TOTAL	**379**	**496**	**875**	**100%**

*Bearing trees were planted six or more years ago or were reworked three or more years ago

1.7.3 Central NSW change since 2003

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Citrus		***not surveyed***	4	-10	1,280	-4,490
Grapefruit		Marsh	1	0	416	0
Lemon		Eureka	0	-4	0	-2,000
Lime		Tahitian	9	0	4,000	0
Mandarin	early	Amigo	0	-1	0	-736
		Imperial	25	-16	17,638	-9,920
	late	Murcott	8	-19	5,836	-11,020
Navel	early	Fisher	13	-12	7,662	-8,122
		Fukumoto	0	-1	0	-315
		Leng	11	-62	4,088	-40,572
		Navelina	38	-133	31,542	-75,417
		Newhall	6	-12	4,159	-7,707
		Ryan	4	-3	2,316	-2,000
		Thomson	0	-2	0	-1,700
	mid	Palmer	2	0	500	0
		Washington	62	-20	28,134	-7,178
	late	Barnfield	0	-3	0	-1,590
		Chislett	3	-3	960	-1,600
		Late Lane	17	-26	7,163	-19,252
Orange	Orange	Hamlin	186	+177	131,870	+125,363
		Pineapple	39	+39	29,800	+29,800
		Salustiana	241	+241	134,952	+134,952
	Blood Orange	Blood Orange	<1	0	50	0
Valencia	Valencia	Ben Yenda	32	+32	18,228	+18,228
		Keenan	31	+31	17,657	+17,657
		Valencia	68	-8	17,232	-1,699
	Valencia-Seedless	McMahon	52	+52	40,950	+40,950
		Valencia Seedless	23	0	9,128	0
		TOTAL	**875**	**+237**	**515,561**	**+171,632**

1.8 East Coast NSW

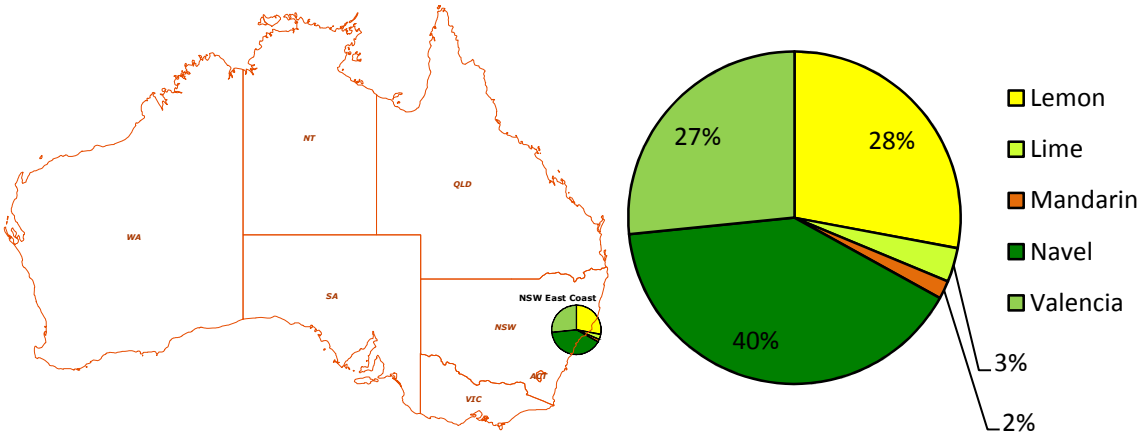
Grower surveys for East Coast NSW (north and central coasts) were undertaken by SunRISE 21. Survey maps were printed and posted directly to growers with stamped addressed envelopes for survey returns. Some growers were contacted personally by telephone or email. The survey maps and data entry were based on Google Earth 2010 and NearMap 2010 imagery.

1.8.1 East Coast NSW citrus

In summary for East Coast NSW citrus:

- In 2011; 368 hectares of citrus (202,422 trees) across 69 citrus properties were mapped and 4 hectares were new plantings since 2008. New plantings are predominantly Eureka lemon
- The area of citrus declined from 555 hectares in 2003 to 403 hectares in 2008 and 368 hectares in 2011
- The number of citrus trees declined from 325,022 in 2003 to 230,893 in 2008, and 202,422 trees in 2011
- NSW east coast predominantly grow Washington navels, Eureka lemons and Valencia oranges
- NSW east coast citrus is predominantly irrigated with low level sprinklers and grown on a Trifoliata rootstock
- The number of citrus growers declined from 79 growers in 2003 to 68 in 2008, then increased by 1 to 69 growers in 2011
- The average citrus area per property decreased from 7 hectares in 2003 to 6 hectares in 2008 and 5.3 hectares in 2011

Figure 7 – East Coast NSW citrus



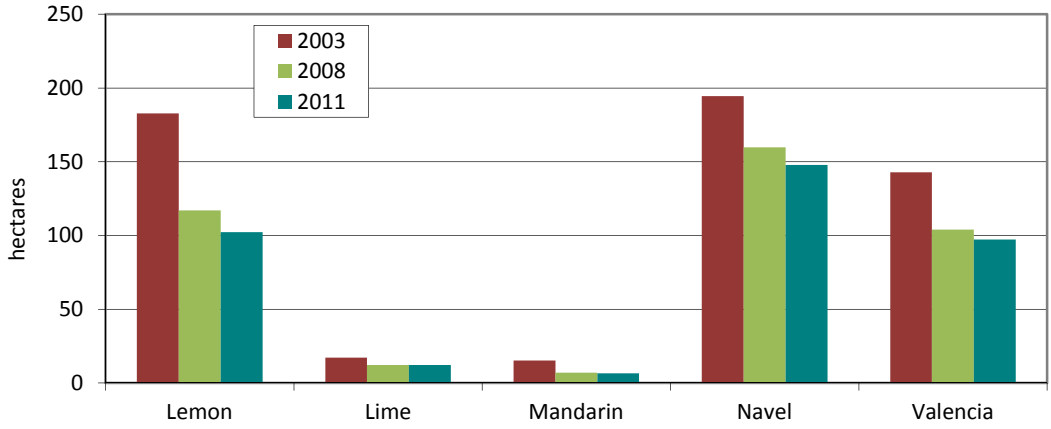
2011 East Coast NSW citrus
excluding Grapefruit (<1%) and Orange (<1%)

East Coast NSW citrus 2003 to 2011

The area of citrus in the NSW east coast declined from 555 hectares in 2003 to 403 hectares in 2008 and 368 hectares in 2011. The overall change from 2003 to 2011 is a 34% decline in area planted (-187 hectares) and a 38% decrease in tree numbers (-122,600 trees) as shown in Table 25.

Table 25 – East Coast NSW citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Grapefruit	1	451	1	462	1	322	0	-129
Lemon	183	100,156	117	59,293	102	51,482	-81	-48,674
Lime	17	9,548	12	7,288	12	7,338	-5	-2,210
Mandarin	15	9,818	7	3,505	6	3,315	-9	-6,503
Navel	195	116,629	160	95,923	148	82,960	-47	-33,668
Orange	2	902	2	1,282	2	988	0	+86
Tangelo	0	802	0	82	0	83	0	-719
Valencia	143	86,715	104	63,057	97	55,932	-46	-30,783
Total	**555**	**325,022**	**403**	**230,893**	**368**	**202,422**	**-187 -34%**	**-122,600 -38%**
Average	585 trees/ha		573 trees/ha		550 trees/ha			



Note: 4% of citrus categories are unknown. A linear extrapolation was applied to account for the 4%
Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

The dominant East Coast NSW citrus variety changed from Eureka lemon in 2003 to Washington navel in 2008 and 2011

	Dominant variety		
	2003	**2008**	**2011**
1	Eureka	Washington	Washington
2	Washington	Eureka	Eureka
3	Valencia	Valencia	Valencia
4	Late Lane	Late Lane	Late Lane
5	Tahitian	Tahitian	Tahitian

East Coast NSW citrus rootstocks, irrigation and properties

NSW east coast citrus is predominantly irrigated with low level sprays and grown on a trifoliata rootstock as shown in Table 26.

Table 26 – East Coast NSW dominant rootstock and irrigation type

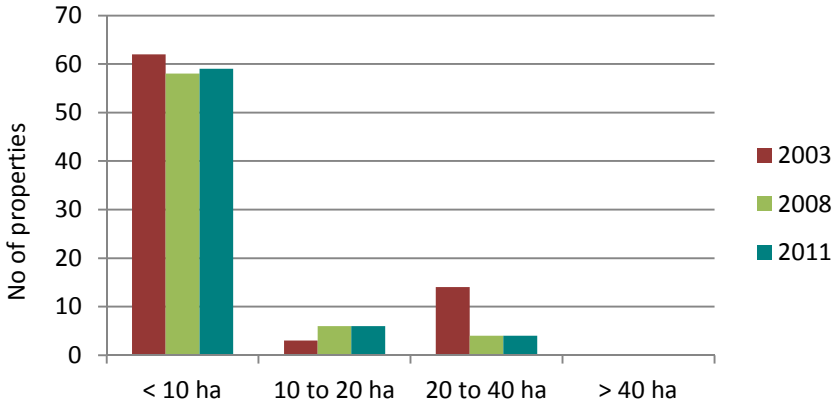
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Grapefruit	Trifoliata	Low level	Low level	Low level
Lemon	Rough Lemon	Low level	Low level	Low level
Lime	Trifoliata	Low level	Low level	Low level
Mandarin	Trifoliata	Low level	Low level	Low level
Navel	Trifoliata	Low level	Low level	Low level
Orange	Trifoliata	Low level	Low level	Low level
Pummelo	-	-	-	-
Tangelo	Trifoliata	Low level	Low level	Low level
Valencia	Trifoliata	Low level	Low level	Low level
Total	**Trifoliata**	**Low level**	**Low level**	**Low level**

East Coast citrus properties

The number of citrus growers declined by 10 between 2003 and 2011; the average property size decreased from 7.0 to 5.3 hectares of citrus as shown in Table 27.

Table 27 – East Coast NSW citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	62	58	59	-3	-4%
10 to 20 ha	3	6	6	+3	+4%
20 to 40 ha	14	4	4	-10	-13%
> 40 ha	0	0	0	0	-
Total properties	**79**	**68**	**69**	**-10**	**-13%**
Average property size (ha of citrus)	**7.0**	**5.9**	**5.3**		



Map 7 – East Coast NSW citrus map

1.8.2 East Coast NSW 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non Bearing	Total	
Citrus		***not surveyed***	**8**	**5**	**14**	**4%**
Grapefruit	Grapefruit	Rio Red	0	0	0	0%
	pink & red flesh	Ruby, Redblush	0	0	0	0%
Lemon		*unspecified*	0	0	0	0%
		Eureka	91	5	95	26%
		Francovielo	0	0	0	0%
		Lemonade	1	0	1	0%
		Lisbon	1	0	1	0%
		Meyer	1	0	1	0%
		Verna	0	0	0	0%
		Yen Ben	0	0	0	0%
Lime		Kaffir	0	0	0	0%
		Tahitian	10	0	10	3%
		West Indian	2	0	2	1%
Mandarin	Mandarin	*unspecified*	0	0	0	0%
	early	Clementine	0	0	0	0%
	season	Fina Clementine	0	0	0	0%
		Imperial	2	0	2	1%
		Marisol Clementine	0	0	0	0%
		Nova	0	0	0	0%
		Okitsu Wase satsuma	1	0	1	0%
		Silverhill satsuma	0	0	0	0%
	mid season	Hickson	0	0	0	0%
	late	Emperor	1	0	1	0%
	season	Murcott	2	0	2	1%
Navel	early	Leng	0	0	0	0%
	season	Navelina	4	0	4	1%
		Newhall	4	0	4	1%
		Ryan	1	0	1	0%
	mid	Bellamy	0	0	0	0%
	season	Washington	109	3	112	30%
	late	Barnfield	0	0	0	0%
	season	Late Lane	22	0	22	6%
		Powell	0	0	0	0%
Orange misc.	Blood orange	*unspecified*	0	0	0	0%
	sweet	Hamlin	0	1	1	0%
	sour	Seville	1	0	1	0%
Tangelo		Seminole	0	0	0	0%
Valencia		Valencia	94	0	94	25%
		TOTAL	**355**	**13**	**368**	**100%**

*Bearing trees were planted six or more years ago (i.e. planted in 2005 or earlier) or were reworked three or more years ago (i.e. reworked in 2008 or earlier).

1.8.3 East Coast NSW change since 2003

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Citrus		***not surveyed***	**14**	**+13**	**7,814**	**+6,928**
Grapefruit	Grapefruit	Rio Red	0	0	210	0
	pink & red flesh	Ruby, Redblush	0	0	100	-140
Lemon		*unspecified*	0	0	165	0
		Eureka	95	-80	47,855	-47,943
		Francovielo	0	0	0	-120
		Lemonade	1	0	450	0
		Lisbon	1	0	645	0
		Meyer	1	-3	180	-1,790
		Verna	0	-1	0	-535
		Yen Ben	0	0	200	0
Lime		Kaffir	0	-1	252	-50
		Tahitian	10	-5	6,008	-2,417
		West Indian	2	0	795	0
Mandarin		*unspecified*	0	0	0	-225
	early season	Clementine	0	-1	0	-250
		Fina Clementine	0	0	0	-132
		Imperial	2	-6	1,600	-4,305
		Marisol Clementine	0	0	0	-150
		Nova	0	0	47	-50
		Okitsu Wase satsuma	0	0	400	0
		Silverhill satsuma	0	0	80	-132
	mid season	Hickson	0	0	160	0
	late season	Emperor	1	0	400	0
		Murcott	2	-2	500	-1,360
Navel	early season	Leng	0	-2	0	-500
		Navelina	4	-4	1,583	-2,145
		Newhall	4	0	2,380	-117
		Ryan	1	-2	1,330	-400
	mid season	Bellamy	0	0	69	0
		Washington	112	-40	58,585	-29,702
	late season	Barnfield	0	-1	0	-54
		Late Lane	22	-3	15,611	-3,635
		Powell	0	0	200	0
Orange	Blood orange	*unspecified*	0	0	300	-300
	sweet	Hamlin	1	+1	350	+350
	sour	Seville	1	0	300	0
Tangelo		Seminole	0	0	80	-720
Valencia		Valencia	94	-49	53,773	-32,706
		TOTAL	**368**	**-187**	**202,422**	**-122,600**

1.9 Northern Territory

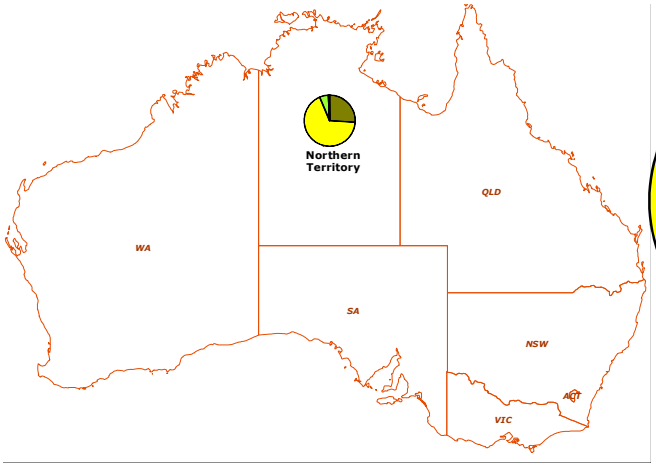
Survey maps for Northern Territory citrus growers were prepared by SunRISE 21 and posted to growers. Megan Connelly, Extension Officer, Department of Primary Industry, Fisheries and Mines NT assisted with grower contact details. Growers returned surveys by post or email to SunRISE 21. Mapping was based on 2010 Google Earth and 2003 orthophoto imagery acquired for the 2003 National Plantings Database.

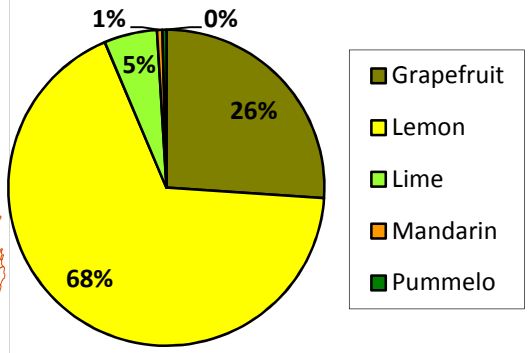
1.9.1 Northern Territory citrus

In summary for Northern Territory citrus:

- In 2011; 137 hectares of citrus (47,746 trees) across 7 citrus properties were mapped and 42 hectares were new plantings since 2008. New plantings are predominantly Lemon and Lime
- The area of citrus declined from 232 hectares in 2003 to 207 hectares in 2008 and 137 hectares in 2011
- The number of citrus trees declined from 82,772 in 2003 to 72,963 in 2008, and 47,746 trees in 2011
- Northern Territory predominantly grows Eureka lemons, Lisbon lemons and Star Ruby grapefruit
- Northern Territory citrus is predominantly irrigated with low level sprinklers and grown on a Benton rootstock
- The number of citrus growers continues to decline with 30 growers in 2003, 16 in 2008 and 7 growers in 2011
- The average citrus area per property increased from 7.7 hectares in 2003 to 12.9 hectares in 2008 and 19.6 hectares in 2011

Figure 8 – Northern Territory citrus





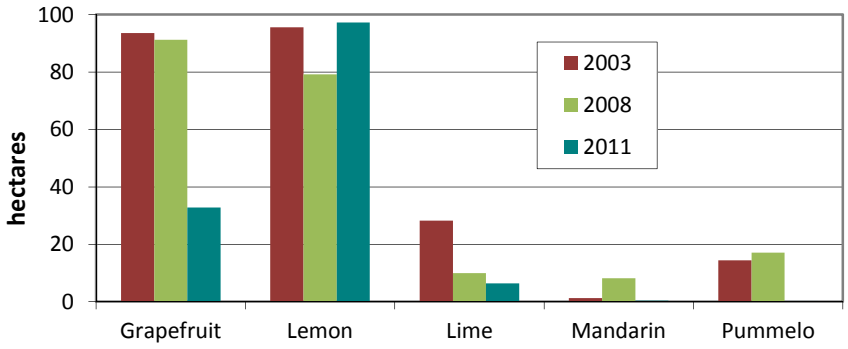
2011 Northern Territory citrus
excluding Grapefruit (<1%)
and Orange (<1%)

Northern Territory citrus 2003 to 2011

The area of citrus in the Northern Territory declined from 232 hectares in 2003 to 207 hectares in 2008 and 137 hectares in 2011. The overall change from 2003 to 2011 is a 41% decline in area planted (-95 hectares) and a 42% decrease in tree numbers (-35,026 trees) as shown in Table 28.

Table 28 – Northern Territory citrus 2003 to 2011

Category	2003		2008		2011		Change 2003-2011	
	ha	trees	ha	trees	ha	trees	ha	trees
Citron	-	-	-	-	-	-	-	-
Cumquat	-	-	-	-	-	-	-	-
Grapefruit	94	33,704	91	32,832	33	12,435	-61	-21,269
Lemon	96	33,068	79	27,610	97	32,265	+2	-803
Lime	28	10,562	10	3,135	6	2,596	-22	-7,966
Mandarin	1	372	8	4,130	0	250	-1	-122
Navel	-	-	-	-	-	-	-	-
Orange	-	-	-	-	-	-	-	-
Pummelo	14	5,066	17	5,255	0	200	-14	-4,866
Tangelo	-	-	-	-	-	-	-	-
Valencia	-	-	-	-	-	-	-	-
Total	**233**	**82,772**	**205**	**72,962**	**137**	**47,746**	**-96 -41%**	**-35,026 -42%**
Average	355 trees/ha		355 trees/ha		348 trees/ha			



Note: Tree numbers are estimates from a range of sources; grower input, calculations & counts from imagery

Dominant variety

The dominant citrus variety in the Northern Territory changed from Lisbon lemon in 2003 to Rio Red grapefruit in 2008 and Eureka lemon in 2011

	Dominant variety		
	2003	**2008**	**2011**
1	Lisbon	Rio Red	Eureka
2	Rio Red	Eureka	Lisbon
3	Eureka	Lisbon	Star Ruby
4	Tahitian	Flame	Flame
5	Flame	Star Ruby	Tahitian

Northern Territory citrus rootstocks, irrigation and properties

Northern Territory citrus is predominantly irrigated with low level sprinklers and grown on a Benton rootstock as shown in Table 29.

Table 29 – Northern Territory dominant rootstock and irrigation type

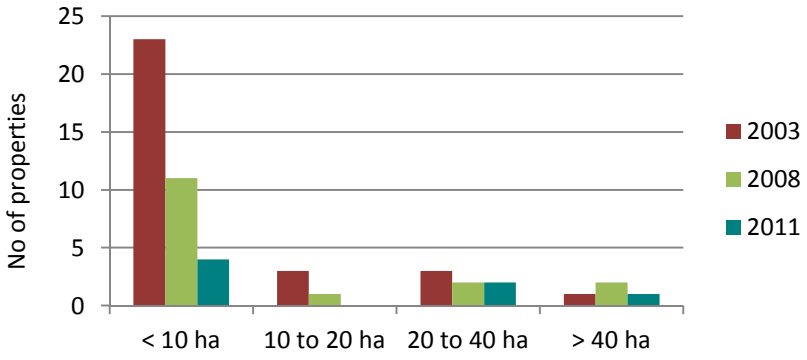
	Dominant rootstock	Dominant irrigation		
	2011	2003	2008	2011
Grapefruit	Troyer	Low level	Low level	Low level
Lemon	Benton	Low level	Low level	Low level
Lime	Trifoliata	Low level	Low level	Low level
Mandarin	Troyer	Low level	Low level	Low level
Pummelo	Troyer	Low level	Low level	Low level
Total	**Benton**	**Low level**	**Low level**	**Low level**

Northern Territory citrus properties

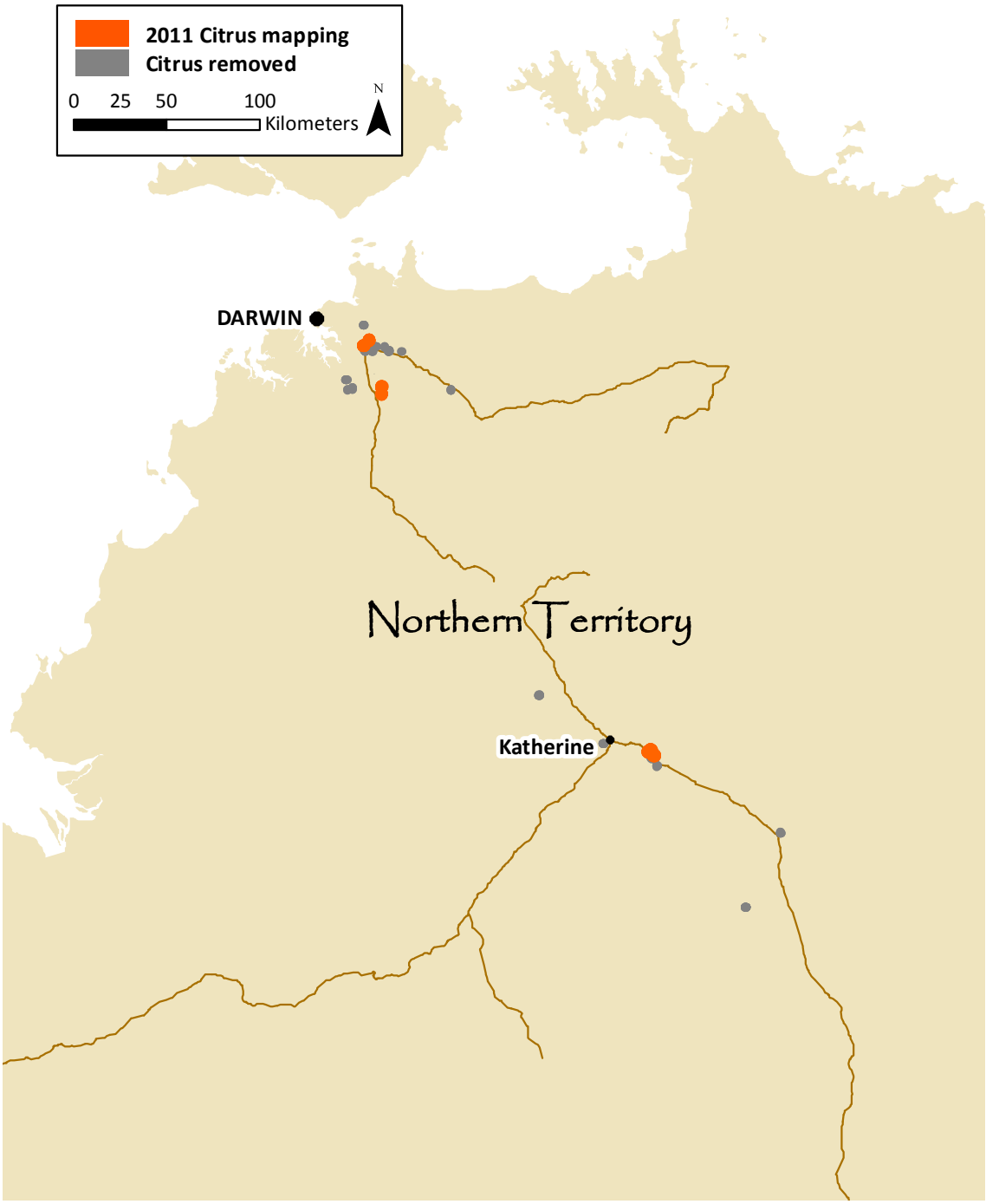
The number of citrus growers declined by 76% (22 growers) between 2003 and 2011, and the average property size increased from 8.0 to 19.6 hectares of citrus as shown in Table 30.

Table 30 – Northern Territory citrus properties

	Number of properties			Change 2003 to 2011	
Property size (citrus area)	**2003**	**2008**	**2011**	**properties**	**% of 2003**
< 10 ha	23	11	4	-19	-63%
10 to 20 ha	3	1	0	-3	-10%
20 to 40 ha	3	2	2	-1	-3%
> 40 ha	1	2	1	0	0%
Total properties	**30**	**16**	**7**	**-23**	**-76%**
Average property size (ha of citrus)	**7.8**	**12.9**	**19.6**		



Map 8 – Northern Territory citrus map



1.9.2 Northern Territory 2011 citrus varieties

CATEGORY		VARIETY	2011 HECTARES			
			Bearing	Non Bearing	Total	
Grapefruit	red & pink	Flame	9	0	9	6%
	flesh	Ray Ruby	2	0	2	2%
		Rio Red	3	0	3	2%
		Star Ruby	20	0	20	15%
Lemon		*unspecified*	7	0	7	5%
		Eureka	25	43	68	49%
		Lisbon	22	0	22	16%
Lime		Tahitian	4	2	6	5%
Mandarin			0	0	0	0%
Pummelo			0	0	0	0%
		TOTAL	**92**	**45**	**137**	**100%**

Note: Bearing trees were planted six or more years ago or reworked three or more years ago.

1.9.3 Northern Territory change since 2003

CATEGORY		VARIETY	2011 Hectare	Change since 2003	2011 Trees	Change since 2003
Grapefruit		*unspecified*	0	0	0	-110
	red & pink	Flame	9	-16	3,120	-5,566
	flesh	Henderson	0	-1	0	-112
		Ray Ruby	2	-2	750	-612
		Rio Red	3	-35	1,220	-12,119
		Ruby Red	0	-6	0	-2,550
		Star Ruby	20	0	7,345	-200
Lemon		*unspecified*	7	-7	3,000	-2,020
		Eureka	68	+41	21,105	+12,284
		Fino	0	-1	0	-406
		Lemonade	0	-4	0	-1,303
		Lisbon	22	-24	8,160	-8,089
		Meyer	0	-3	0	-1,269
Lime		Kaffir	0	-1	0	-458
		Tahitian	6	-20	2,596	-7,098
		West Indian	0	-1	0	-410
Mandarin		*unspecified*	0	0	250	+250
	early	Fremont*	0	0	0	0
	late	Emperor	0	0	0	-52
		Murcott	0	-1	0	-320
Pummelo		*unspecified*	0	-14	0	-5,066
		Pomelit	0	0	200	+200
		TOTAL	**137**	**-95**	**47,746**	**-35,026**

Note: 880 Fremont trees were planted & removed between 2003 and 2011

References

Part 4 Details of subcategories and varieties for InfoCitrus 2011 (June)_final.doc

Citrus Pages www.users.kymp.net/citruspages

College of Natural and Agricultural Sciences, Citrus Variety Collection, www.citrusvariety.ucr.edu/citrus

Final Report CT02033 Utilising new technologies to improve national citrus crop forecasting – Stage 2: National Plantings Database, SunRISE 21 Inc., July 2006.

National Citrus Plantings Database Management - 2008 Citrus Report, CT07055, December 2008.

Appendix A – Sample property crop plan

PATCH	HECTARES	TREES	VARIETY	ROOTSTOCK	YEAR	REWORK	INT_TREES	INTER_VAR	INTER_ROOT	INTER_YR	IRRIGATION
A	1.92	660	Eureka	Troyer	1981		240	Tahitian	Benton	2008	Drip
B	2.18	3000	Imperial	Troyer	1981						Drip
C	2.57	2000	Murcott	Troyer	1981						Drip
D	0.20	200	Murcott	Troyer	1984						Drip
E	0.33	300	Washington	Troyer	1997						Drip
F	0.23	50	Valencia	Troyer	1997						Drip
G	0.79	100	Eureka	Troyer	1981						Drip
H	1.51	2000	Valencia	Troyer	1981						Drip
I	0.33	300	Murcott	Troyer	1981	1997					Drip
J	0.28	150	Murcott	Troyer	1992						Drip

Appendix B – Standard crop database fields

Field name	Field type	Record*	Description
Ortho	string	assigned	Shows status of the mapping with respect to the date of imagery used. This field can be used to check progress when updating the mapping to an updated image base.
Source	string	assigned	Source for collection of the data eg grower or via another data source such as an irrigation authority, or details mapped from orthophoto
Survey	string	assigned	Year that the grower was last surveyed – otherwise NS for Not Surveyed
Location	string	assigned	Property location / irrigation district
Block_id or Farm_id	string	assigned	Unique Block or Farm reference. Must be first 4 letters of 'Location'+3 numbers eg.GRIF001
Citrus_id	string	assigned	Unique citrus grower registration number
Property	string	collected	Owner or Property name Must be surname then initials eg SMITH B
Patch	string	assigned	Patch ID – A to Z then ZA to ZZ then ZZA to ZZZ etc. (unless otherwise specified by grower)
Area_ha	Numeric 2 dec places	calculated	Area of crop patch in hectares
Row_m	Numeric 2 dec places	collected	Row & Planting spacing in metres (can be collected in feet and then converted to metres) Only necessary if 'Trees' is not known
Plant_m	Numeric 2 dec places	collected	
Trees	Numeric 0 dec places	collected	Number of trees – preferably collected from grower; else count from ortho; else = [Area_ha]*10,000/[Row_m]/[Plant_m]
Type	string	assigned	Grape, Citrus, Field crop, Vegetable, Vacant (i.e. in redevelopment), Fruit Tree, Nut Tree etc.
Category	string	assigned	Crop category e.g. Navel
Variety	string	collected	Crop variety name e.g. Barnfield
Rootstock	string	collected	Crop rootstock name or 'Own Roots'
Year	Numeric 0 dec places	collected	Year of planting (of rootstock) eg 1978
Rework	Numeric 0 dec places	collected	Year reworked or top-worked eg 2000
Inter_yr	Numeric 0 dec places	collected	Year of inter-planting
Int_type	string	assigned	Inter-planted crop type
Int_catego	string	assigned	Inter-planted crop category
Inter_var	string	collected	Inter-planted crop variety
Inter_root	string	collected	Inter-planted crop rootstock
Int_trees	Numeric 0 dec places	collected	Number of interplant trees
Irrigation	string	collected	Irrigation method eg lowlevel, drip, furrow, overhead

*Collected = Collected from Grower by Survey Field Officer *Assigned = Assigned or allocated by the Project Manager or GIS Officer

Property database fields

Collected and maintained for Regional purposes only.

Field Name	Field Type	Description
Block_id or Farm_id	string	Block/Farm reference **Used as link between Crop and Property databases**
Property	string	Property or Owner name
Company	string	Company Name
Trading	string	Trading Name
Contact	string	Contact name for property
Phone	string	Phone number for contact person
Fax	string	Fax number for contact person
Mobile	string	Mobile number for contact person
Email	string	Email address for contact person
Title	string	Name for mail out
Postal	string	Postal address for contact person
Town	string	
Postcode	string	
State	string	VIC, NSW, QLD, NT, WA, SA
Address	string	Address of Fruit Block
Notes	string	
Citrus_id	string	Grower registration number – if applicable

Appendix C – National 2011 citrus varieties list

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-bearing	Total	
Citrus		***not surveyed***	**1,264**	**146**	**1,410**	**5%**
Citron	Citron	Buddha's Hand	0	0	0	0%
Cumquat		Cumquat	0	1	1	0%
Grapefruit	Grapefruit white flesh	*unspecified grapefruit*	122	0	122	0%
		Marsh	108	0	108	0%
		Oroblanco	0	0	0	0%
		Thompson	2	0	2	0%
		Poorman (NZ grapefruit)	0	0	0	0%
	Grapefruit pink & red flesh	Flame	107	1	108	0%
		Henderson	1	0	1	0%
		Ray Ruby	12	0	12	0%
		Rio Red (Rio Star)	113	5	118	0%
		Ruby(Red,Pink),Redblush	23	1	25	0%
		Star Ruby	88	7	94	0%
		Thompson (Eagle)	37	0	37	0%
Lemon		*unspecified lemon*	104	19	124	0%
		Eureka	480	136	615	2%
		Eureka Seedless	3	43	46	0%
		Fino	7	0	7	0%
		Francovielo	1	0	1	0%
		Lambert Eureka	0	0	0	0%
		Lemonade	3	0	3	0%
		Limoniera	2	0	2	0%
		Lisbon	210	12	222	1%
		Meyer	2	0	2	0%
		Verna	8	0	8	0%
		Villa Franca	1	0	1	0%
		Yen Ben	1	0	1	0%
Lime		*unspecified lime*	5	34	39	0%
		Blood	0	0	0	0%
		Desert	0	0	0	0%
		Finger	1	0	1	0%
		Kaffir	0	0	0	0%
		Outback	1	0	1	0%
		Sunrise	0	0	0	0%
		Tahitian (Persian)	70	40	110	0%
		West Indian (Mexican)	2	0	2	0%
Mandarin	Mandarin	*unspecified mandarin*	48	4	52	0%
		Alkantara	0	1	1	0%
		Darling	1	0	1	0%
		Dekopon	2	3	5	0%
		Empress	43	3	46	0%
		GoldenNugget	0	4	4	0%
		Goldup	1	37	38	0%
		Monarch	3	0	3	0%
		Nectar	0	6	6	0%
		Success	9	0	9	0%
		Tangerine	1	0	1	0%
	Mandarin early season	Amigo	8	0	8	0%
		Caffin Clementine	0	1	1	0%

National 2011 citrus varieties list *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-bearing	Total	
Mandarin	Mandarin	Clementine	49	3	52	0%
	early	Fallglo	12	0	12	0%
	season	Feutrell	1	0	1	0%
	continued	Fina Clementine	0	0	0	0%
		Fremont	28	1	29	0%
		Imperial	1,401	363	1,764	6%
		Marisol Clementine	1	0	1	0%
		Miho Wase Satsuma	3	1	4	0%
		Nova (Suntina)	56	0	56	0%
		Nules Clementine	63	18	81	0%
		Okitsu Wase Satsuma	8	0	8	0%
		Satsuma unspecified	23	0	23	0%
		Silverhill Satsuma	0	0	0	0%
	Mandarin	Afourer (Nadorcott)	306	247	553	2%
	mid	Avana (Aperino,Tardivo)	10	28	38	0%
	season	Daisy	96	28	124	0%
		Dancy Tangerine	2	0	2	0%
		Ellendale	136	0	137	0%
		Ellenor	7	0	7	0%
		Hickson	169	23	192	1%
		Oroval Clementine	0	0	0	0%
		Page	0	0	0	0%
		Parker	0	0	0	0%
		Sunburst	20	0	20	0%
		Taylor Lee	59	0	59	0%
		TDE Mandarin	0	0	0	0%
	Mandarin	Emperor	4	0	4	0%
	late	Hansen	0	0	0	0%
	season	Kara (Carra)	5	0	6	0%
		Murcott	883	318	1,201	4%
		Murcott Honey	3	24	27	0%
		Murcott LS	13	248	261	1%
		Mystique	14	13	28	0%
		Sunset	0	0	0	0%
		Topaz, Ortanique	41	3	44	0%
	Mandarin Total		**3,350**	**1,379**	**4,909**	**17%**
Navel	Navel	*unspecified navel*	240	0	240	1%
		Cellaline	0	0	0	0%
		Follett	0	0	0	0%
		Langdon	10	0	10	0%
		Salisbury	2	0	2	0%
		Sun Smooth	0	0	0	0%
	Navel	*unspecified early navel*	5	0	5	0%
	early	Atwood	43	21	64	0%
	season	Biggs Leng	2	0	2	0%
		Early Bird	0	0	0	0%
		Fisher	38	7	45	0%
		Fuko Mozonau	5	0	5	0%
		Fukumoto	17	1	18	0%
		Fulwood	2	0	2	0%
		Golden Nugget	1	0	1	0%

National 2011 citrus varieties list *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-bearing	Total	
Navel	Navel	Hammet	1	0	1	0%
	early	Leng	697	28	724	3%
	season	Lloyd Leng	1	0	1	0%
	continued	M7 Navel	8	67	75	0%
		Navelencia	0	0	0	0%
		Navelina(Italian,Spanish)	993	40	1,033	4%
		Newhall (Naveline)	41	42	83	0%
		Nucellar Leng	27	0	27	0%
		Pasin	23	3	27	0%
		Riverside	1	1	2	0%
		Rosey Red	4	3	7	0%
		Ryan	78	0	78	0%
		Thomson	61	2	63	0%
		Whitely	6	0	6	0%
		Winter Navel	6	0	6	0%
	Navel	Bellamy	1	0	1	0%
	mid	Cara Cara (Red Navel)	137	43	179	1%
	season	Hockney	5	0	5	0%
		Navelate (Tardia)	2	0	2	0%
		Palmer	5	0	5	0%
		Washington	3,294	159	3,453	12%
	Navel	*unspecified late navel*	333	0	333	1%
	late	Albanese	0	0	0	0%
	season	Autumn Gold (Pollock)	86	4	89	0%
		Barnfield	395	6	401	1%
		Chislett	487	65	552	2%
		Christensen	3	0	3	0%
		Christmas	0	0	0	0%
		Clark (Doug Clarke)	31	0	31	0%
		Edwards	2	0	2	0%
		Fairlane	0	0	0	0%
		Garraway	0	0	0	0%
		Honey Gold	2	0	2	0%
		Hutton	39	0	39	0%
		Late Lane	2,856	210	3,067	11%
		Murray Gold	2	0	2	0%
		Pillar	0	0	0	0%
		Powell	200	1	201	1%
		Ravens Choice	5	0	5	0%
		Rohde	43	13	56	0%
		Scopelliti	6	0	6	0%
		Summer Gold (Marrows)	100	1	100	0%
		Taylor	1	0	1	0%
		Toc	12	0	12	0%
		Toomey	3	0	3	0%
		Wiffen	15	0	15	0%
		Wilson	67	0	67	0%
	Navel Total		**10,442**	**717**	**11,159**	**40%**

National 2011 citrus varieties list *continued*

CATEGORY		VARIETY	2011 HECTARES			
			Bearing*	Non-bearing	Total	
Orange Misc.	Blood Orange	*unspecified*	21	3	24	0%
		Arnold (Moro)	45	5	50	0%
		Maltese	0	0	0	0%
		Ruby	1	0	1	0%
		Tarocco	2	0	3	0%
	Sweet Orange	Acidless (Non Acid)	0	0	0	0%
		Common Orange	2	0	2	0%
		Hamlin	156	175	330	1%
		Honey Ball	3	9	12	0%
		Joppa	5	0	5	0%
		Lima acidless	3	0	3	0%
		Parramatta	0	0	0	0%
		Parson Brown	29	0	29	0%
		Pera (Bianchi, Limeria)	19	0	19	0%
		Pineapple	35	39	74	0%
		Salustiana	255	170	425	2%
		Seleta (Siletta)	0	0	0	0%
	Sour	Seville	26	0	26	0%
		Smooth Seville	1	0	1	0%
Pummelo		*Pummelo unspecified*	3	0	3	0%
		Pomelit (Pomelette)	0	0	0	0%
Tangelo		*unspecified Tangelo*	82	1	83	0%
		Minneola	193	3	196	1%
		Orlando	0	0	0	0%
		Seminole	2	0	2	0%
Valencia		Appleby T2	1	0	1	0%
		Ben Yenda	1	32	33	0%
		Berri	6	0	6	0%
		Casey	8	0	8	0%
		Dwarf	7	0	7	0%
		Keenan	0	33	33	0%
		Lord Howe	6	0	6	0%
		Newton	36	0	36	0%
		Owen	0	0	0	0%
		Pecta	2	0	2	0%
		Smith Red	10	0	10	0%
		Valencia	7,138	32	7,171	25%
		Valencia Late	23	0	23	0%
	Valencia Seedless	Delta	45	1	46	0%
		Early Glow	0	0	0	0%
		McMahon	14	55	70	0%
		Midknight	40	37	77	0%
		Valencia Seedless	97	14	111	0%
		TOTAL	**25,067**	**3,150**	**28,217**	**100%**

*Bearing trees were planted six or more years ago (i.e. planted in 2002 or earlier) or were reworked three or more years ago (i.e. reworked in 2005 or earlier).

Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008 and bearing/non-bearing figures were unavailable for Riverina

Appendix D – National citrus varieties change 2003 to 2011

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Citrus		***not surveyed***	**1,410**	**+481**	**657,274**	**+274,692**
Citron		Buddha's Hand	0	0	47	+47
Cumquat		Cumquat	1	+1	360	+360
Grapefruit	Grapefruit white flesh	*unspecified grapefruit*	122	-35	50,254	-15,425
		Marsh	108	-95	43,835	-42,728
		Melogold	0	0	0	0
		Oroblanco	2	-7	822	-4,083
		Poorman (NZ grapefruit)	0	0	50	0
	Grapefruit pink & red flesh	Flame	108	+32	41,965	+13,874
		Henderson	1	-1	400	-450
		Ray Ruby	12	-5	3,195	-1,166
		Rio Red (Rio Star)	118	+16	40,028	+1,708
		Ruby(Red,Pink),Redblush	25	-5	10,065	-1,355
		Star Ruby	94	+5	42,188	+3,933
		Thompson (Eagle)	37	+21	17,859	+10,678
Lemon		*unspecified lemon*	124	-38	51,244	-13,758
		Eureka	615	-189	247,051	-115,593
		Eureka Seedless	46	+46	21,834	+21,834
		Fino	7	-2	2,366	-875
		Francovielo	1	-6	541	-2,059
		Lambert Eureka	0	0	0	-140
		Lemonade	3	-4	1,837	-1,444
		Limoniera	2	0	890	0
		Lisbon	222	-93	77,317	-28,833
		Meyer	2	-9	690	-3,962
		Verna	8	-6	2,907	-2,848
		Villa Franca	1	0	231	+135
		Yen Ben	1	0	463	0
Lime		*unspecified lime*	39	+36	18,661	+16,945
		Blood	0	-4	44	-1,907
		Desert	0	-1	0	-696
		Finger	1	+1	442	+392
		Kaffir	0	-2	252	-558
		Outback	1	-1	116	-583
		Sunrise	0	-2	0	-1,203
		Tahitian (Persian)	110	-33	41,506	-19,101
		West Indian (Mexican)	2	-1	795	-535
Mandarin	Mandarin	*unspecified mandarin*	52	+30	18,890	+9,375
		Alkantara	1	+1	171	+171
		Darling	1	0	260	0
		Dekopon	5	+5	2,700	+2,700
		Empress	46	+9	15,165	+2,750
		GoldenNugget	4	+4	1,849	+1,849
		Goldup	38	+38	15,352	+15,352
		Monarch	3	0	1,094	0
		Nectar	6	+6	731	+731
		Success	9	-12	3,457	-4,273
		Tangerine	1	0	407	0

National citrus varieties change 2003 to 2011 *continued*

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Mandarin	Mandarin	Amigo	8	-3	3,467	-1,840
	early	Caffin Clementine	1	+1	945	+945
	season	Clementine	52	-7	32,472	-2,866
		Fallglo	12	-10	8,638	-9,372
		Feutrell	1	0	156	-44
		Fina Clementine	0	0	0	-132
		Fremont	29	-24	14,663	-11,484
		Imperial	1,764	-79	793,009	-16,757
		Marisol Clementine	1	-1	540	-276
		Miho Wase Satsuma	4	0	2,530	-310
		Nova (Suntina)	56	-65	27,263	-26,745
		Nules Clementine	81	+16	53,023	+9,332
		Okitsu Wase Satsuma	8	-1	6,693	-198
		Satsuma unspecified	23	0	19,879	-623
		Silverhill Satsuma	0	0	80	-132
	Mandarin	Afourer (Nadorcott)	553	+521	347,031	+323,784
	mid	Avana (Aperino,Tardivo)	38	+38	15,502	+15,408
	season	Daisy	124	+53	66,146	+32,362
		Dancy Tangerine	2	-4	859	-1,044
		Ellendale	137	-277	57,750	-92,092
		Ellenor	7	-34	3,787	-11,042
		Hickson	192	-85	83,103	-25,977
		Oroval Clementine	0	0	300	0
		Page	0	-5	0	-1,243
		Parker	0	0	0	-40
		Sunburst	20	-35	11,730	-17,764
		Taylor Lee	59	-71	27,129	-27,214
		TDE Mandarin	0	0	400	+400
	Mandarin	Emperor	4	-3	1,915	-1,115
	late	Hansen	0	-1	51	-533
	season	Kara (Carra)	6	-14	2,081	-6,733
		Murcott	1,201	-518	549,996	-242,920
		Murcott Honey	27	+25	16,316	+15,346
		Murcott LS	261	+261	116,203	+116,203
		Mystique	28	+16	17,129	+10,409
		Sunset	0	0	0	-100
		Topaz, Ortanique	44	+13	23,803	+8,597
	Mandarin Total		**4,909**	**-213**	**2,364,665**	**62,846**
Navel	Navel	*unspecified navel*	240	-98	109,724	-40,958
		Cellaline	0	0	40	0
		Follett	0	0	120	0
		Langdon	10	+2	3,895	+696
		Salisbury	2	0	648	0
		Sun Smooth	0	0	0	0
	Navel	*unspecified early navel*	5	+1	2,469	+427
	early	Atwood	64	+44	35,197	+23,389
	season	Biggs Leng	2	0	664	0
		Early Bird	0	0	98	+98
		Fisher	45	+12	22,572	+3,256
		Fuko Mozonau	5	+5	4,490	+4,490
		Fukumoto	18	-3	11,696	+2,048

National citrus varieties change 2003 to 2011 *continued*

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Navel	Navel	Fulwood	2	0	1,342	0
	early	Golden Nugget	1	0	418	0
	season	Hammet	1	-1	600	-440
	continued	Leng	724	-266	287,436	-112,466
		Lloyd Leng	1	-1	482	-288
		M7 Navel	75	+75	45,774	+45,774
		Navelencia	0	0	0	0
		Navelina(Italian,Spanish)	1,033	-226	528,251	-122,519
		Newhall (Naveline)	83	+29	50,985	+16,375
		Nucellar Leng	27	+3	14,454	+3,028
		Pasin	27	+1	14,875	+607
		Riverside	2	+1	653	+314
		Rosey Red	7	+4	3,733	+2,373
		Ryan	78	+8	34,351	+3,454
		Thomson	63	-49	24,330	-20,873
		Whitely	6	-1	3,212	-440
		Winter Navel	6	0	1,717	-121
	Navel	Bellamy	1	0	207	-54
	mid	Cara Cara (Red Navel)	179	+112	90,435	+59,311
	season	Hockney	5	+1	2,457	+488
		Navelate (Tardia)	2	-1	543	-954
		Palmer	5	+1	3,205	+841
		Washington	3,453	-618	1,429,446	-164,150
	Navel	*unspecified late navel*	333	+12	132,607	+13,673
	late	Albanese	0	0	96	0
	season	Autumn Gold (PollockL.)	89	+1	49,448	+1,489
		Barnfield	401	+8	179,044	+2,603
		Chislett	552	+153	279,692	+80,209
		Christensen	3	0	1,356	0
		Christmas	0	0	200	0
		Clark (Doug Clarke)	31	-1	10,409	+489
		Edwards	2	0	1,036	0
		Fairlane	0	0	0	0
		Garraway	0	0	0	-161
		Honey Gold	2	0	1,329	0
		Hutton	39	+9	18,264	+4,235
		Late Lane	3,067	+130	1,384,845	+92,937
		Murray Gold	2	0	1,167	-75
		Pillar	0	0	0	-147
		Powell	201	+19	88,268	+8,544
		Ravens Choice	5	+3	1,601	+729
		Rohde	56	+9	25,323	+4,736
		Scopelliti	6	-1	2,976	-866
		Summer Gold (Marrows)	100	-38	59,001	-19,612
		Taylor	1	0	356	0
		Toc	12	0	4,289	0
		Toomey	3	0	1,423	0
		Wiffen	15	+1	6,984	+106
		Wilson	67	-12	29,473	-5,811
	Navel Total		**11,195**	**-675**	**5,009,707**	**-113,217**

National citrus varieties change 2003 to 2011 *continued*

CATEGORY		VARIETY	2011 hectare	Change since 2003	2011 trees	Change since 2003
Orange Misc.	Blood Orange	*unspecified*	24	-6	14,469	-1,713
		Arnold (Moro)	50	+35	36,264	+28,680
		Maltese	0	0	31	-124
		Ruby	1	0	498	0
		Tarocco	3	+3	2,272	+2,272
	Sweet Orange	Acidless (Non Acid)	0	0	230	+110
		Common Orange	2	-4	781	-3,125
		Hamlin	330	+240	222,286	+162,712
		Honey Ball	12	+12	7,443	+7,443
		Joppa	5	-3	1,576	-1,039
		Lima acidless	3	0	3,175	+1,450
		Parramatta	0	-1	0	-333
		Parson Brown	29	+20	19,761	+11,108
		Pera (Bianchi, Limeria)	19	0	6,169	+110
		Pineapple	74	+73	46,756	+46,051
		Salustiana	425	+389	251,464	+218,391
		Seleta (Siletta)	0	-2	0	-1,069
	Sour	Seville	26	-11	9,105	-4,334
		Smooth Seville	1	0	959	0
Pummelo		*Pummelo unspecified*	3	-14	1,446	-4,346
		Pomelit (Pomelette)	0	0	200	+200
Tangelo		*unspecified Tangelo*	83	-1	43,178	+826
		Minneola	196	-46	98,680	-24,167
		Orlando	0	-3	104	-1,240
		Seminole	2	0	848	-827
Valencia		Appleby T2	1	-2	463	-330
		Ben Yenda	33	+32	18,775	+18,228
		Berri	6	+2	4,150	+2,230
		Casey	8	-13	3,082	-5,580
		Dwarf	7	0	8,587	0
		Keenan	33	+31	18,862	+17,914
		Lord Howe	6	+3	1,825	+1,024
		Newton	36	-40	14,858	-21,619
		Owen	0	0	53	0
		Pecta	2	0	544	0
		Smith Red	10	-2	5,275	-561
		Valencia	7,171	-1,673	2,729,308	-570,742
		Valencia Late	23	-57	6,591	-16,787
	Valencia Seedless	Delta	46	+29	22,688	+13,692
		Early Glow	0	0	0	0
		McMahon	70	+65	50,321	+47,795
		Midknight	77	+39	43,826	+27,829
		Valencia Seedless	111	+23	41,402	+10,291
		TOTAL	**28,217**	**-1,668**	**12,490,205**	**-4,653**

Note: 2011 figures for Riverland are unavailable and 2008 figures have been used for 2011
2011 figures for Riverina have only been updated for 50% of growers since 2008

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