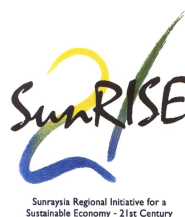
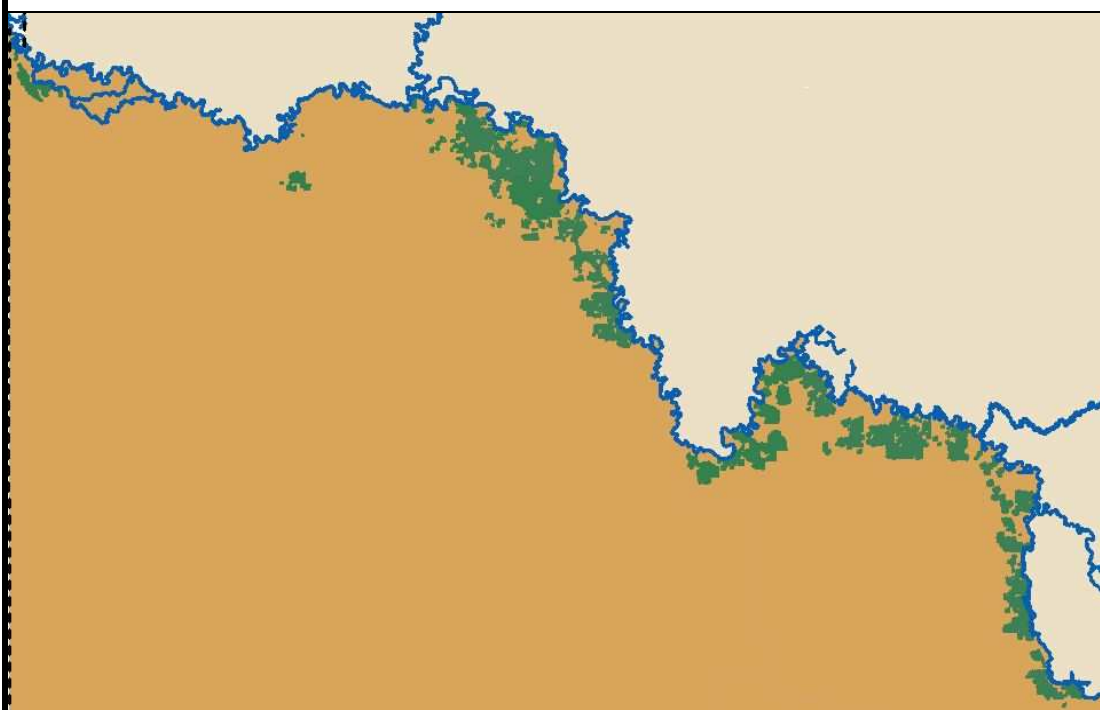




Victorian Mallee 2006 Crop Report



Final Report: SLA 07/417

January 2008

amended March 2008

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Note:

This final report was originally issued in January 2008; however, typing errors on pages 8, 12, 21 and 33 were noted and amended by SunRISE 21 in March 2008. Copies of the report that do not contain this ‘note’ should be discarded as superseded versions.

Introduction

This report was commissioned by the Mallee Catchment Management Authority (Mallee CMA) and funded by the National Action Plan for Salinity and Water Quality.

The report provides information on changes in irrigated horticulture from 1997 to 2006 and is a continuation of SunRISE 21's 2003 Crop Report that presented changes in irrigated horticulture from 1997 to 2003.

In 2006, the Mallee CMA, in collaboration with other stakeholders, invested in February 2006 aerial photography and its conversion to high resolution orthophoto imagery. The imagery provided the map base for capture of 2006 crop mapping and the data necessary to produce this 2006 Crop Report.

The study region covers irrigated crops along the Murray River, in Victoria, from Nyah to the South Australian Border. The region comprises ten 'study districts' that are defined by four pumped irrigation districts (Robinvale, Red Cliffs, Mildura (First Mildura Irrigation trust) and Merbein) and six river reaches that coincide with water supply and/or river salinity impact reporting areas.

Change is presented with respect to the following parameters:

1. crop types;
2. irrigation methods;
3. grape use (dried, table, wine);
4. irrigation properties and development; and
5. hectares per salinity impact zone

This report was initially intended to cover change from 2003 to 2006 as a continuation of the SunRISE 21 2003 Crop Report on change from 1997 to 2003. However, changes in information requirements and data management since 2003 (described in the following 'methodology and data sources') make it impractical to align this 2006 report with the 2003 report, and hence this report includes information for 1997, 2003 and 2006, providing overall, a nine year snap-shot of change.

Methodology and Data Sources

Irrigated Crops Data

Crop data is from SunRISE 21's 1997, 2003 and 2006 crop mapping which is based on orthophoto imagery. Crop details have been collected from grower surveys, drive-by surveys and/or image interpretation. Grower surveys include annual updates of all registered citrus growers facilitated by the Murray Valley Citrus Board.

It was initially intended that this report complement the 2003 Crop Report, however, significant adjustment in crop data management and reporting areas has occurred since 2003. Hence information presented in this report will not be directly comparable with information presented in SunRISE 21's previous 2003 Crop Report;

1. Change from calendar year to irrigation season;
The crop mapping previously represented crops in a particular calendar year; hence 2003 crop mapping represented crops existing between January 2003 and December 2003. However, recent alignment of crop mapping to water use highlighted the need for the crop mapping to align with irrigation seasons and the mapping has been adjusted accordingly. For example, the 2003 crop mapping is based on February 2003 orthophoto imagery representing crops irrigated in the 2002-2003 irrigation season and, likewise, the 2006 crop mapping is based on February 2006 orthophoto imagery representing crops irrigated in the 2005-2006 irrigation season.
2. Improvement in orthophoto image resolution and extent of coverage;
Significant improvements have occurred in the resolution, clarity and positional accuracy of orthophoto imagery since 1996/1997. The February 2006 digital aerial photography and 0.35 metre pixel resolution orthophoto imagery have enabled significant refinement of the 1997, 2003 and 2006 crop mapping. It has resulted in much of the private diverter's areas being refined from 1:25,000 scale mapping to better than 1:5,000.
3. Change in reporting districts;
Study districts in this 2006 Crop Report have changed since the 2003 Crop Report to better coincide with the Mallee CMA's requirements.

Limitations

The crop mapping and information in this report is based on interpretation of orthophoto imagery, drive-by surveys and irrigator surveys. The information in this report has been generated or extrapolated from data sets of at least 80% reliability. Hectare totals have been rounded to the nearest 5 hectares.

The crop mapping has limitations with respect to seasonal plantings. Footprints for significant areas of 'field crop' are evident in the orthophoto imagery; however, it is often unclear whether these areas are abandoned, rotational or fully or partially active. They are generally left in the crop mapping as areas are only 'retired' from the mapping where there is a change of land use which precludes the land from being irrigated, such as urban development or dam construction. Hence, the irrigated areas may be over-stated for seasonal cropping. Also, whilst numerous footprints of pivot irrigation are noticeable in the orthophoto imagery, they are not all active in the one irrigation season and allowance is made for shifting of pivots from site to site within a given season.

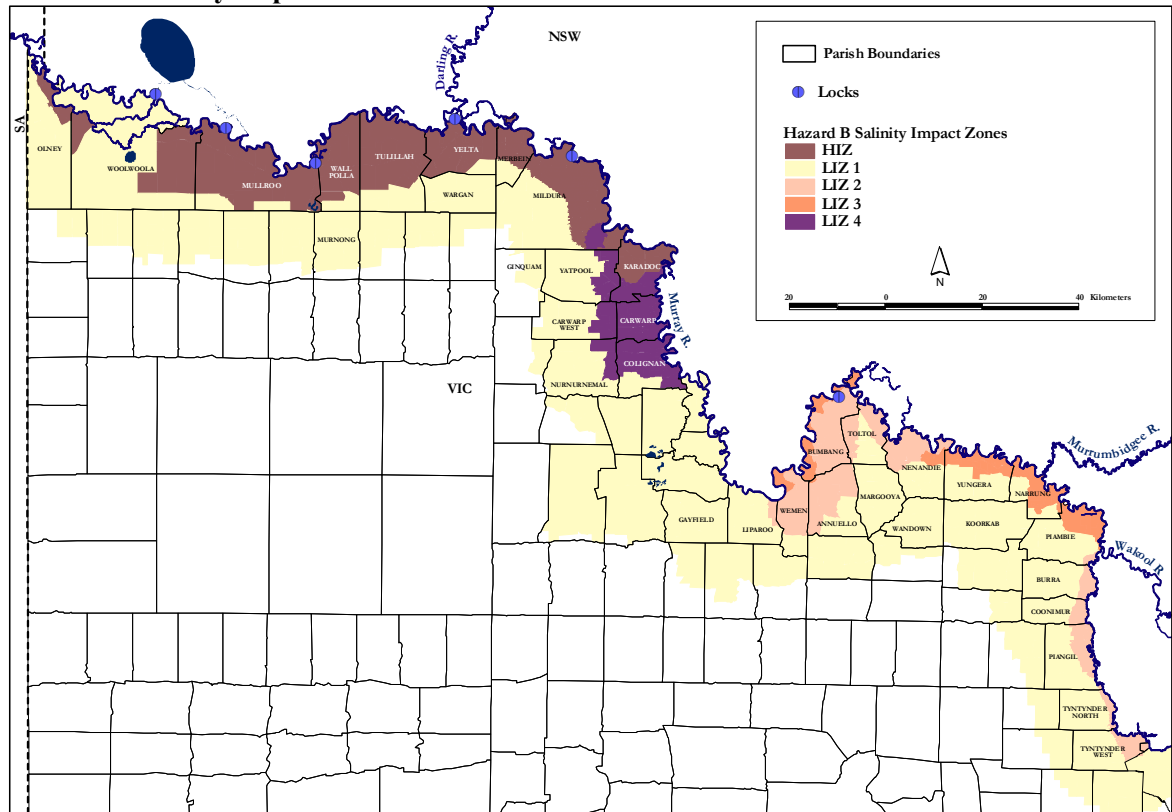
Salinity Impact Zones

The salinity impact zones in this report are ‘Hazard B’ zones (comprising four low impact zones (LIZ) and one high impact zone (HIZ)). These are used for levying new development and have been used in this study, purely for ease of presentation, rather than the ‘Hazard A’ zones (seven low impact zones and 5 high impact zones) which are used for reporting river salinity impacts to the Murray-Darling Basin Commission (Salinity Register).

The relationship between Hazard A and Hazard B zones is shown in the following table.

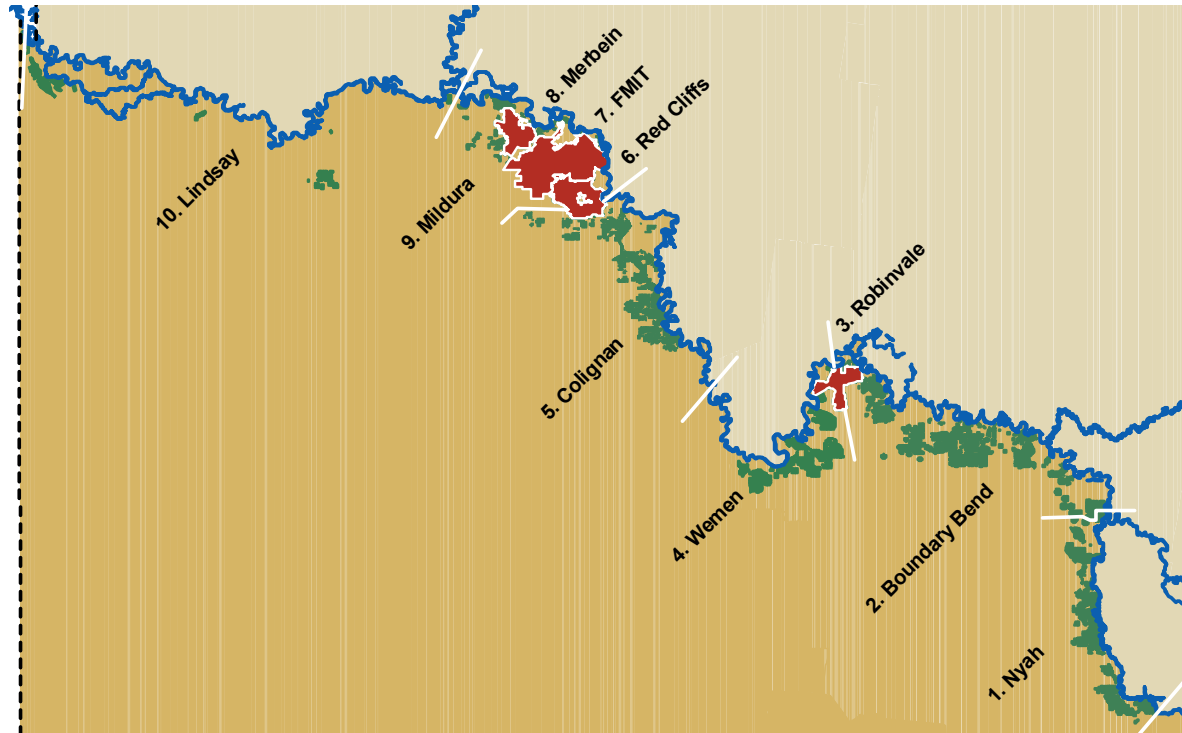
Hazard B Zones	Hazard A Zones
LIZ 1	LIZ 1, LIZ 2
LIZ 2	LIZ 3
LIZ 3	LIZ 4, LIZ 5
LIZ 4	LIZ 6, LIZ 7
HIZ	HIZ 1, HIZ 2, HIZ 3, HIZ 4, HIZ 5

Hazard B Salinity Impact Zones and Parishes



Study Districts

Reporting is based on ten Study Districts. These comprise the four pumped irrigation districts of Robinvale, Red Cliffs, Mildura and Merbein and private diverters for six river reaches as shown in the following map:



- | | |
|------------------------------|---|
| 1. Nyah River Reach | - Nyah to the Wakool River Junction |
| 2. Boundary Bend River Reach | - Wakool River Junction to the Euston Weir |
| 3. Robinvale District | - Robinvale Pumped Irrigation District |
| 4. Wemen River Reach | - Euston Weir to Hattah |
| 5. Colignan River Reach | - Colignan to Yatpool |
| 6. Red Cliffs District | - Red Cliffs Pumped Irrigation District |
| 7. FMIT District | - First Mildura Irrigation Trust District |
| 8. Merbein District | - Merbein Pumped Irrigation District |
| 9. Mildura River Reach | - Mildura to Darling Junction |
| 10. Lindsay River Reach | - Darling Junction to the South Australian Border |

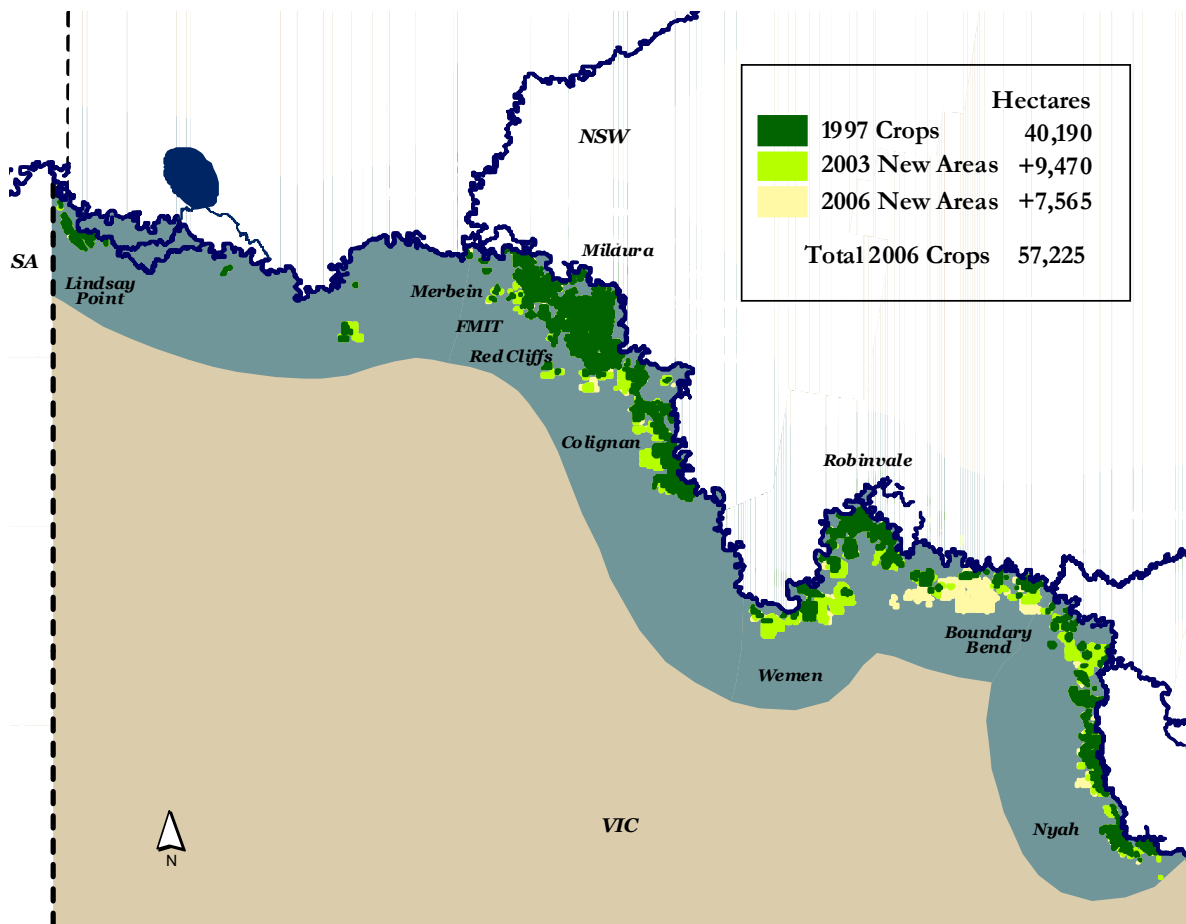
The pumped irrigation district of Nyah is included in the Nyah River Reach.

Victorian Mallee Summary - Irrigation Change 1997 to 2006

The following tables and charts represent changes in irrigated horticulture from Nyah to the South Australian border for the period 1997 to 2006.

In summary:

- The irrigated area increased by 17,035 hectares, a 42% increase from 1997 to 2006 – (an average of 1,893 hectares per year over a nine year period)
- Grapevines remained the dominant crop type from 1997 to 2006
- Wine production remained the dominant grape use from 1997 to 2006
- The dominant irrigation method changed from furrow in 1997 to drip in 2006
- Permanent plantings were predominantly in the high salinity impact zone (HIZ) in 1997 and then the low salinity impact zone (LIZ1) in 2006. Seasonal plantings remained predominantly in the low salinity impact zone (LIZ2) from 1997 to 2006.
- The region has approximately 2,543 properties, with an average cropped area of 22.5 hectares



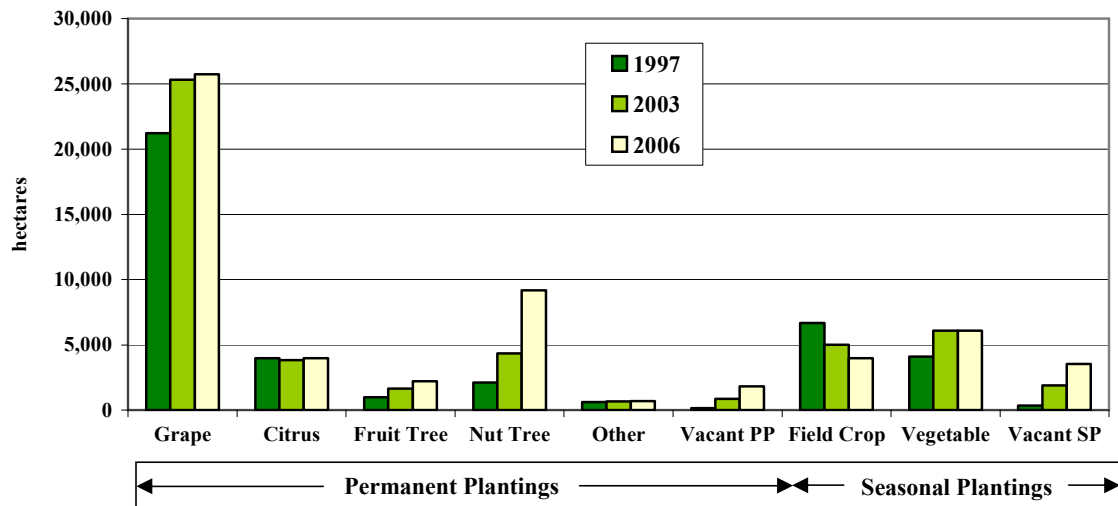
Victorian Mallee Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	21,210	+4,115	25,325	+395	25,720	+4,510	+21%
	Citrus	3,975	-150	3,825	+160	3,985	+10	0%
	Fruit Tree	985	+670	1,655	+560	2,215	+1,230	+125%
	Nut Tree	2,115	+2,220	4,335	+4,865	9,200	+7,085	+335%
	Other	610	+55	665	+30	695	+85	+14%
	Vacant PP	135	+735	870	+945	1,815	+1,680	+1,244%
Seasonal Plantings	Field Crop	6,690	-1,685	5,005	-1,030	3,975	-2,715	-41%
	Vegetable	4,110	+1,985	6,095	-5	6,090	+1,980	+48%
	Vacant SP	360	+1,525	1,885	+1,645	3,530	+3,170	+881%
Total hectares		40,190	+9,470	49,660	+7,565	57,225	+17,035	+42%

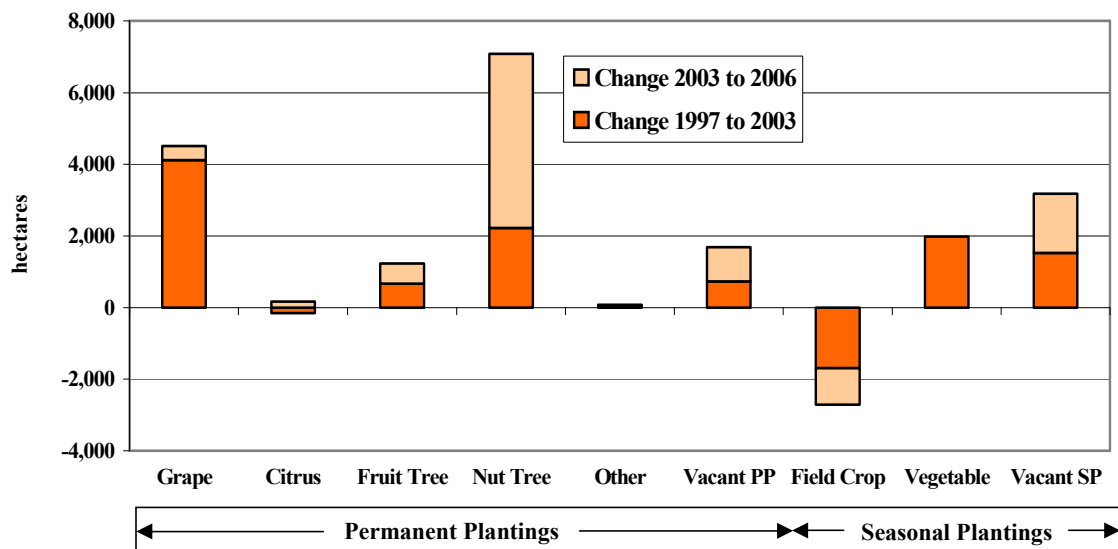
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

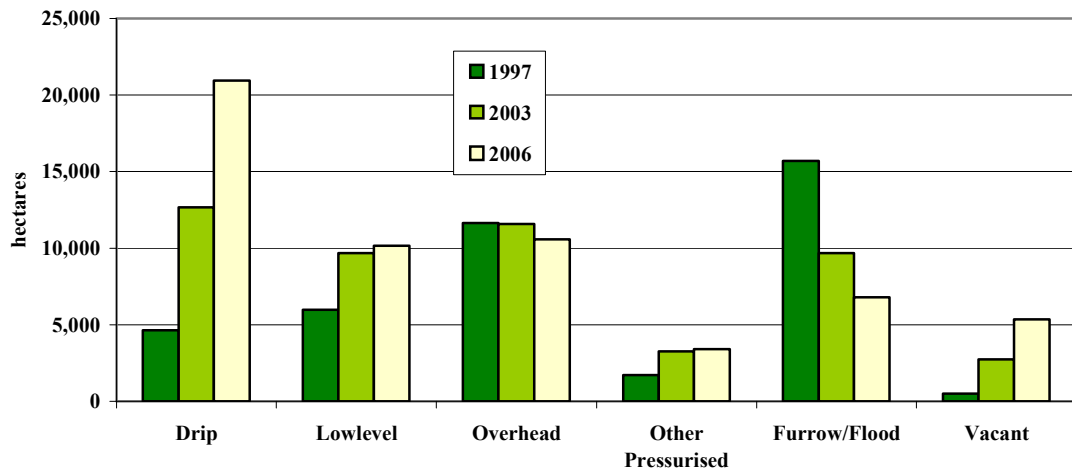


Victorian Mallee Irrigation Methods

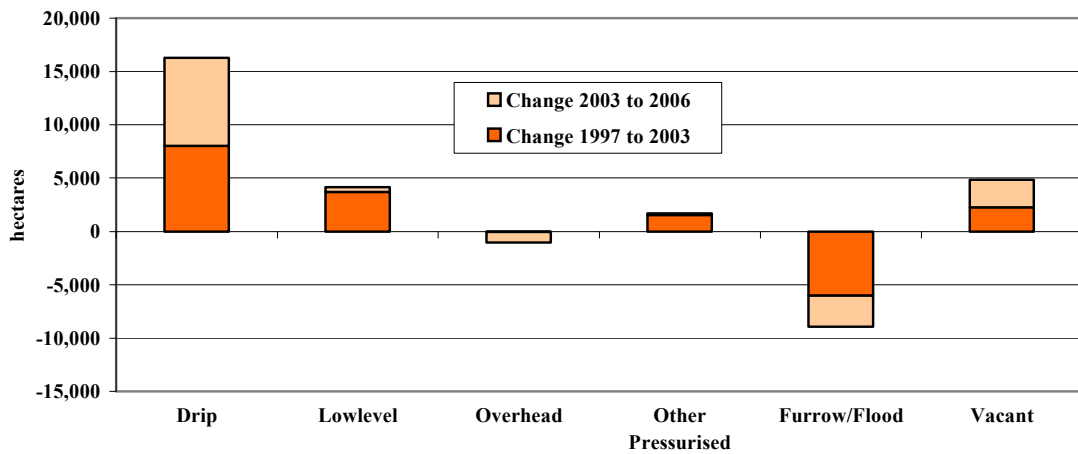
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	4,650	+8,035	12,685	+8,260	20,945	+16,295	+350%
Low level	5,995	+3,685	9,680	+475	10,155	+4,160	+69%
Overhead	11,635	-50	11,585	-1,000	10,585	-1,050	-9%
Other Pressurised	1,710	+1,560	3,270	+130	3,400	+1,690	+99%
Furrow/Flood	15,705	-6,020	9,685	-2,890	6,795	-8,910	-57%
Vacant	495	+2,260	2,755	+2,590	5,345	+4,850	+980%
Total hectares	40,190	+9,470	49,660	+7,565	57,225	+17,035	+42%

‘Other Pressurised’ includes pivot and micro sprinkler

Irrigation Method per Year



Irrigation Method Change

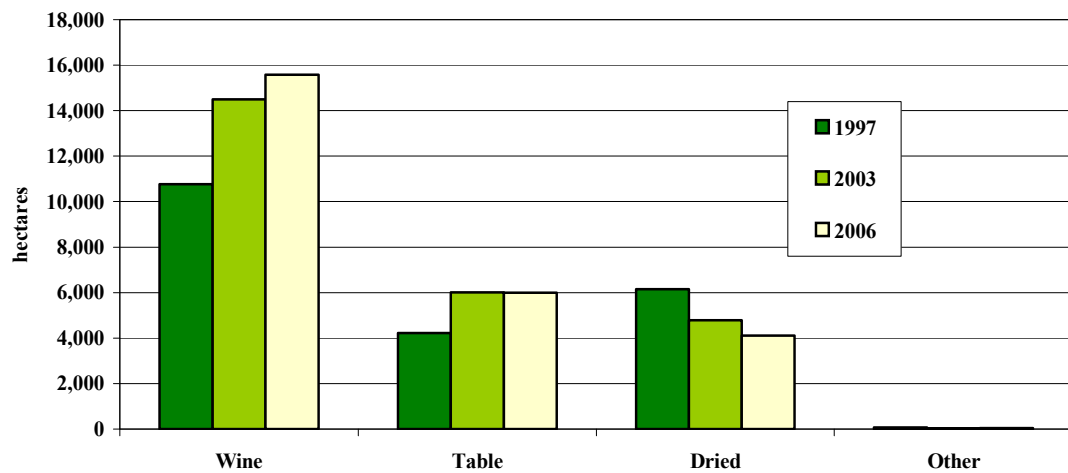


Victorian Mallee Grape Use

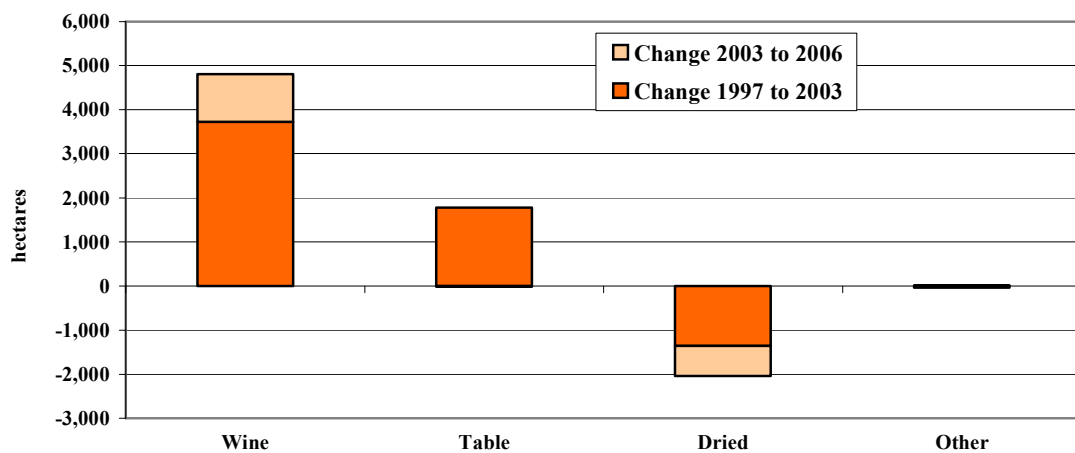
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	10,770	+3,725	14,495	+1,085	15,580	+4,810	+45%
Table	4,225	+1,780	6,005	-15	5,990	+1,765	+42%
Dried	6,145	-1,355	4,790	-685	4,105	-2,040	-33%
Other	70	-35	35	+10	45	-25	-36%
Total hectares	21,210	+4,115	25,325	+395	25,720	+4,510	+21%

Other = juice, cannery or research

Grape Use per Year



Grape Use Change



Victorian Mallee Irrigation Development and Properties

Victorian Mallee Irrigation Development from 1997 to 2006

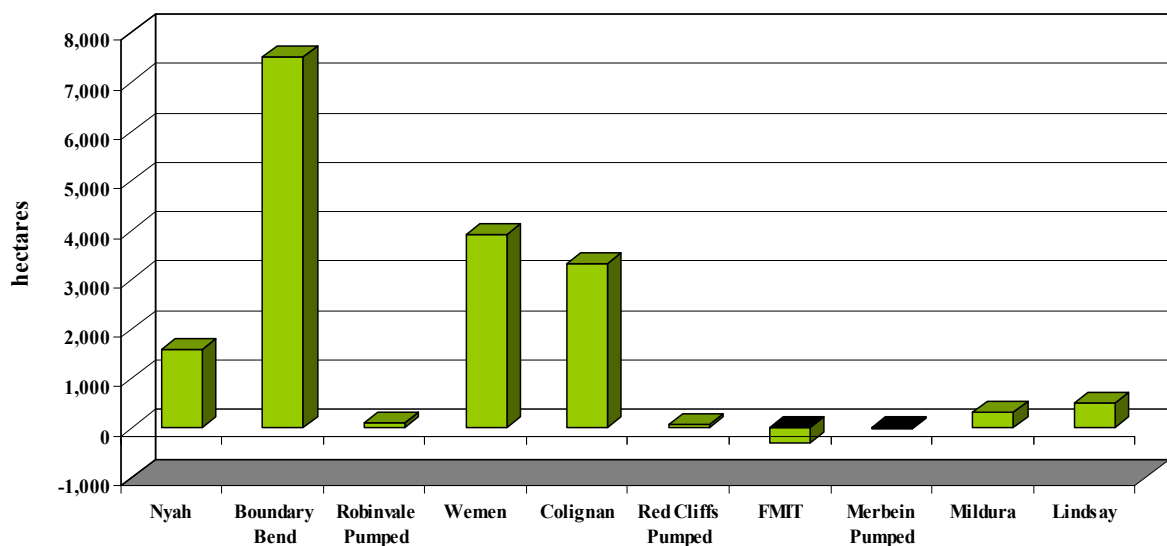
	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	40,190		
Retired between 1997 and 2006		- 1,140	- 3%
New Areas between 1997 and 2006		+ 18,175	+ 45%
Irrigated Crops in 2006 (2005-06 season)	57,225		

Retired = change in land use (e.g. urban subdivision, dam or building construction) has occurred that precludes use for irrigated horticulture.

Irrigation Development per Study Area

Study Area	Hectares change 1997 - 2006	% of total change
Nyah river reach	+1,610	+9%
Boundary Bend river reach	+7,505	+44%
Robinvale district	+100	+1%
Wemen river reach	+3,925	+23%
Colignan river reach	+3,320	+19%
Red Cliffs district	+90	+1%
FMIT district	-310	-2
Merbein district	-30	0%
Mildura river reach	+310	+2
Lindsay river reach	+515	+3
Total	+17,035	100%

Change in irrigated area from 1997 to 2006 per study area:



Victorian Mallee Property Change

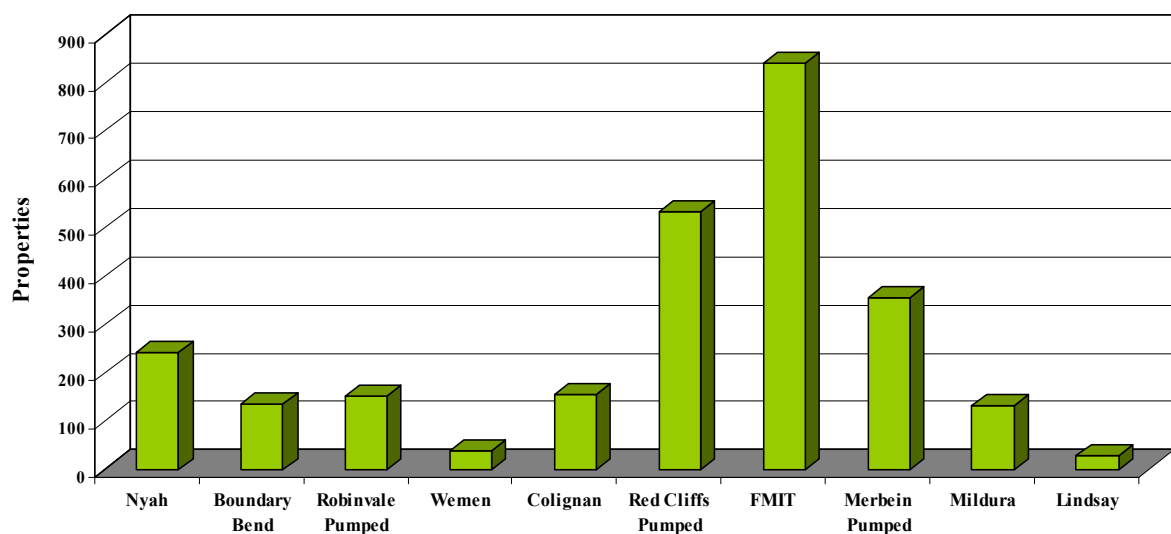
Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	2,287	2,181	2,132	-155	-7%
20 to 40	217	209	208	-9	-4%
> 40	154	200	203	+49	+32%
Total Properties	2,658	2,590	2,543	-115	-4%
Average Cropped Area (hectares)	15.1	19.2	22.5		

Properties per Study Area in 2006

Study Area	Approximate No. of Properties	% of Regional total	Average Property size (hectares)
Nyah river reach	243	9%	30.6
Boundary Bend river reach	134	5%	96.2
Robinvale district	151	6%	16.0
Wemen river reach	39	1%	159.2
Colignan river reach	155	6%	67.3
Red Cliffs district	532	20%	8.5
FMIT district	842	32%	7.3
Merbein district	354	14%	8.8
Mildura river reach	143	5%	12.1
Lindsay river reach	19	1%	122.1
Study Areas Total	2,612	100%	
Victorian Mallee Total*	2,543		22.5

*Victorian Mallee total is smaller than the sum of properties per study area as 69 properties occur in more than one study area.

Number of Properties per Study Area

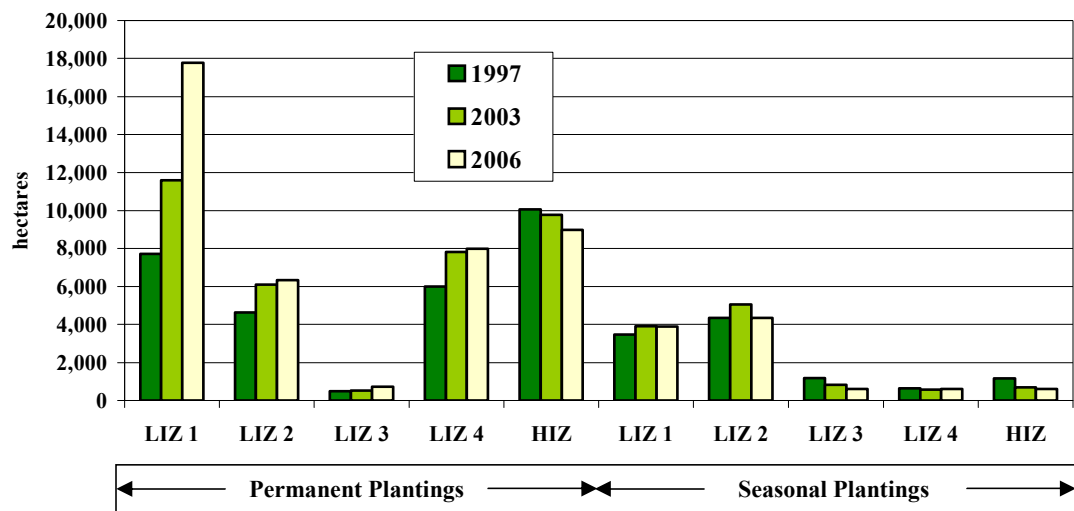


Victorian Mallee Salinity Impact Zones

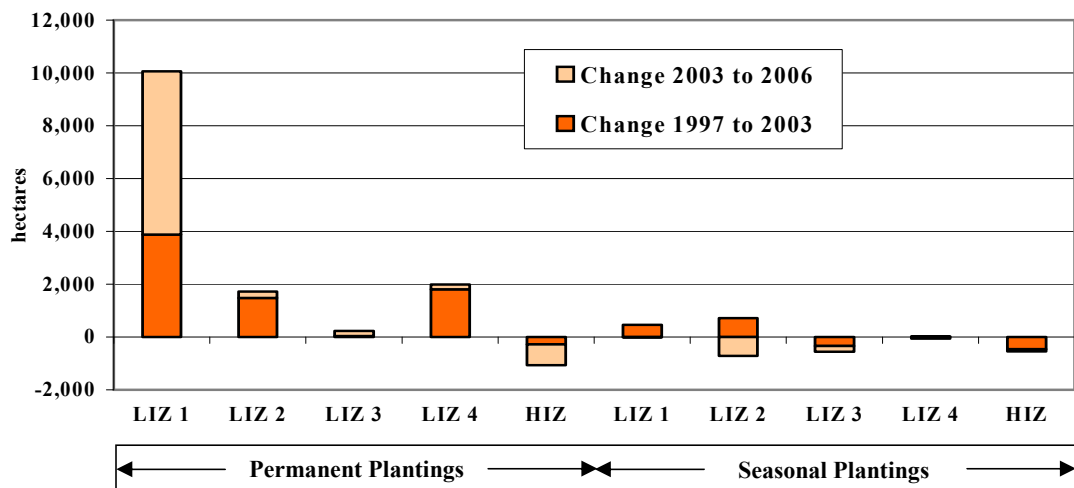
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	7,720	+3,880	11,600	+6,185	17,785	+10,065	+130%
	LIZ 2	4,625	+1,470	6,095	+245	6,340	+1,715	+37%
	LIZ 3	490	+35	525	+195	720	+230	+47%
	LIZ 4	6,005	+1,805	7,810	+185	7,995	+1,990	+33%
	HIZ	10,055	-280	9,775	-800	8,975	-1,080	-11%
Seasonal Plantings	LIZ 1	3,465	+450	3,915	-15	3,900	+435	+13%
	LIZ 2	4,350	+715	5,065	-720	4,345	-5	0%
	LIZ 3	1,180	-340	840	-225	615	-565	-48%
	LIZ 4	645	-65	580	+20	600	-45	-7%
	HIZ	1,160	-460	700	-95	605	-555	-48%
Total hectares		39,695	+7,210	46,905	+4,975	51,880	+12,185	+31%
Vacant areas excluded		495		2,755		5,345		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



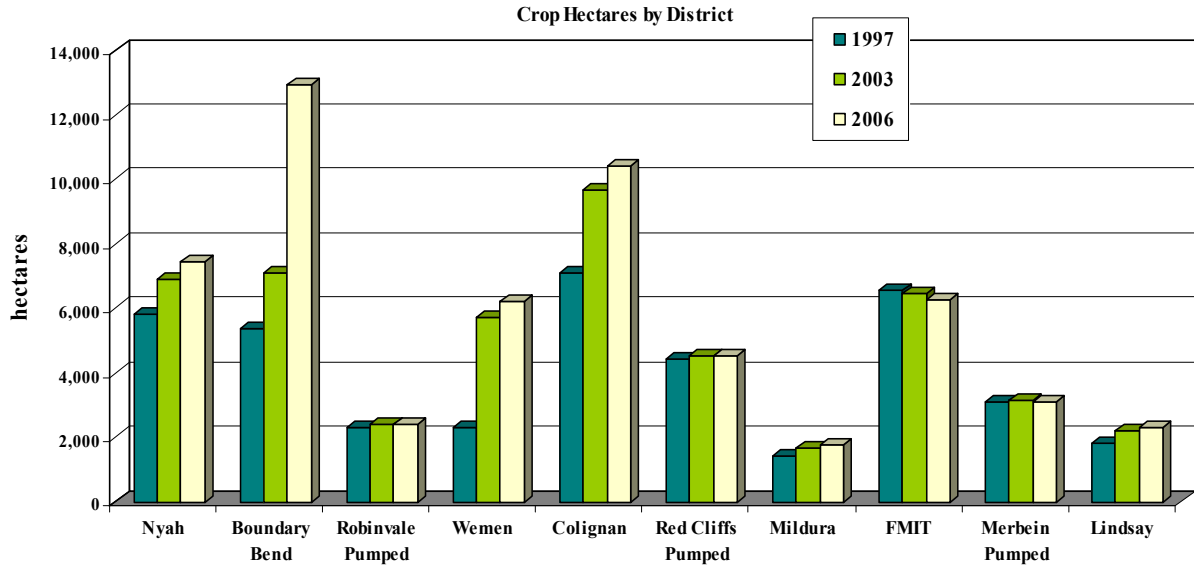
Salinity Impact Zone Change



Summary by District

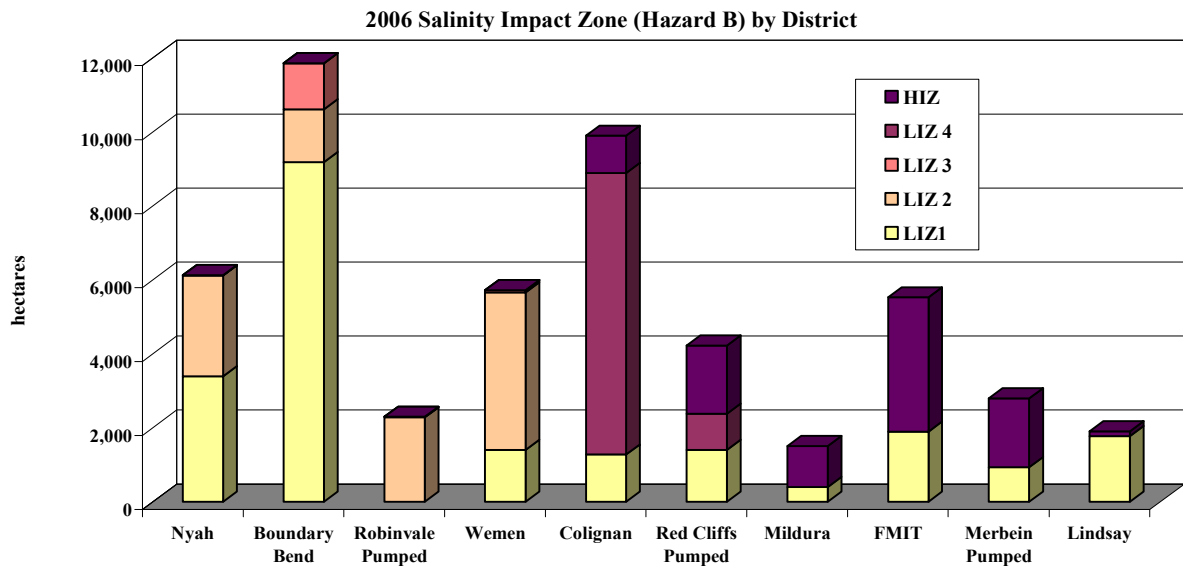
Area Change per District

The following chart shows the change in irrigated hectares per study district between 1997 and 2006:



Salinity Impact Zone by District

The following chart shows 2006 irrigated hectares per salinity impact zone (Hazard B) for each study district:

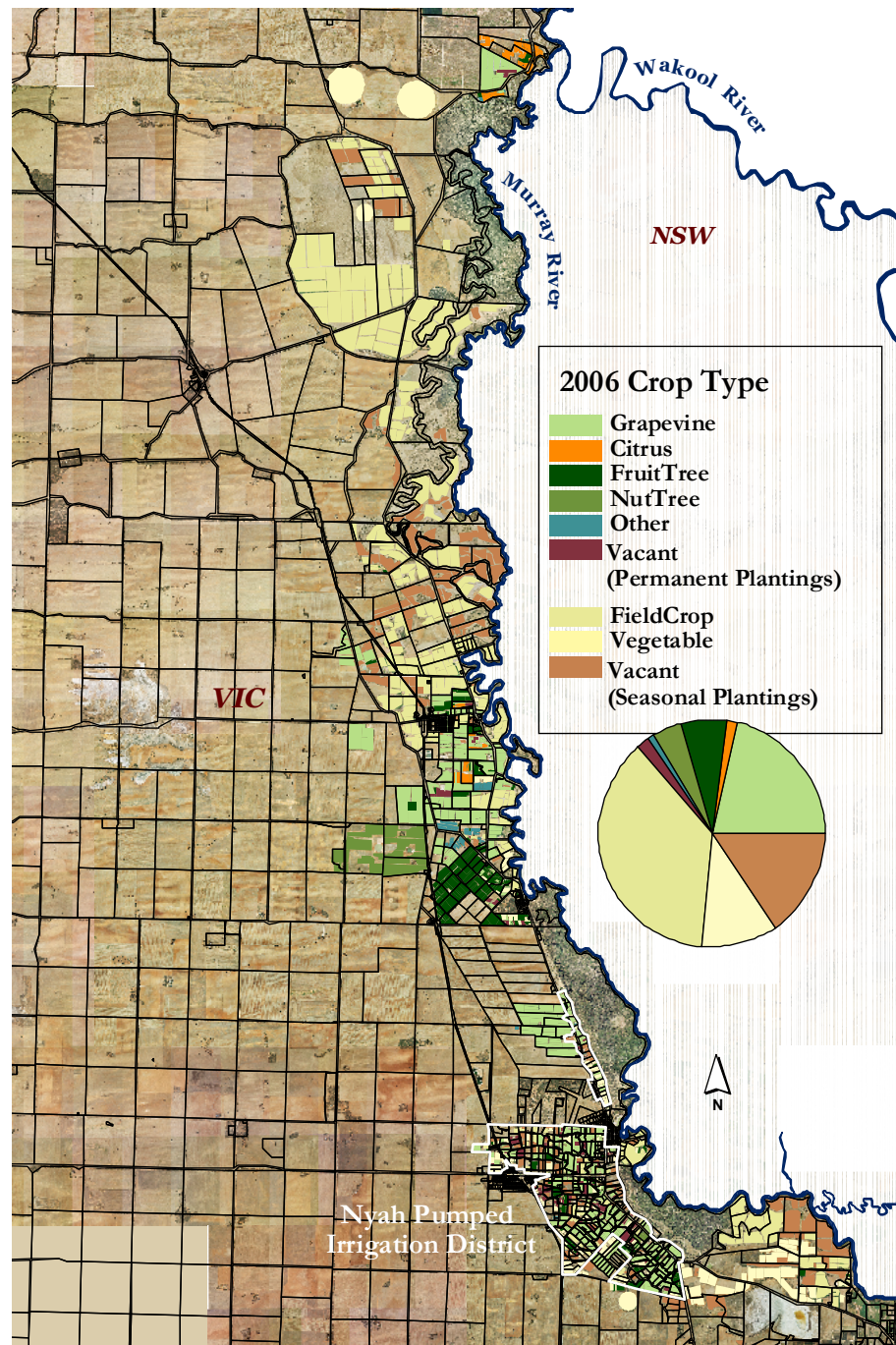


1 Nyah River Reach (Nyah to Wakool Junction)

The following presents information with respect to irrigated crops for the Nyah river reach from 1997 to 2006. In summary:

- The irrigated area increased by 1,610 hectares; a 28% increase from 1997 to 2006
- 'Field Crops' remained the dominant crop type from 1997 to 2006
- 'Furrow' remained the dominant irrigation method from 1997 to 2006
- Grapevines were predominantly grown for wine production from 1997 to 2006
- Crops were predominantly in the low salinity impact zone, LIZ 2, in 1997 then LIZ 1 in 2006
- The Nyah river reach has approximately 243 properties, with an average cropped area of 30.6 hectares

Map of Nyah river reach showing 2006 crop types



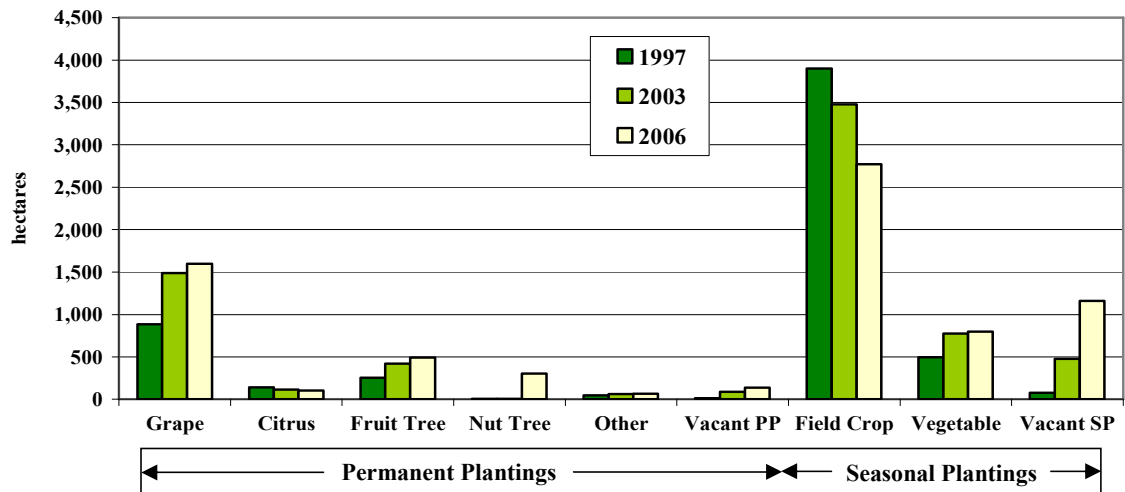
1.1 Nyah Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	885	+605	1,490	+105	1,595	+710	+80%
	Citrus	140	-25	115	-10	105	-35	-25%
	Fruit Tree	255	+165	420	+70	490	+235	+92%
	Nut Tree	5	0	5	+300	305	+300	+6,000%
	Other	45	+15	60	+5	65	+20	+44%
	Vacant PP	15	+75	90	+45	135	+120	+800%
Seasonal Plantings	Field Crop	3,900	-425	3,475	-705	2,770	-1,130	-29%
	Vegetable	495	+280	775	+25	800	+305	+62%
	Vacant SP	75	+400	475	+685	1,160	+1,085	+1,447%
Total hectares		5,815	+1,090	6,905	+520	7,425	+1,610	+28%

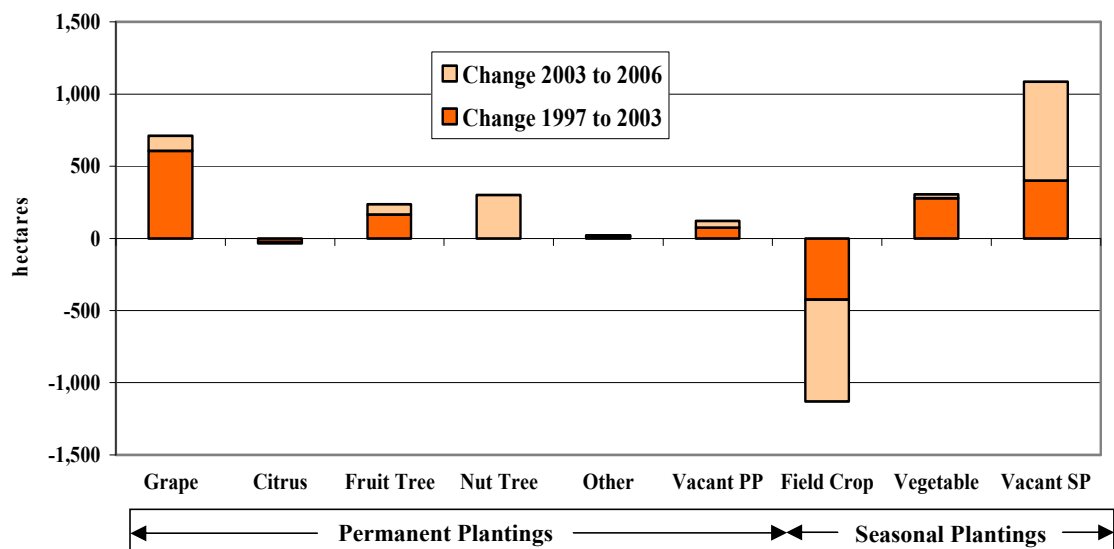
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

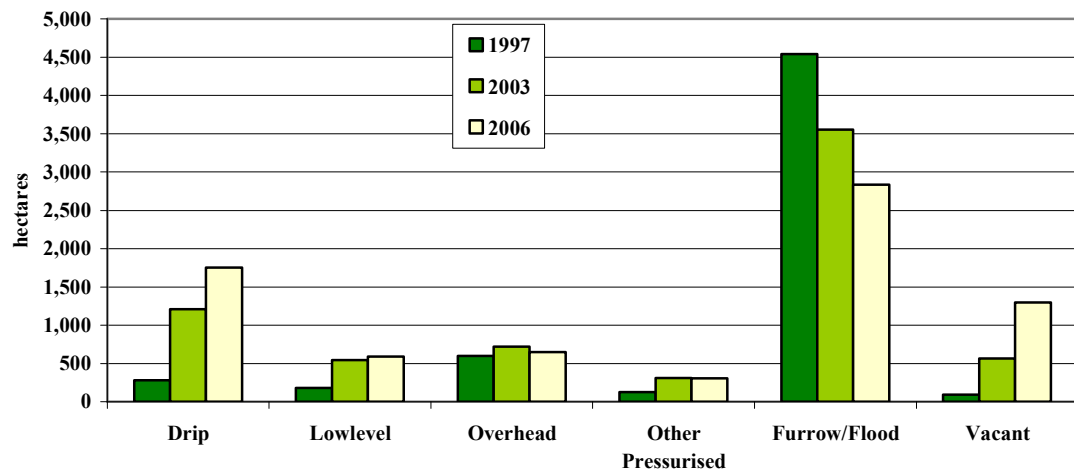


1.2 Nyah Irrigation Methods

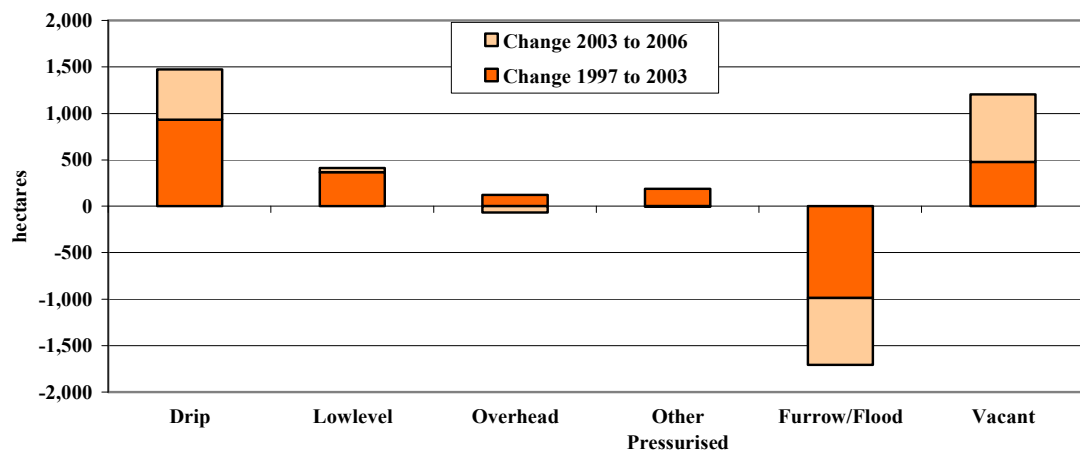
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	280	+930	1,210	+540	1,750	+1,470	+525%
Low level	180	+365	545	+45	590	+410	+228%
Overhead	600	+120	720	-70	650	+50	+8%
Other Pressurised	125	+185	310	-5	305	+180	+144%
Furrow/Flood	4,540	-985	3,555	-720	2,835	-1,705	-38%
Vacant	90	+475	565	+730	1,295	+1,205	+1,339%
Total hectares	5,815	+1,090	6,905	+520	7,425	+1,610	+28%

Other Pressurised includes pivot and micro sprinkler

Irrigation Method per Year



Irrigation Method Change

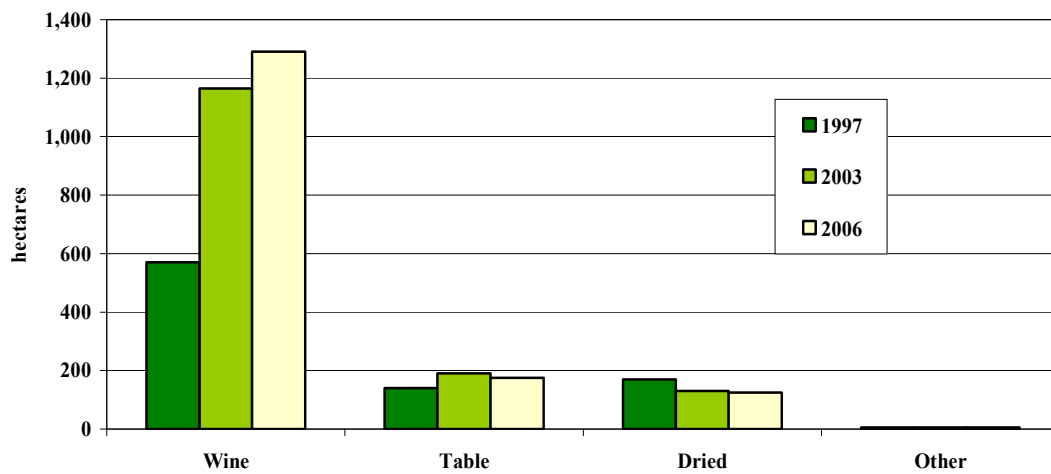


1.3 Nyah Grape Use

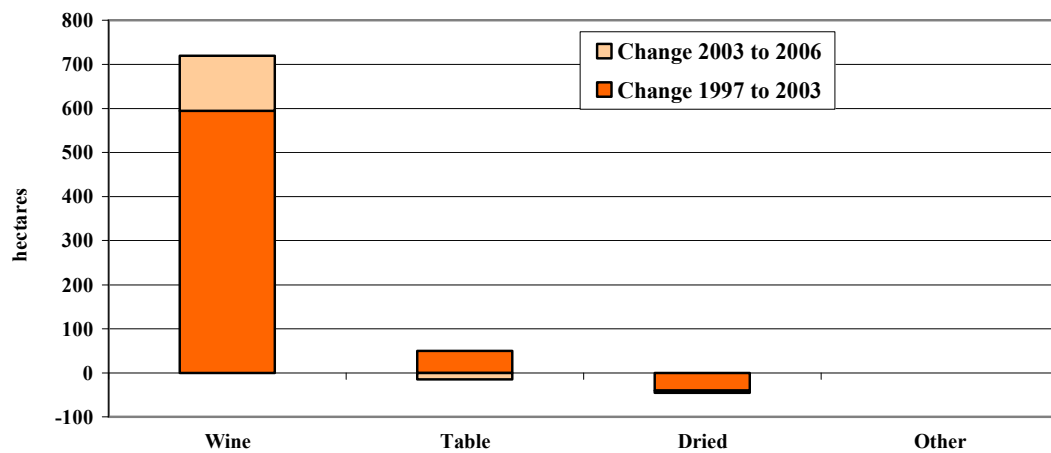
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	570	+595	1,165	+125	1,290	+720	+126%
Table	140	+50	190	-15	175	+35	+25%
Dried	170	-40	130	-5	125	-45	-26%
Other	5	0	5	0	5	0	0%
Total hectares	885	+605	1,490	+105	1,595	+710	+80%

Other = juice, cannery or research

Grape Use per Year



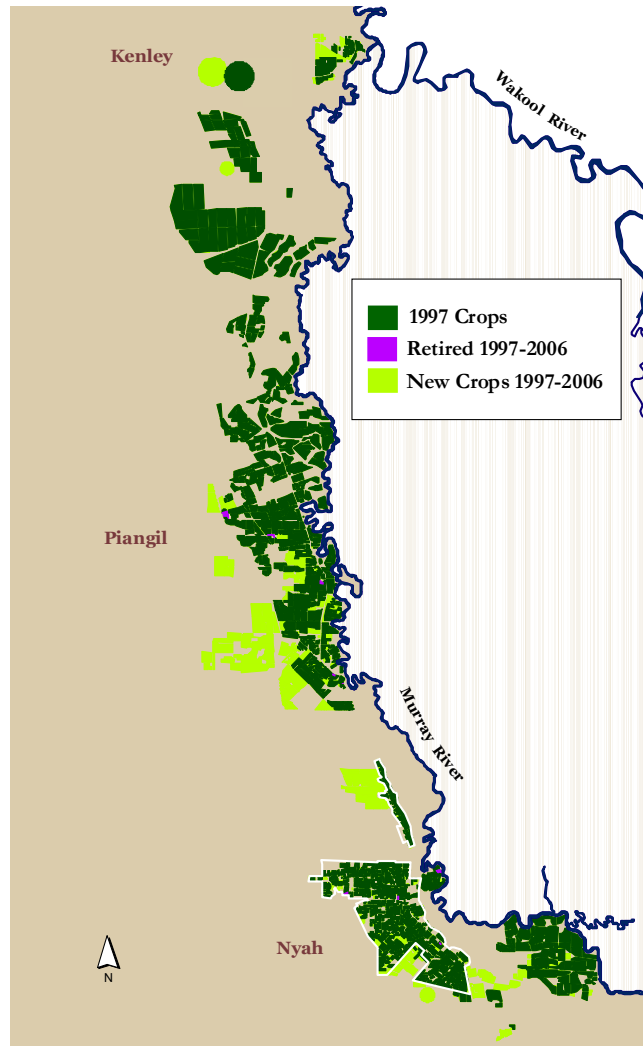
Grape Use Change



1.4 Nyah Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	5,815		
Retired between 1997 and 2006		-20	0 %
New Areas between 1997 and 2006		+1,630	+28 %
Irrigated Crops in 2006 (2005-06 season)	7,425		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	%
< 20 ha	182	179	172	-10	-5%
20 to 40 ha	27	28	26	-1	-4%
> 40 ha	36	43	45	+9	+25%
Total No. of Properties	245	250	243	-2	-1%
Average Cropped Area (hectares)	23.7	27.6	30.6		

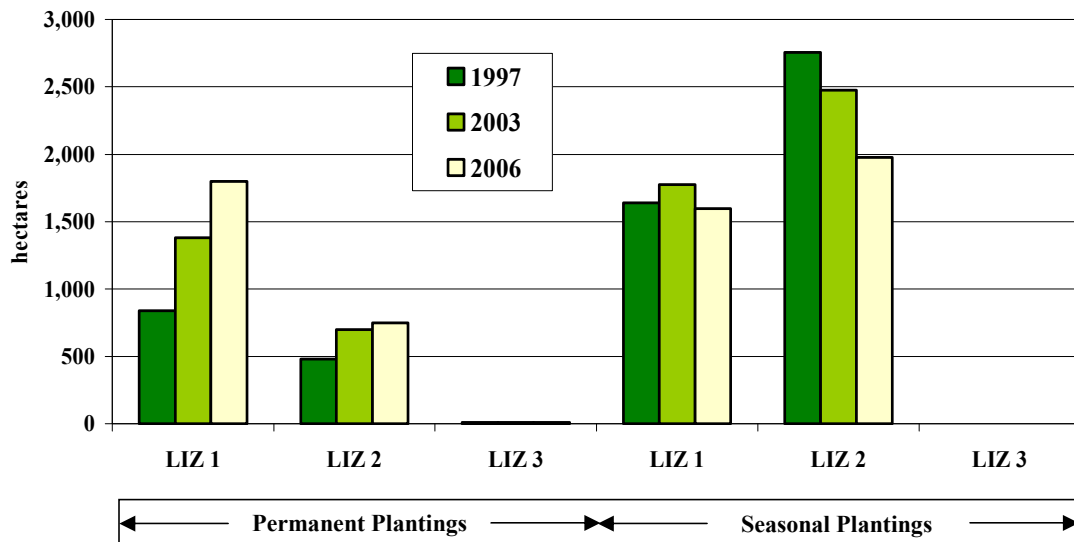
Note that some properties may own irrigated crops outside of this Nyah study area but these are not included in the above figures.

1.5 Nyah Salinity Impact Zones

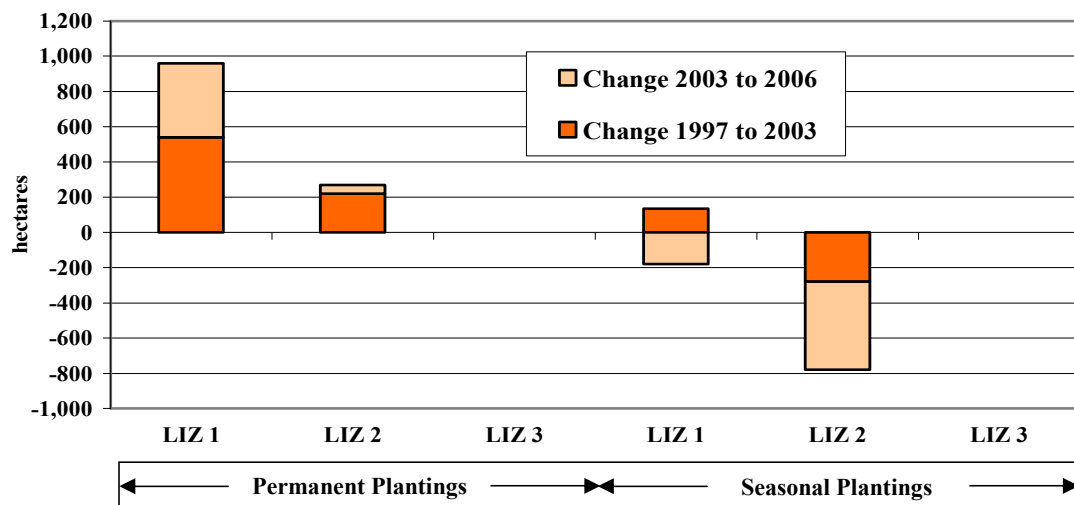
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	840	+540	1,380	+420	1,800	+960	+114%
	LIZ 2	480	+220	700	+50	750	+270	+56%
	LIZ 3	10	0	10	0	10	0	0%
	LIZ 4							
	HIZ							
Seasonal Plantings	LIZ 1	1,640	+135	1,775	-180	1,595	-45	-3%
	LIZ 2	2,755	-280	2,475	-500	1,975	-780	-28%
	LIZ 3							
	LIZ 4							
	HIZ							
Total hectares		5,725	+615	6,340	-210	6,130	+405	+7%
Vacant areas excluded		90		565		1,295		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change

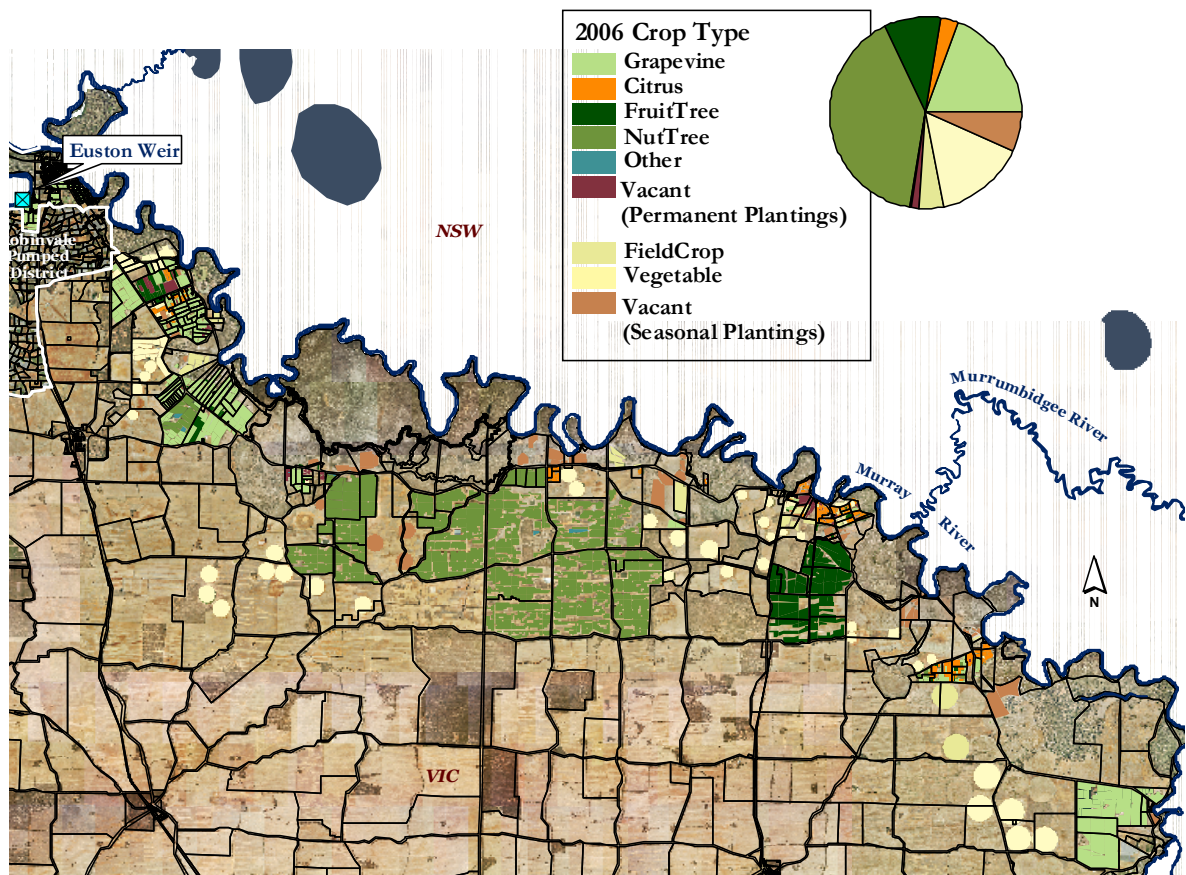


2 Boundary Bend River Reach (Wakool Junction to Euston Weir)

The following presents information with respect to irrigated crops for the Boundary Bend river reach from 1997 to 2006. In summary:

- The irrigated area increased by 7,505 hectares (a 139% increase) from 1997 to 2006
- The dominant crop type changed from 'Vegetables' in 1997 to 'Nut trees' in 2006
- The dominant irrigation method changed from 'Overhead' in 1997 to 'Drip' in 2006
- Grapevines were predominantly grown for table grapes in 1997 and wine production in 2006
- The Boundary Bend district has approximately 134 properties, with an average cropped area of 96.2 hectares
- Crops remained predominantly in the lowest salinity impact zone, LIZ 1, from 1997 to 2006

Map of Boundary Bend river reach showing 2006 crop types



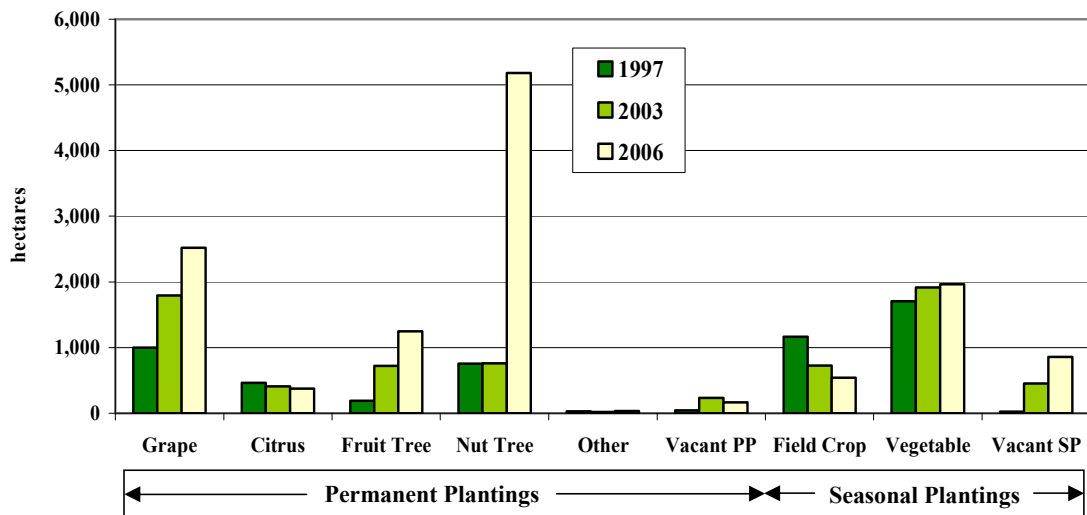
2.1 Boundary Bend Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	1,000	+790	1,790	+730	2,520	+1,520	+152%
	Citrus	465	-55	410	-35	375	-90	-19%
	Fruit Tree	190	+530	720	+525	1,245	+1,055	+555%
	Nut Tree	755	+5	760	+4,420	5,180	+4,425	+586%
	Other	30	-10	20	+15	35	+5	+17%
	Vacant PP	45	+185	230	-65	165	+120	+267%
Seasonal Plantings	Field Crop	1,165	-440	725	-185	540	-625	-54%
	Vegetable	1,705	+210	1,915	+50	1,965	+260	+15%
	Vacant SP	25	+430	455	+405	860	+835	+3,340%
Total hectares		5,380	+1,645	7,025	+5,860	12,885	+7,505	+139%

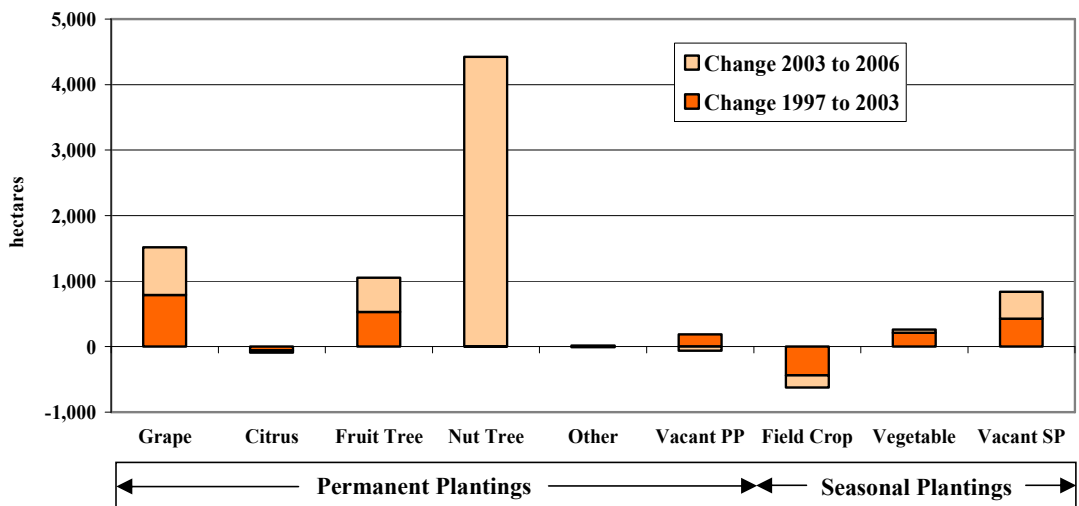
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

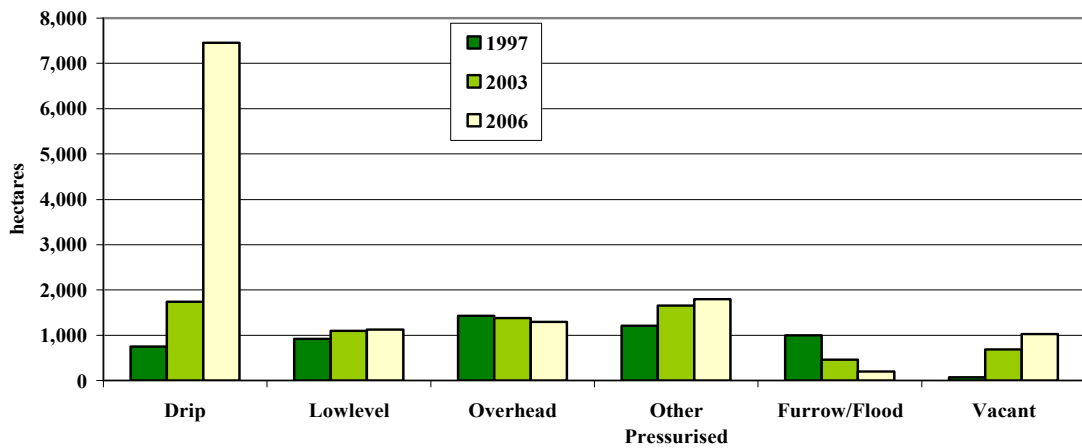


2.2 Boundary Bend Irrigation Methods

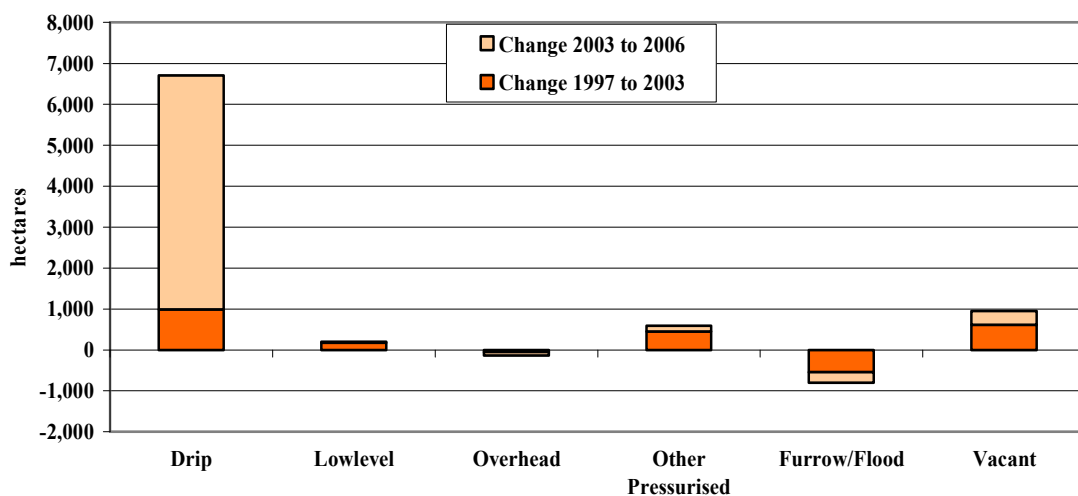
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	750	+995	1,745	+5,705	7,450	+6,700	+893%
Low level	920	+175	1,095	+25	1,120	+200	+22%
Overhead	1,430	-50	1,380	-85	1,295	-135	-9%
Other Pressurised	1,210	+450	1,660	+140	1,800	+590	+49%
Furrow/Flood	1,000	-540	460	-265	195	-805	-81%
Vacant	70	+615	685	+340	1,025	+955	+1,364%
Total hectares	5,380	+1,645	7,025	+5,860	12,885	+7,505	+139%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

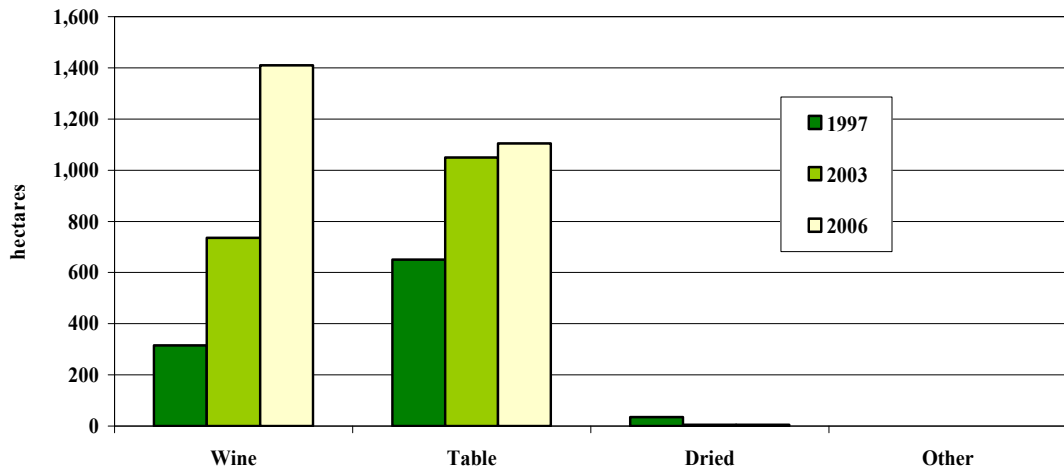


2.3 Boundary Bend Grape Use

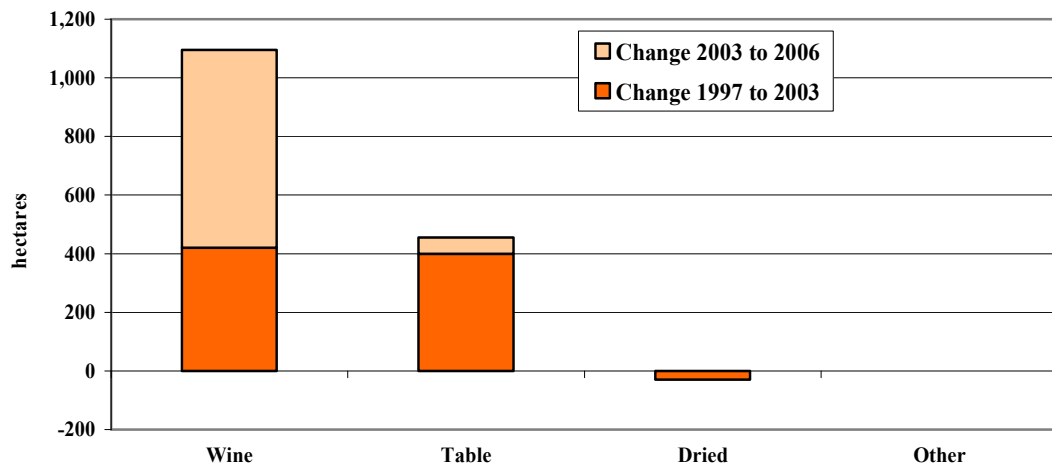
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	315	+420	735	+675	1,410	+1,095	+348%
Table	650	+400	1,050	+55	1,105	+455	+70%
Dried	35	-30	5	0	5	-30	-86%
Other	0	0	0	0	0	0	0%
Total hectares	1,000	+790	1,790	+730	2,520	+1,520	+152%

Other = juice, cannery or research

Grape Use per Year



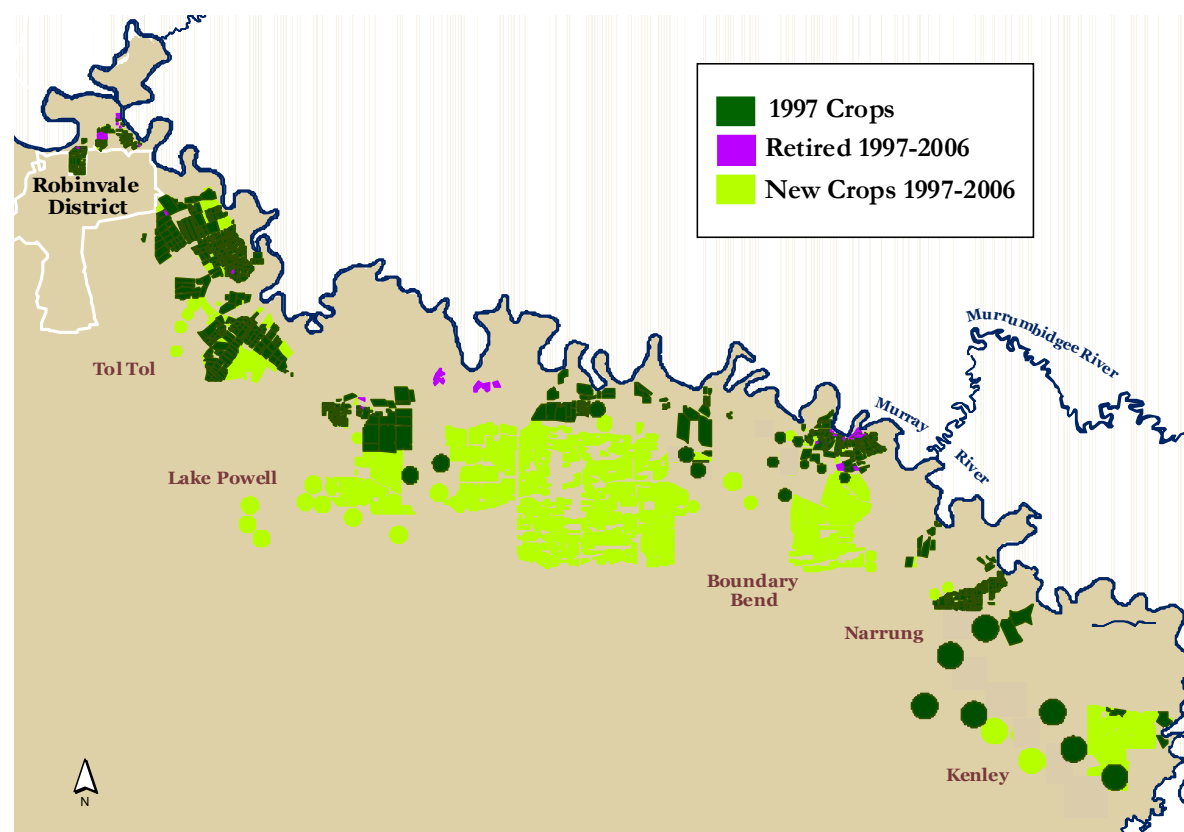
Grape Use Change



2.4 Boundary Bend – Irrigation Properties and Development

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	5,380		
Retired between 1997 and 2006		- 95	- 2%
New Areas between 1997 and 2006		+ 7,600	+ 141%
Irrigated Crops in 2006 (2005-06 season)	12,885		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	90	87	82	-8	-9%
20 to 40	33	28	26	-7	-21%
> 40	20	26	26	+6	+30%
Total Properties	143	141	134	-9	-6%
Average Cropped Area (hectares)	37.6	49.8	96.2		

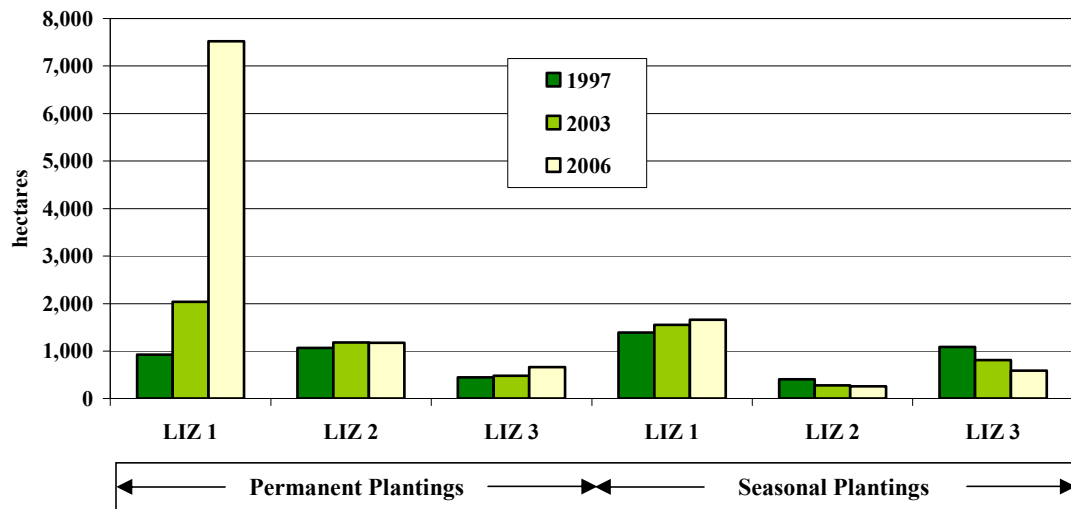
Note that some properties may own irrigated crops outside of this Boundary Bend study area but these are not included in the above figures.

2.5 Boundary Bend Salinity Impact Zones

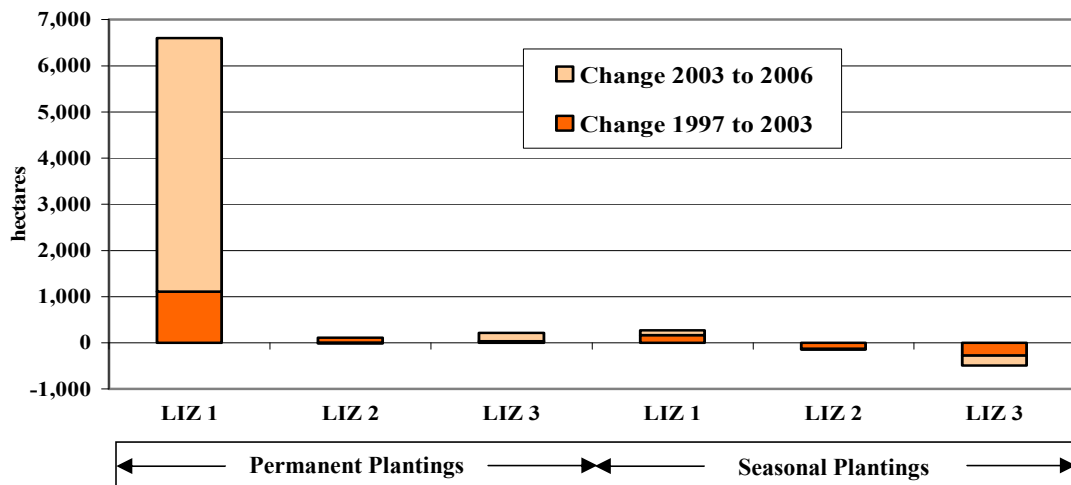
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	925	+1,115	2,040	+5,485	7,525	+6,600	+714%
	LIZ 2	1,070	+110	1,180	-10	1,170	+100	+9%
	LIZ 3	445	+35	480	+180	660	+215	+48%
	LIZ 4							
	HIZ							
Seasonal Plantings	LIZ 1	1,385	+170	1,555	+105	1,660	+275	+20%
	LIZ 2	400	-125	275	-20	255	-145	-36%
	LIZ 3	1,085	-275	810	-220	590	-495	-46%
	LIZ 4							
	HIZ							
Total hectares		5,310	+1,030	6,340	+5,520	11,860	+6,550	+123%
Vacant areas excluded		70		685		1,025		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



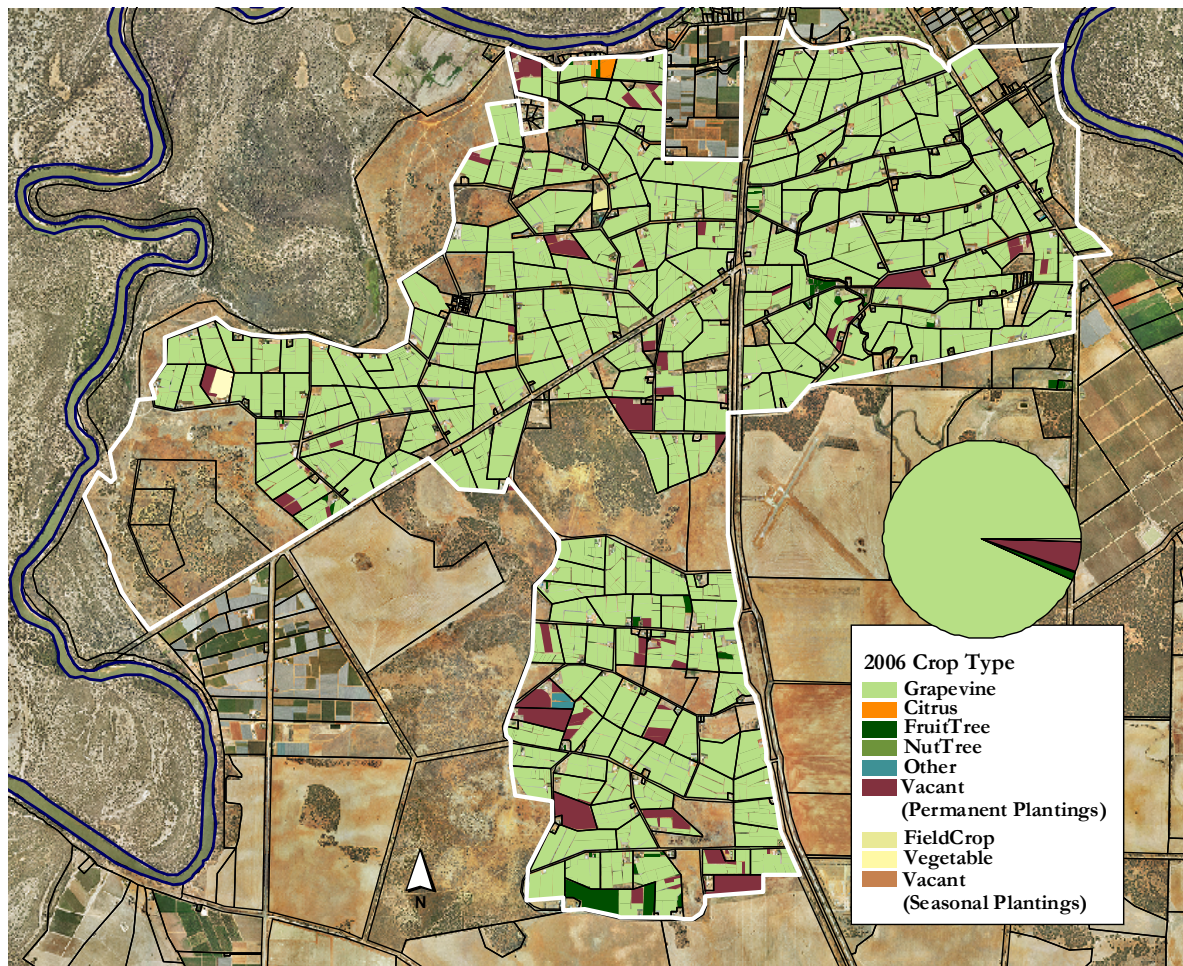
3 Robinvale District (Robinvale Pumped Irrigation District)

The following presents information with respect to irrigated crops for the Robinvale district from 1997 to 2006.

In summary:

- The irrigated area increased by 100 hectares (a 4% increase) from 1997 to 2006
- Grapevines have remained the dominant crop type from 1997 to 2006
- The dominant irrigation method changed from 'Furrow' in 1997 to 'Low level' in 2006
- Grapevines were predominantly grown for table grapes from 1997 to 2006
- The Robinvale district has approximately 151 properties, with an average cropped area of 16.0 hectares
- Crops are predominantly in the low salinity impact zone, LIZ 2

Map of Robinvale district showing 2006 crop types:



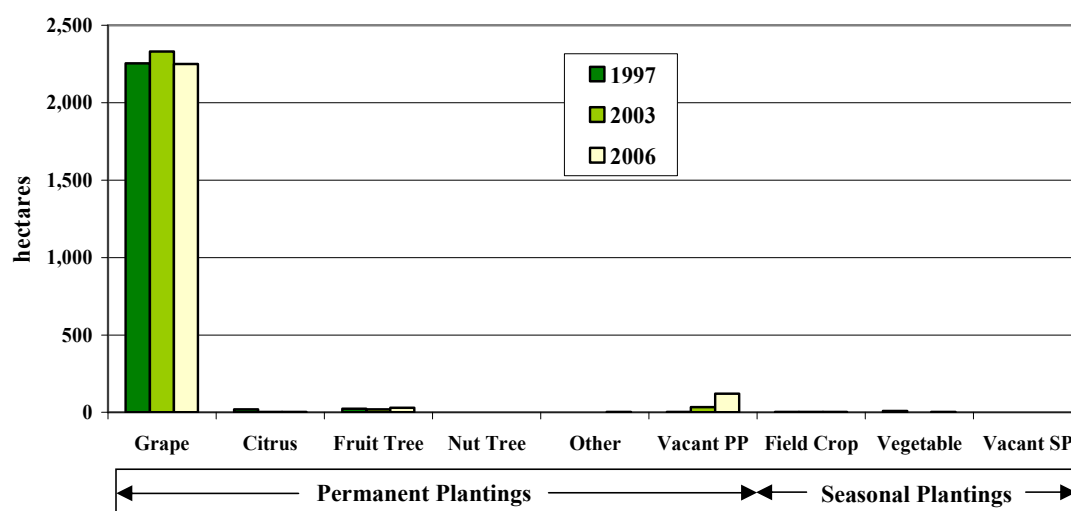
3.1 Robinvale Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	2,255	+75	2,330	-80	2,250	-5	0%
	Citrus	20	-15	5	0	5	-15	-75%
	Fruit Tree	25	-5	20	+10	30	+5	+20%
	Nut Tree							0%
	Other	0	0	0	+5	5	+5	0%
	Vacant PP	5	+30	35	+85	120	+115	+2,300%
Seasonal Planting	Field Crop	5	0	5	0	5	0	0%
	Vegetable	10	-10	0	+5	5	-5	-50%
	Vacant SP							0%
Total hectares		2,320	+75	2,395	+25	2,420	+100	+4%

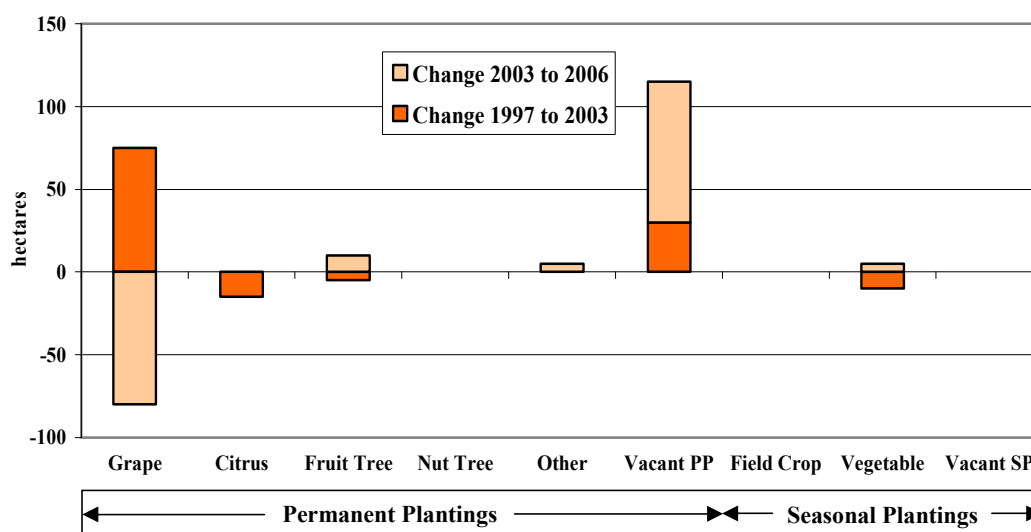
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

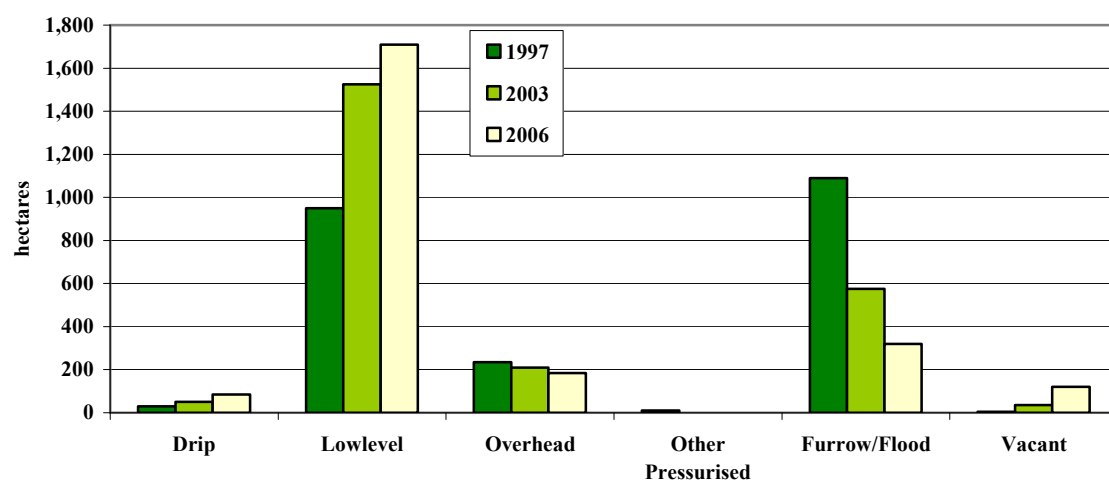


3.2 Robinvale Irrigation Methods

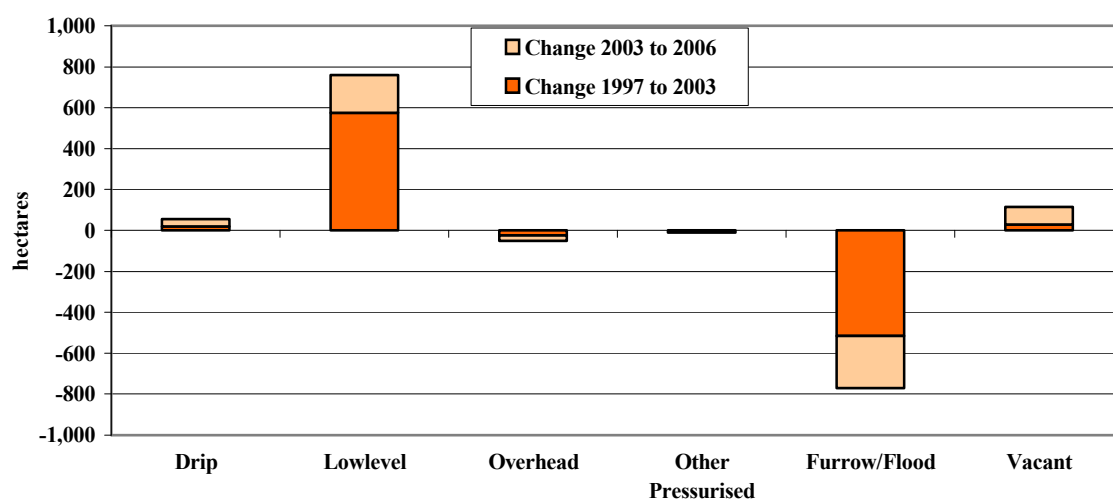
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	30	+20	50	+35	85	+55	+183%
Low level	950	+575	1,525	+185	1,710	+760	+80%
Overhead	235	-25	210	-25	185	-50	-21%
Other Pressurised	10	-10	0	0	0	-10	-100%
Furrow/Flood	1,090	-515	575	-255	320	-770	-71%
Vacant	5	+30	35	+85	120	+115	+2,300%
Total hectares	2,320	+75	2,395	+25	2,420	+100	+4%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

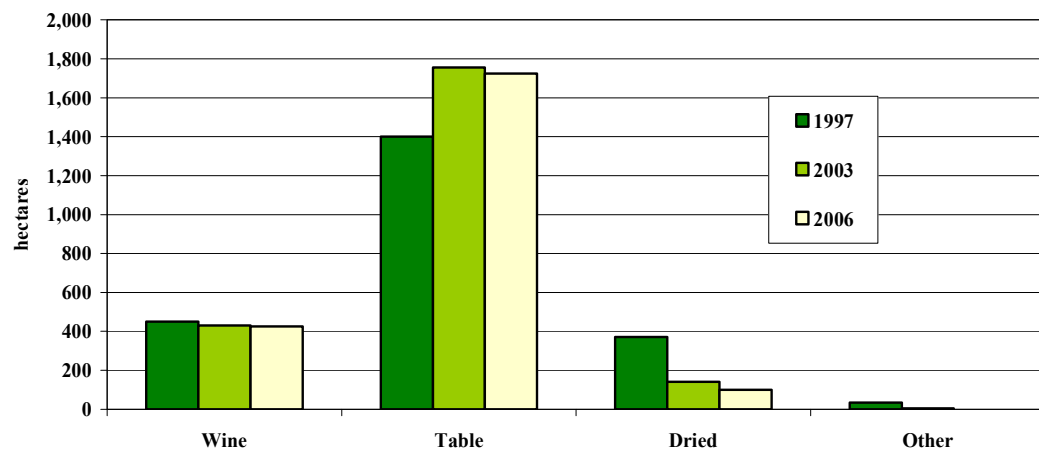


3.3 Robinvale Grape Use

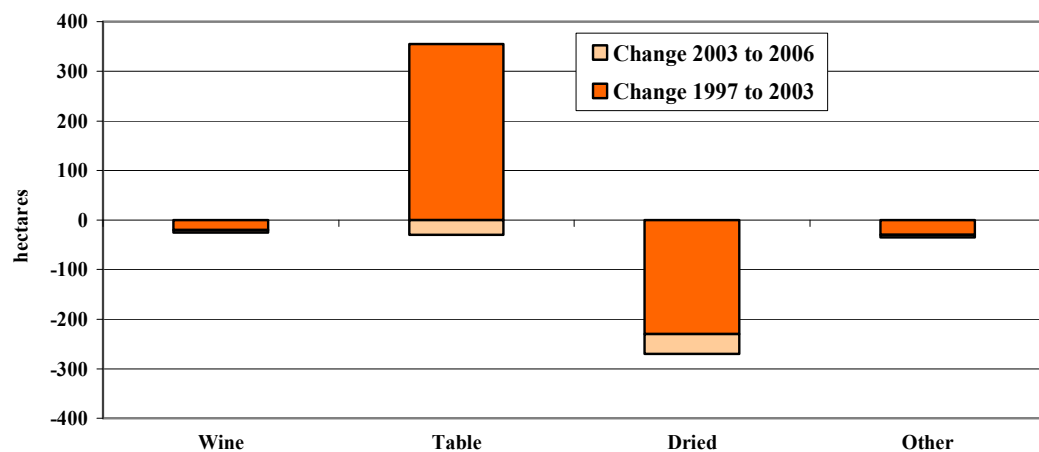
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	450	-20	430	-5	425	-25	-6%
Table	1,400	+355	1,755	-30	1,725	+325	+23%
Dried	370	-230	140	-40	100	-270	-73%
Other	35	-30	5	-5	0	-35	-100%
Total hectares	2,255	+75	2,330	-80	2,250	-5	0%

Other = juice, cannery or research

Grape Use per Year



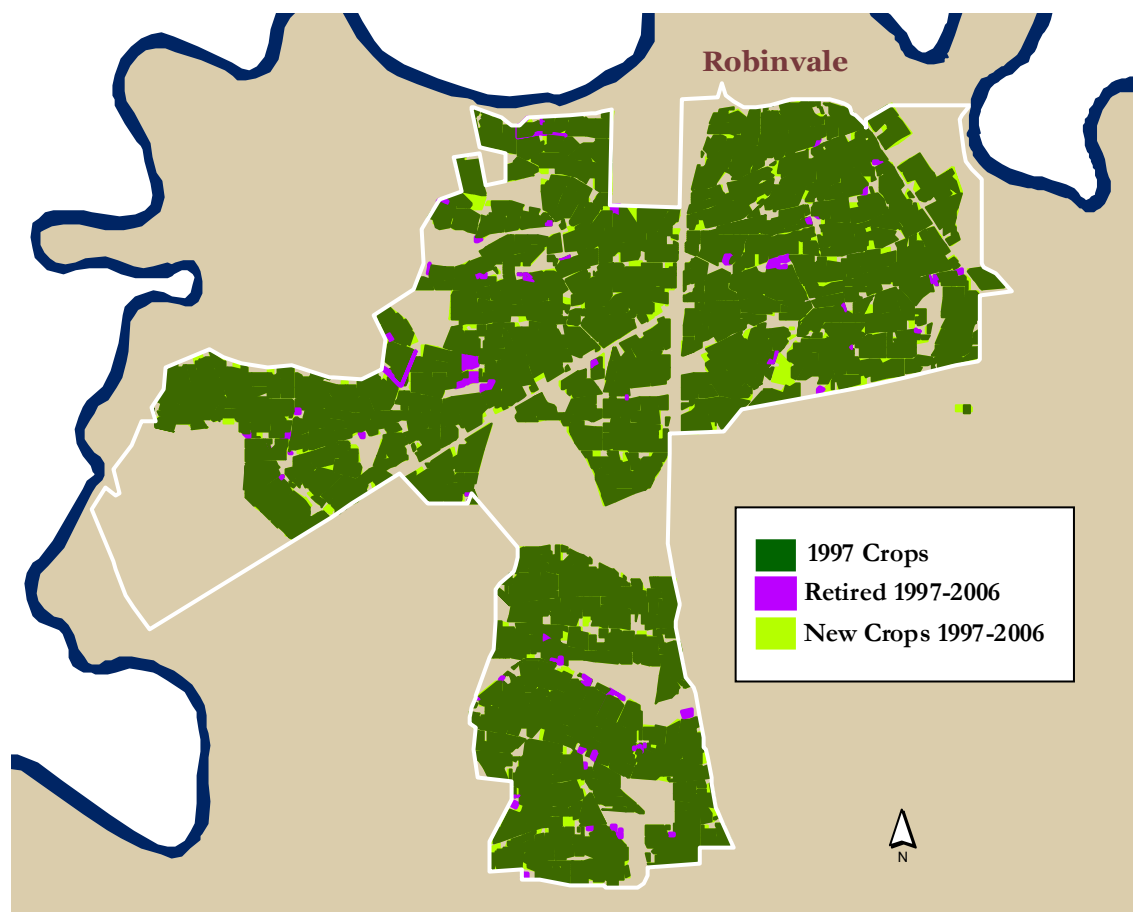
Grape Use Change



3.4 Robinvale – Irrigation Properties and Development

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	2,320		
Retired between 1997 and 2006		-20	-1%
New Areas between 1997 and 2006		+120	+5%
Irrigated Crops in 2006 (2005-06 season)	2,420		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	152	135	121	-31	-20%
20 to 40	19	19	20	+1	+5%
> 40	5	8	10	+5	+100%
Total Properties	176	162	151	-25	-14%
Average Cropped Area (hectares)	13.2	14.8	16.0		

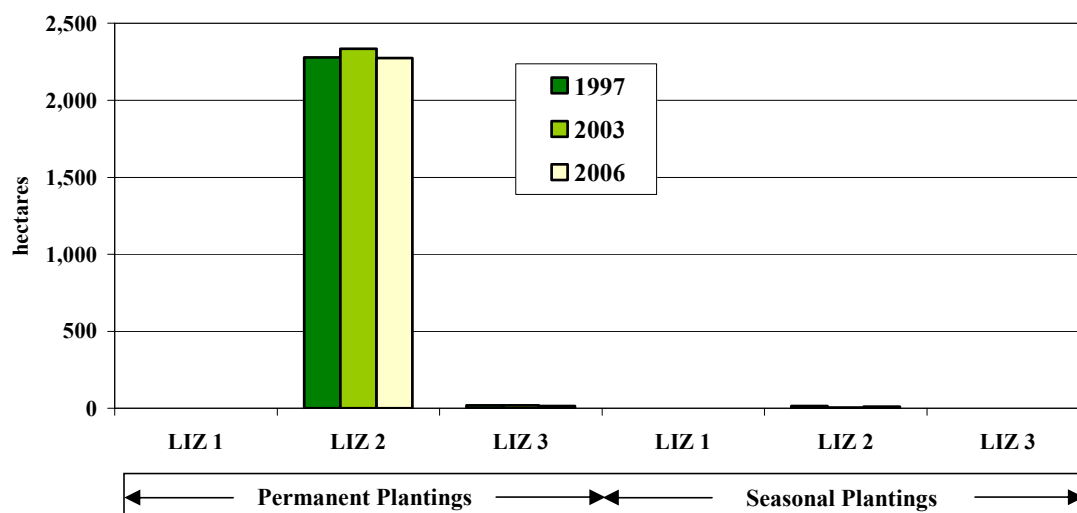
Note that some properties may own irrigated crops outside of this Robinvale study area but these are not included in the above figures.

3.5 Robinvale Salinity Impact Zones

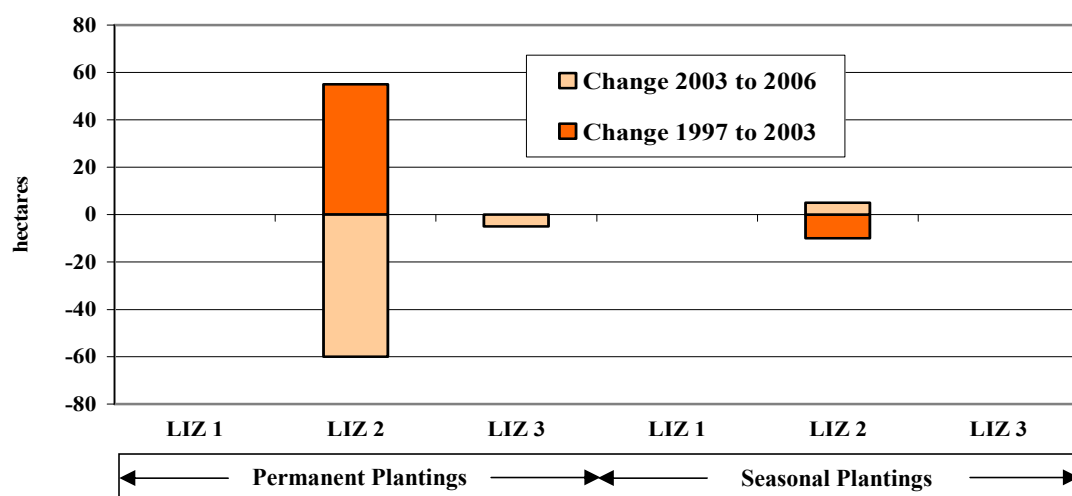
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1							
	LIZ 2	2,280	+55	2,335	-60	2,275	-5	0%
	LIZ 3	20	0	20	-5	15	-5	-25%
	LIZ 4							
	HIZ							
Seasonal Plantings	LIZ 1							
	LIZ 2	15	-10	5	+5	10	-5	-33%
	LIZ 3							
	LIZ 4							
	HIZ							
Total hectares		2,315	+45	2,360	-60	2,300	-15	-1%
Vacant areas excluded		5		35		120		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change

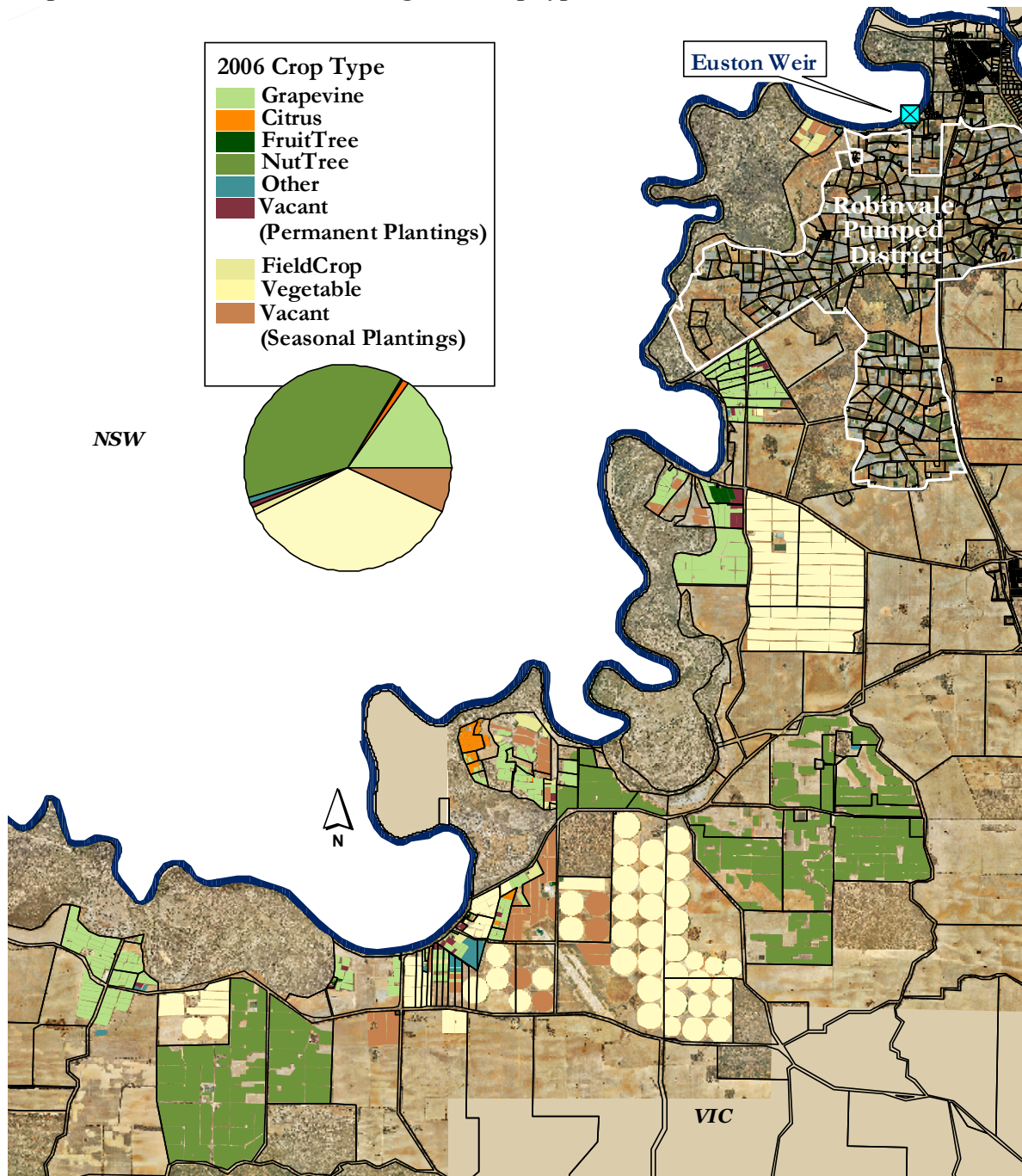


4 Wemen River Reach (Euston Weir to Hattah)

The following presents information with respect to irrigated crops for the Wemen River Reach from 1997 to 2006. In summary:

- The irrigated area increased by 3,925 hectares (a 172% increase) between 1997 and 2006
- The dominant crop type changed from 'Vegetables' in 1997 to 'Nut trees' in 2006
- The dominant irrigation method changed from 'Low level' in 1997 to 'Drip' in 2006
- Grapevines were predominantly grown for wine production from 1997 to 2006
- Crops have remained predominantly in the low salinity impact zone, LIZ 2 from 1997 to 2006
- The Wemen district has approximately 39 properties, with an average cropped area of 159.2 hectares

Map of Wemen river reach showing 2006 crop types:



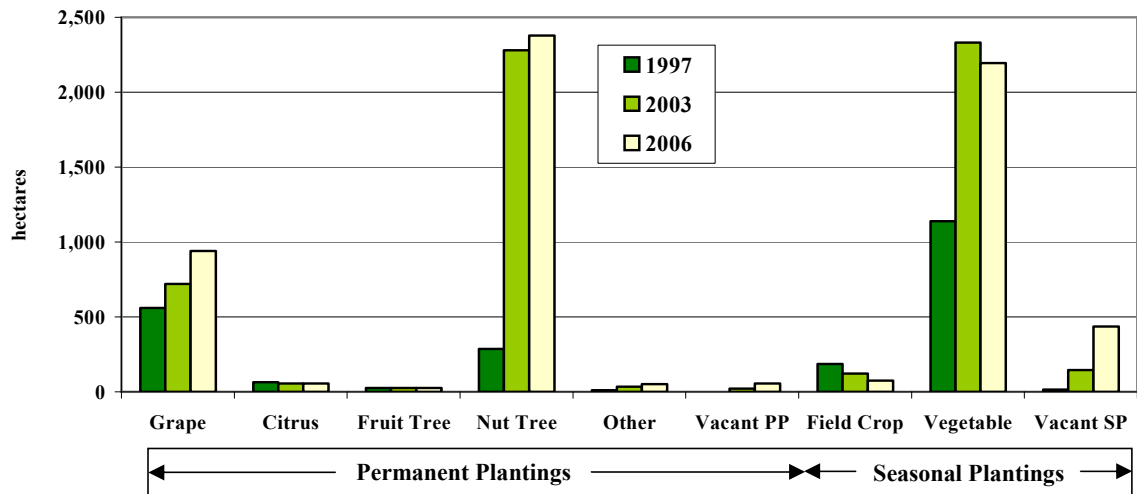
4.1 Wemen Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	560	+160	720	+220	940	+380	+68%
	Citrus	65	-5	60	-5	55	-10	-15%
	Fruit Tree	25	0	25	0	25	0	0%
	Nut Tree	285	+1,990	2,275	+105	2,380	+2,095	+735%
	Other	10	+25	35	+15	50	+40	+400%
	Vacant PP	0	+20	20	+35	55	+55	0%
Seasonal Plantings	Field Crop	185	-65	120	-45	75	-110	-59%
	Vegetable	1,140	+1,190	2,330	-135	2,195	+1,055	+93%
	Vacant SP	15	+130	145	+290	435	+420	+2,800%
Total hectares		2,285	+3,445	5,730	+480	6,210	+3,925	+172%

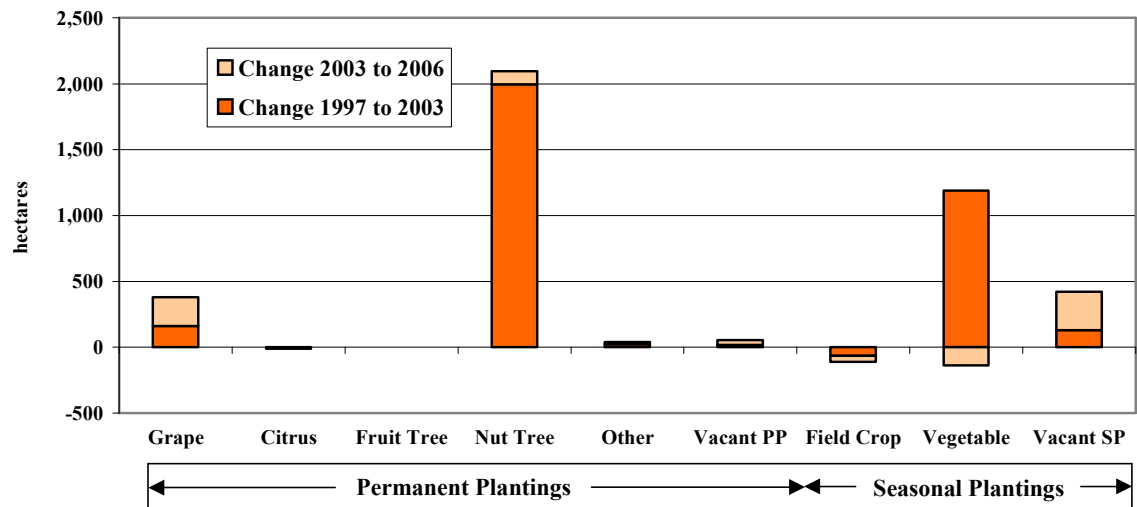
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

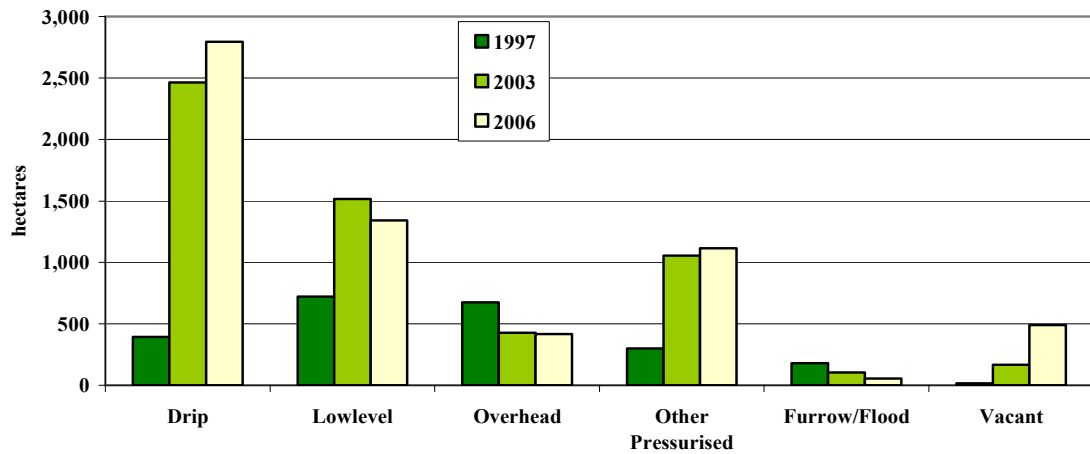


4.2 Wemen Irrigation Methods

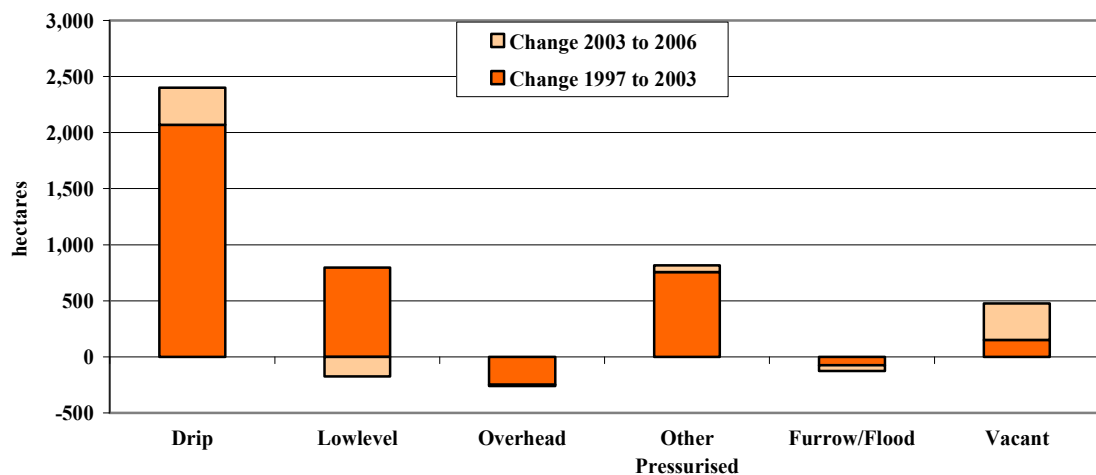
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	395	+2,070	2,465	+330	2,795	+2,400	+608%
Low level	720	+795	1,515	-175	1,340	+620	+86%
Overhead	675	-250	425	-10	415	-260	-39%
Other Pressurised	300	+755	1,055	+60	1,115	+815	+272%
Furrow/Flood	180	-75	105	-50	55	-125	-69%
Vacant	15	+150	165	+325	490	+475	+3,167%
Total hectares	2,285	+3,445	5,730	+480	6,210	+3,925	+172%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change



4.3 Wemen Grape Use

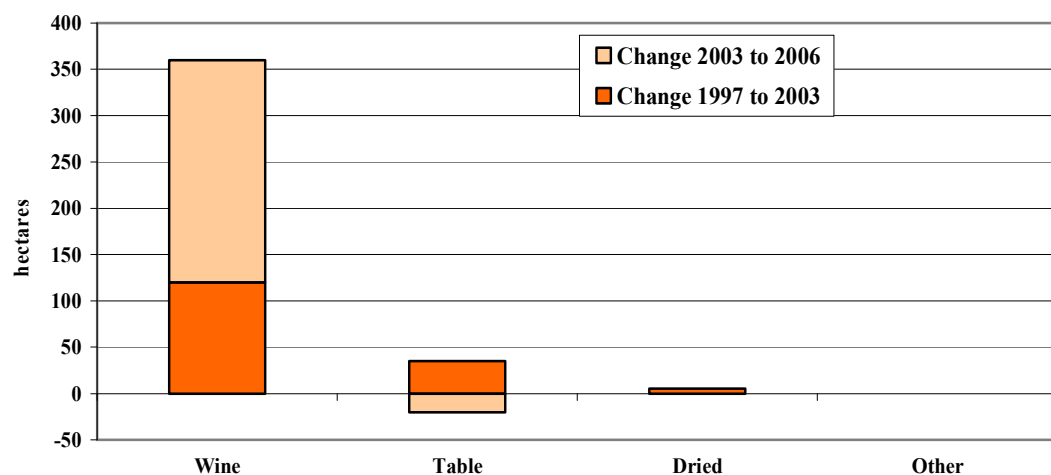
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	285	+120	405	+240	645	+360	+126%
Table	250	+35	285	-20	265	+15	+6%
Dried	25	+5	30	0	30	+5	+20%
Other*							0%
Total hectares	560	+160	720	+220	940	+380	+68%

Other = juice, cannery or research

Grape Use per Year



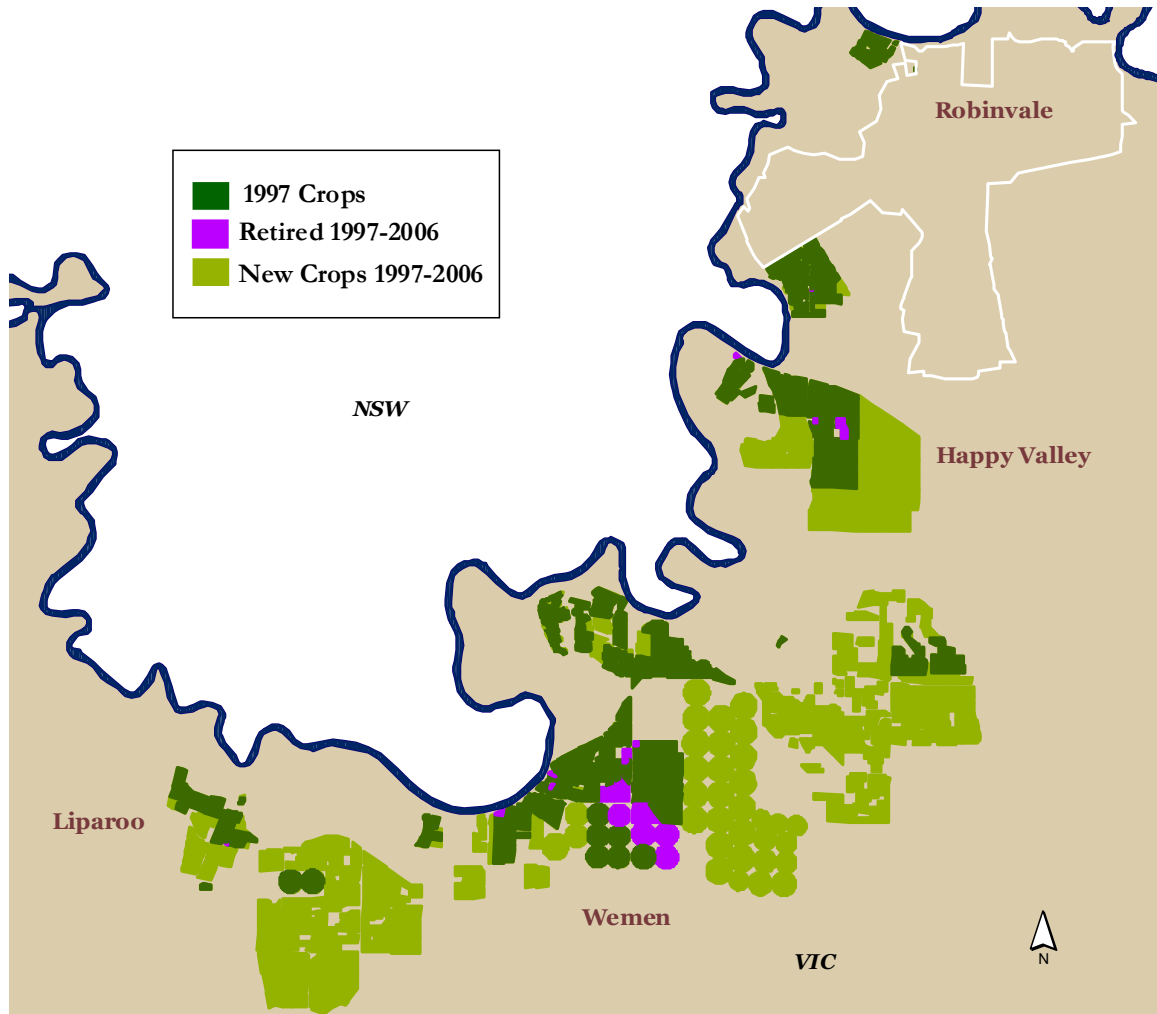
Grape Use Change



4.4 Wemen – Irrigation Properties and Development

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	2,285		
Retired between 1997 and 2006		-190	-8%
New Areas between 1997 and 2006		+4,115	+180 %
Irrigated Crops in 2006 (2005-06 season)	6,210		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	17	15	14	-3	-18%
20 to 40	9	9	10	+1	+11%
> 40	13	15	15	+2	+15%
Total Properties	39	39	39	0	0%
Average Cropped Area (hectares)	58.6	146.9	159.2		

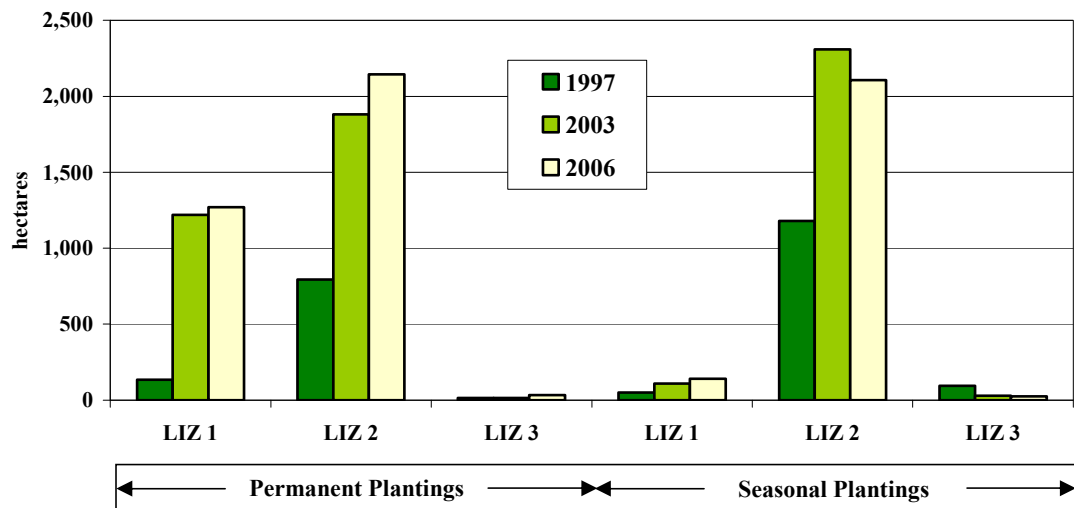
Note that some properties may own irrigated crops outside of this Wemen study area but these are not included in the above figures.

4.5 Wemen Salinity Impact Zones

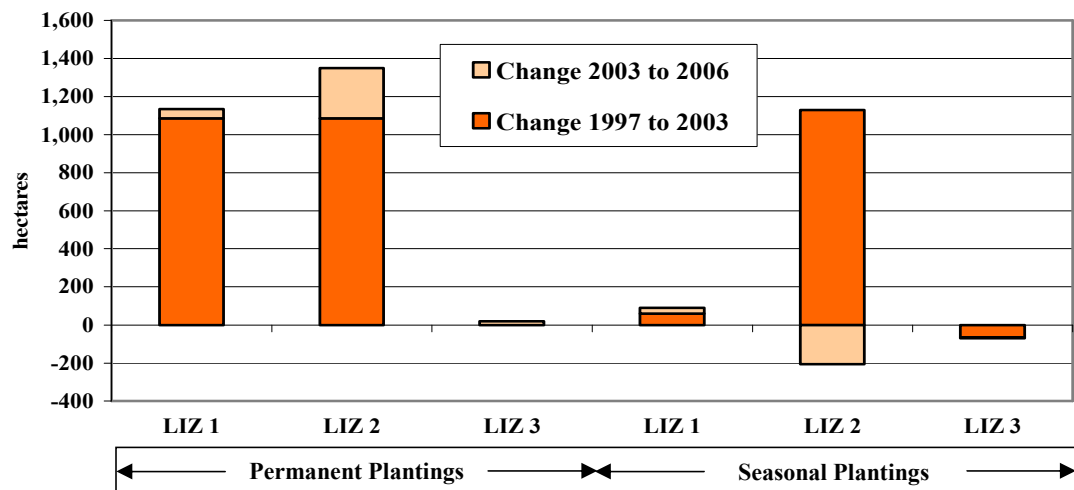
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	135	+1,085	1,220	+50	1,270	+1,135	+841%
	LIZ 2	795	+1,085	1,880	+265	2,145	+1,350	+170%
	LIZ 3	15	0	15	+20	35	20	+133%
	LIZ 4							
	HIZ							
Seasonal Plantings	LIZ 1	50	+60	110	+30	140	+90	+180%
	LIZ 2	1,180	+1,130	2,310	-205	2,105	+925	+78%
	LIZ 3	95	-65	30	-5	25	-70	-74%
	LIZ 4							
	HIZ							
Total hectares		2,270	+3,295	5,565	+155	5,720	+3,450	+152%
Vacant areas excluded		15		165		490		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



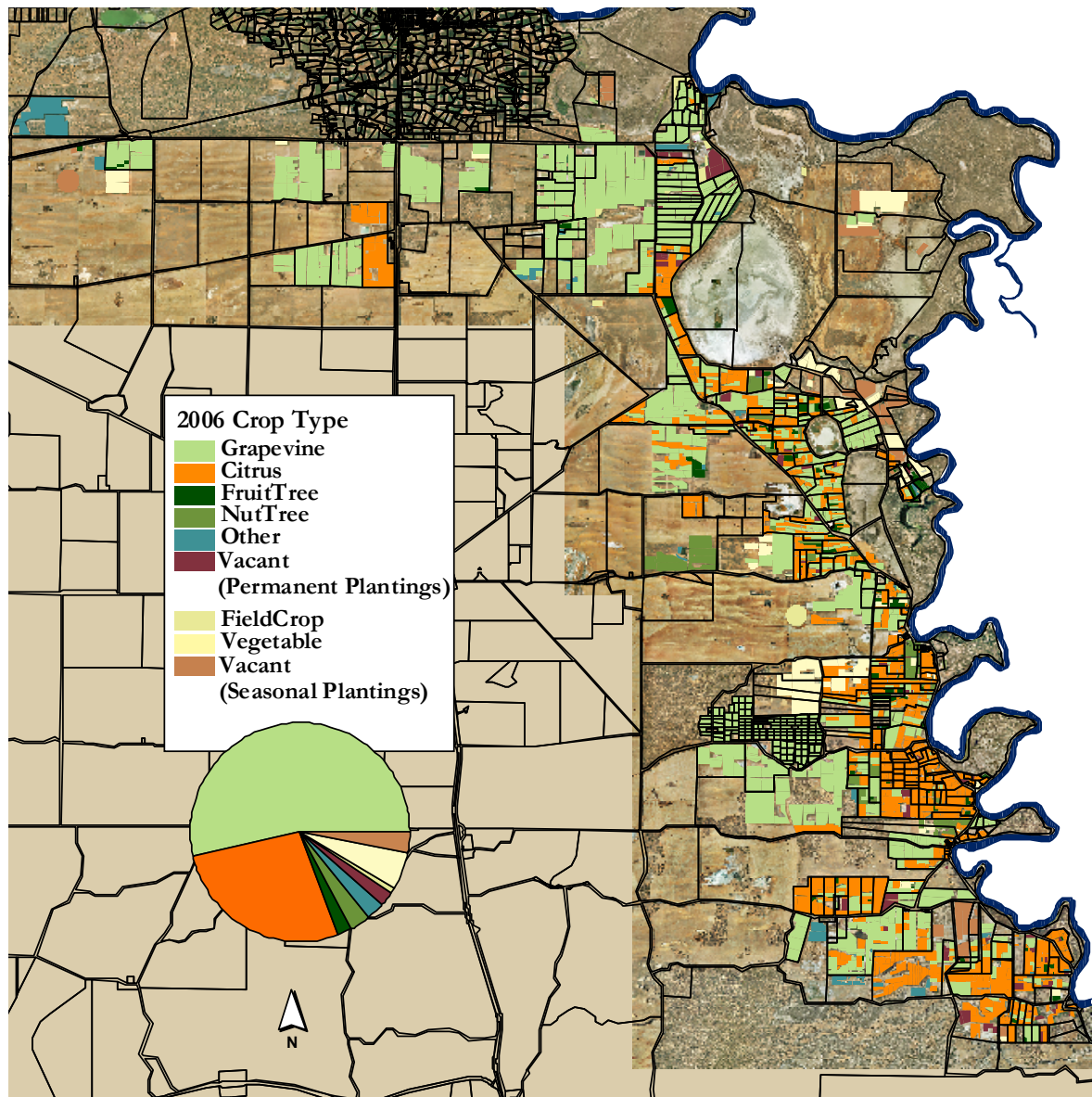
5 Colignan River Reach (Colignan to Yatpool)

The following presents information with respect to irrigated crops for the Colignan River Reach from 1997 to 2006.

In summary:

- The irrigated area increased by 3,320 hectares, a 47% increase from 1997 to 2006
- 'Grapevines' remained the dominant crop type from 1997 to 2006
- The dominant irrigation method changed from 'Overhead' in 1997 to 'Drip' in 2006
- Grapevines were predominantly grown for wine production from 1997 to 2006
- The Colignan district has approximately 155 properties, with an average cropped area of 67.3 hectares
- Crops have remained predominantly in the low salinity impact zone, LIZ 4 from 1997 to 2006

Map of Colignan river reach showing 2006 crop types:



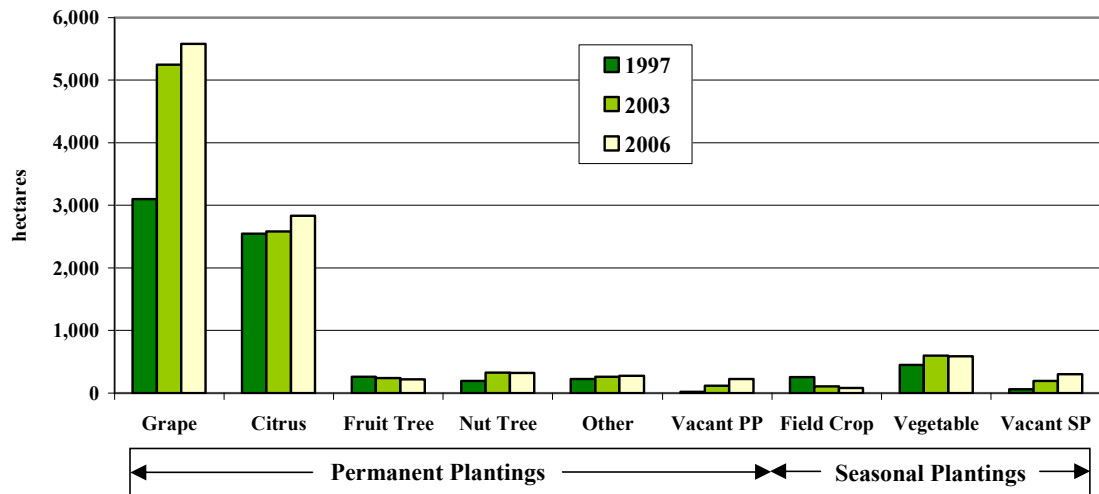
5.1 Colignan Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	3,095	+2,150	5,245	+335	5,580	+2,485	+80%
	Citrus	2,545	+40	2,585	+245	2,830	+285	+11%
	Fruit Tree	260	-20	240	-20	220	-40	-15%
	Nut Tree	195	+135	330	-5	325	+130	+67%
	Other	225	+35	260	+15	275	+50	+22%
	Vacant PP	20	+95	115	+110	225	+205	+1,025%
Seasonal Plantings	Field Crop	255	-150	110	-25	80	-175	-69%
	Vegetable	450	+150	600	-10	590	+140	+31%
	Vacant SP	65	+130	195	+110	305	+240	+369%
Total hectares		7,110	+2,565	9,675	+755	10,430	+3,320	+47%

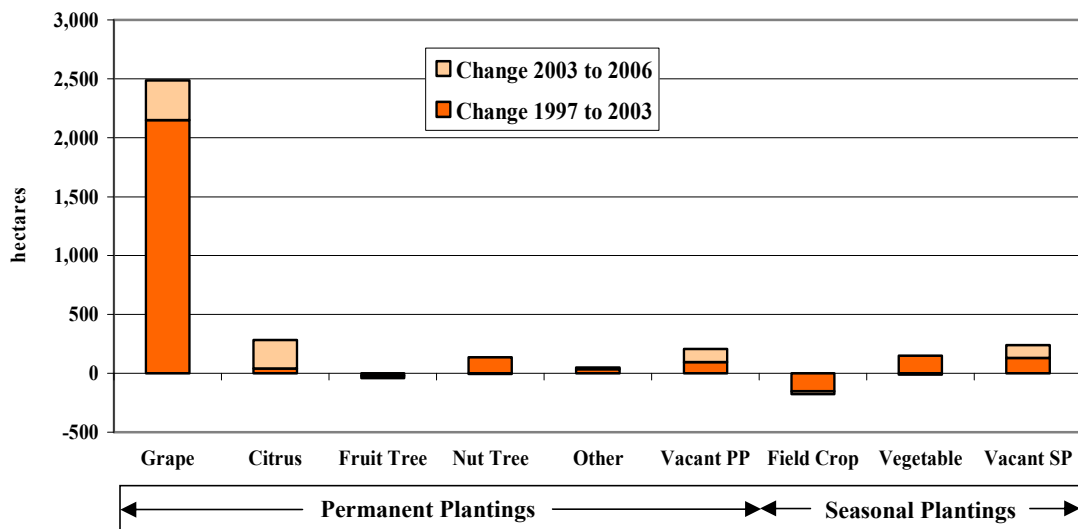
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

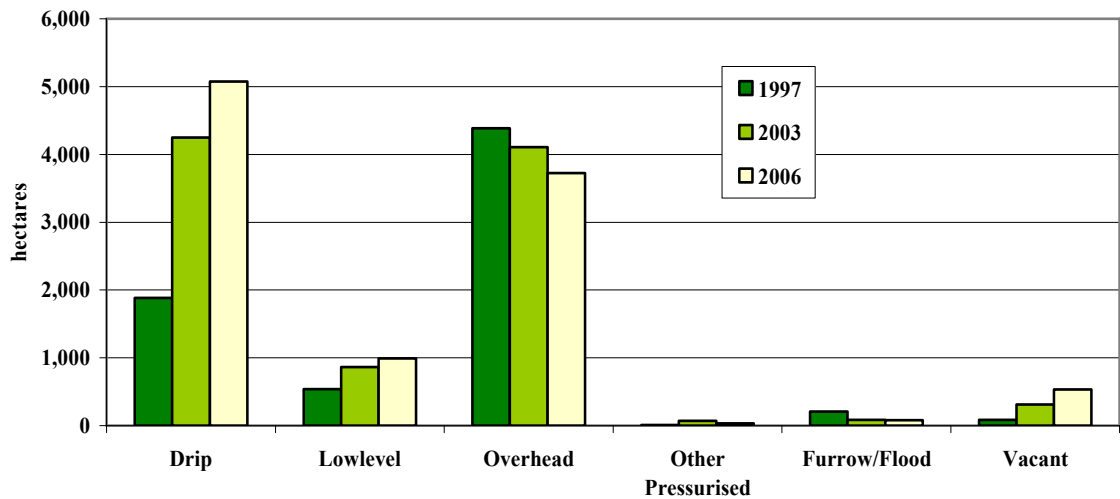


5.2 Colignan Irrigation Methods

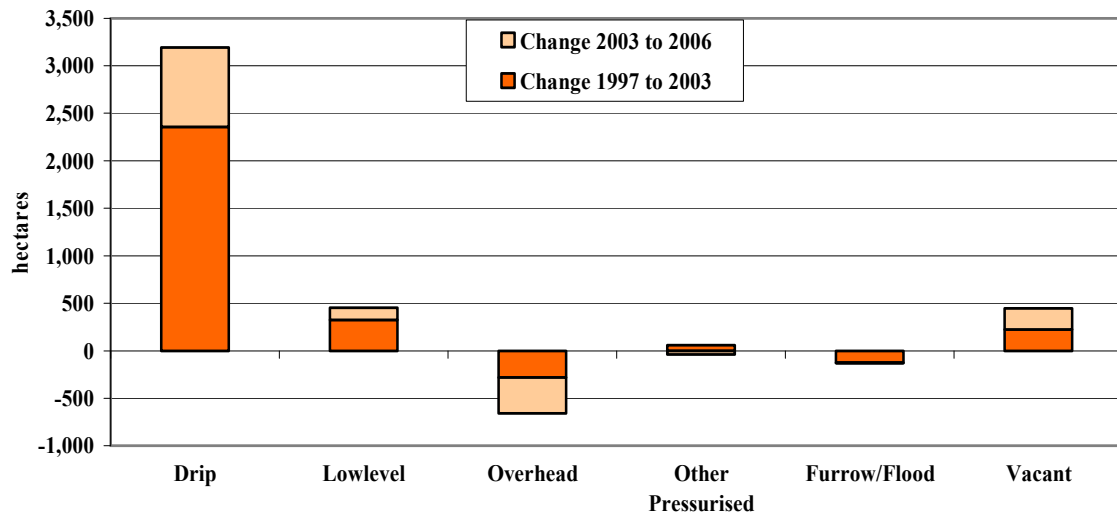
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	1,885	+2,360	4,245	+830	5,075	+3,190	+169%
Low level	535	+325	860	+130	990	+455	+85%
Overhead	4,385	-280	4,105	-380	3,725	-660	-15%
Other Pressurised	10	+60	70	-40	30	+20	+200%
Furrow/Flood	210	-125	85	-5	80	-130	-62%
Vacant	85	+225	310	+220	530	+445	+524%
Total hectares	7,110	+2,565	9,675	+755	10,430	+3,320	+47%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

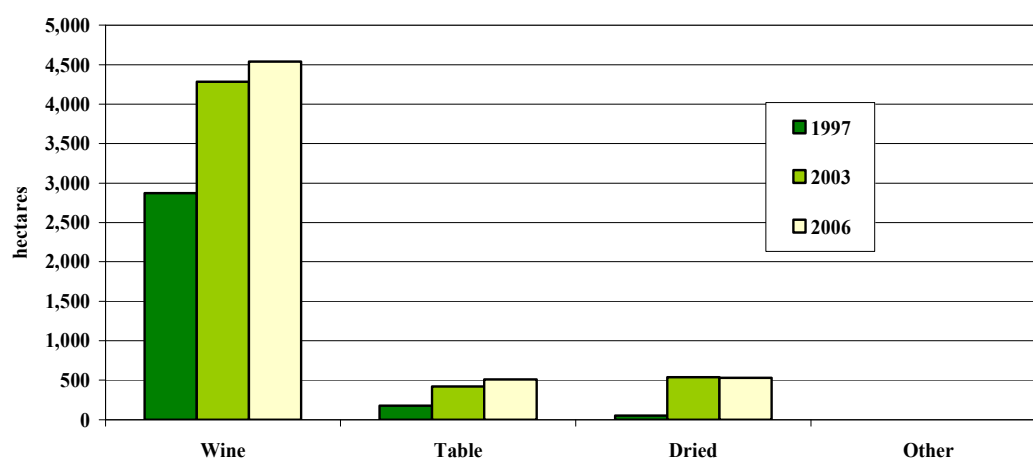


5.3 Colignan Grape Use

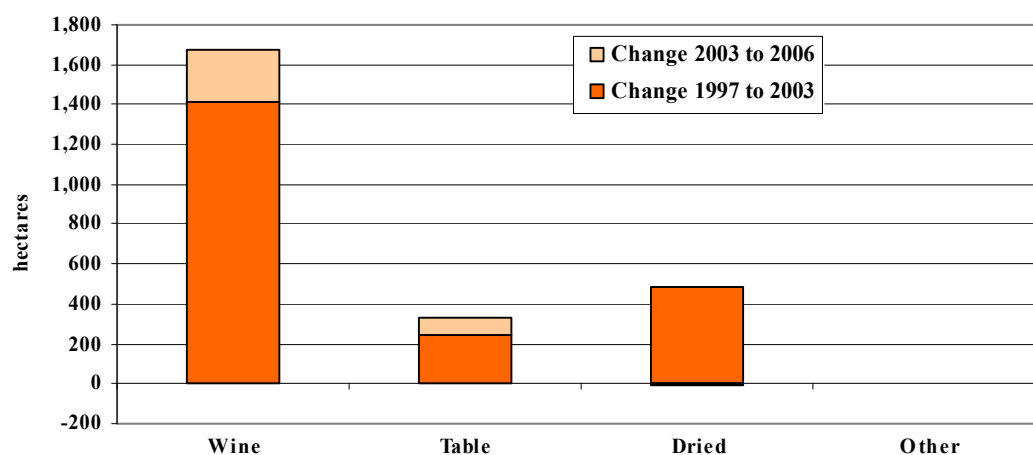
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	2,870	+1,415	4,285	+255	4,540	+1,670	+58%
Table	175	+245	420	+90	510	+335	+191%
Dried	50	+490	540	-10	530	+480	+960%
Other							0%
Total hectares	3,095	+2,150	5,245	+335	5,580	+2,485	+80%

Other = juice, cannery or research

Grape Use per Year



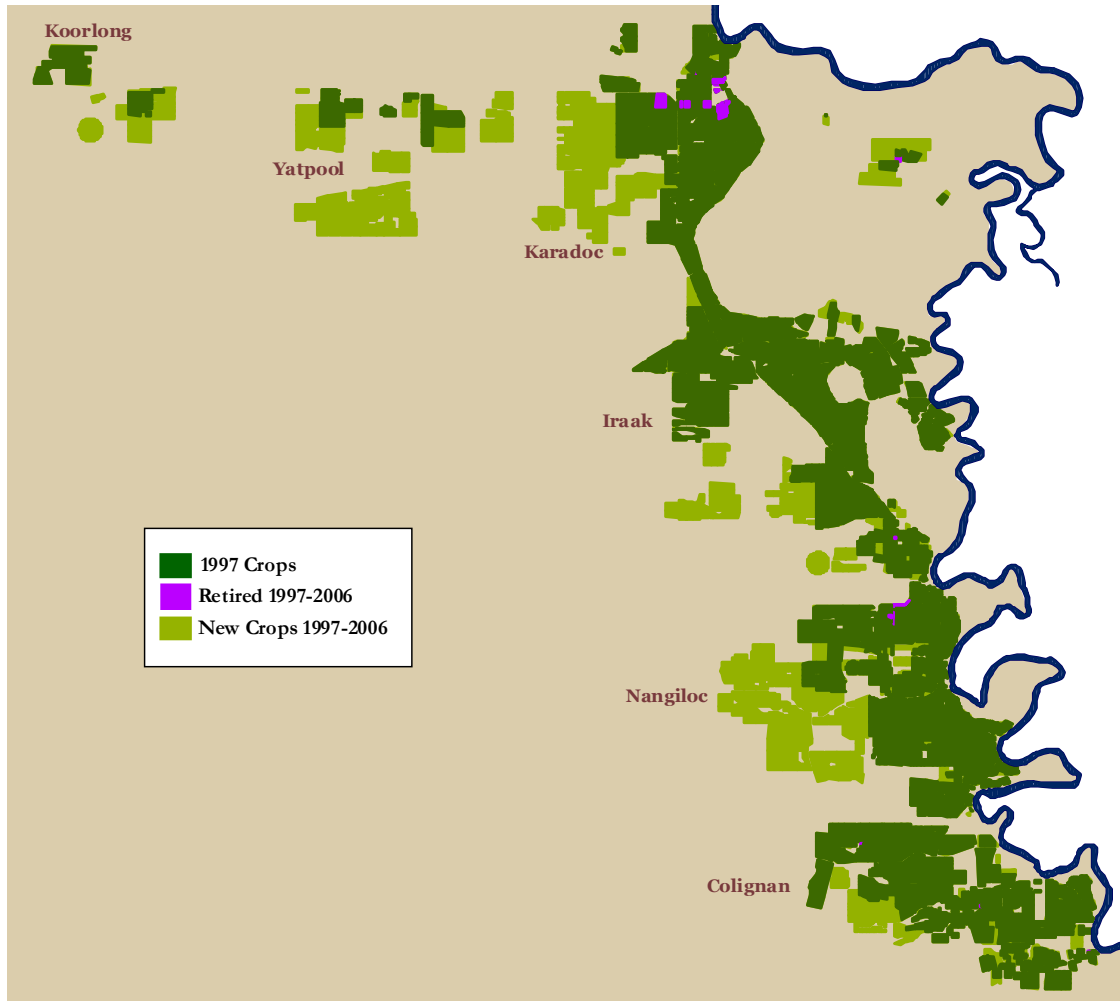
Grape Use Change



5.4 Colignan – Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	7,110		
Retired between 1997 and 2006		-40	-1%
New Areas between 1997 and 2006		+3,360	+47 %
Irrigated Crops in 2006 (2005-06 season)	10,430		



Property Change

Property Cropped Area	Number of Properties			Change 1997 – 2006	
	1997	2003	2006	Number	% since 1997
< 20	62	60	60	-2	-3%
20 to 40	34	31	33	-1	-3%
> 40	48	60	62	+14	+29%
Total Properties	144	151	155	+11	+8%
Average Cropped Area (hectares)	49.4	64.1	67.3		

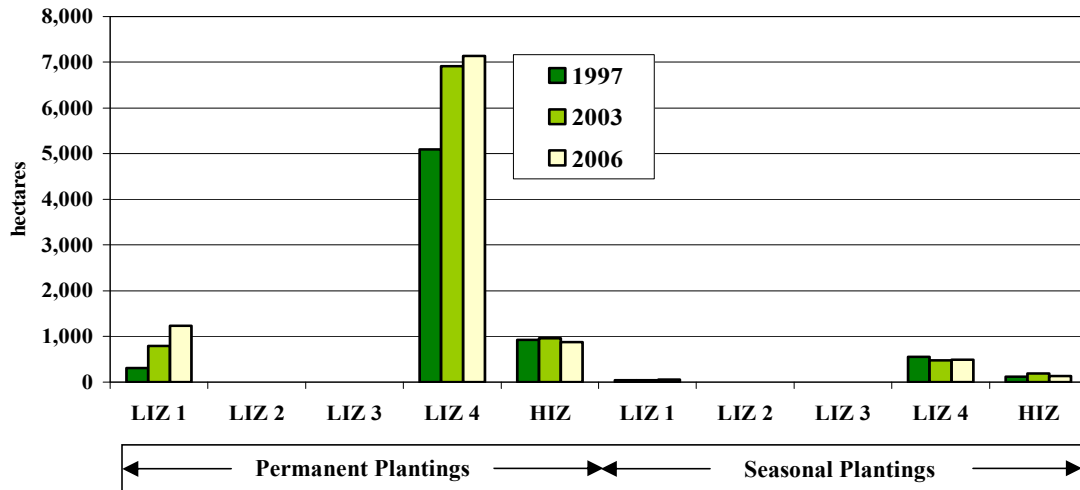
Note that some properties may own irrigated crops outside of this Colignan study area but these are not included in the above figures.

5.5 Colignan Salinity Impact Zones

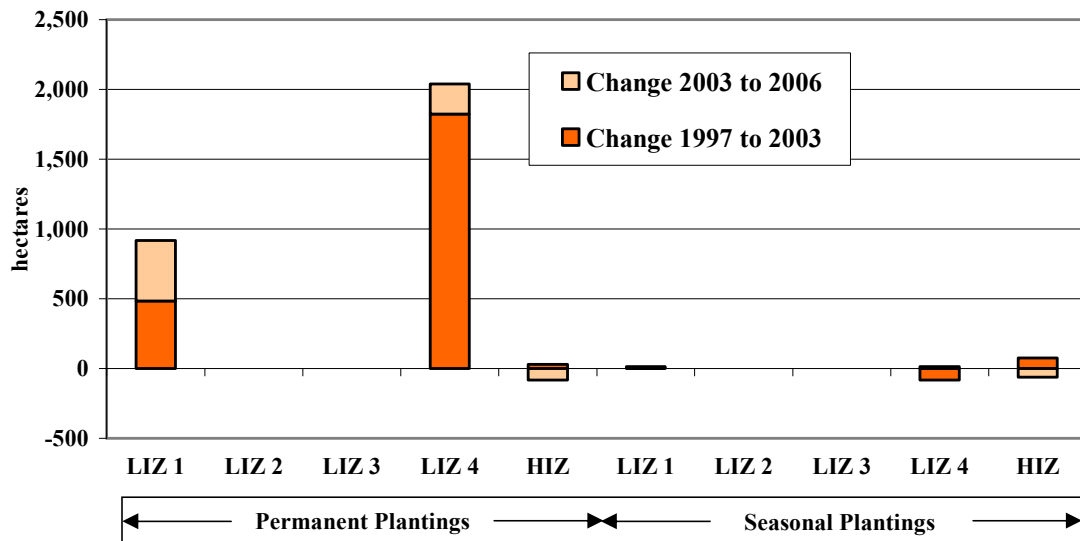
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	305	+485	790	+435	1,225	+920	+302%
	LIZ 2							
	LIZ 3							
	LIZ 4	5,090	+1,825	6,915	+215	7,130	+2,040	+40%
	HIZ	925	+30	955	-80	875	-50	-5%
Seasonal Plantings	LIZ 1	40	+5	45	+10	55	+15	+38%
	LIZ 2							
	LIZ 3							
	LIZ 4	550	-80	470	+15	485	-65	-12%
	HIZ	115	+75	190	-60	130	+15	+13%
Total hectares		7,025	+2,340	9,365	+535	9,900	+2,875	+41%
Vacant areas excluded		85		310		530		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



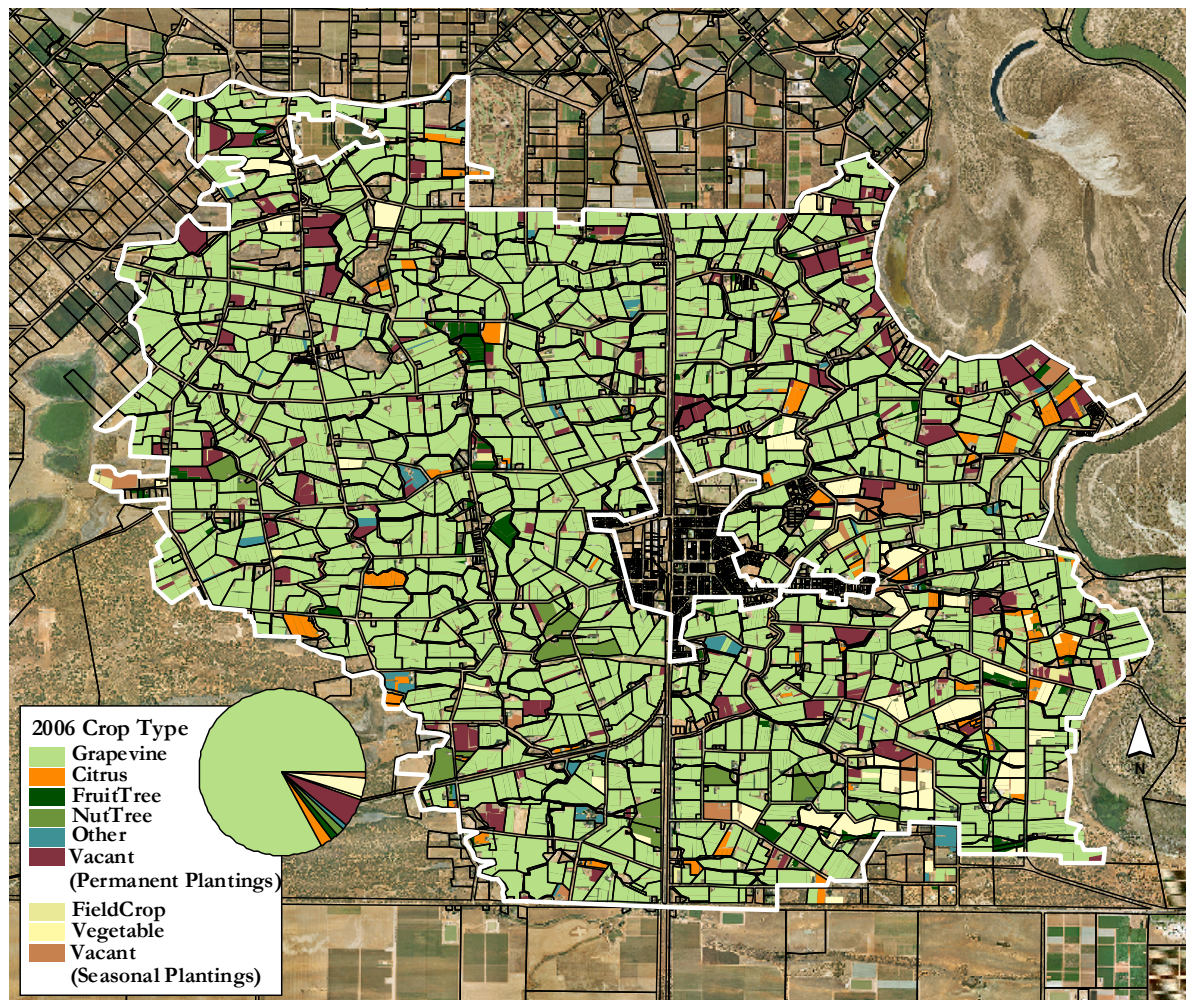
6 Red Cliffs District (Red Cliffs Pumped Irrigation District)

The following presents information with respect to irrigated crops for the Red Cliffs pumped irrigation district from 1997 to 2006.

In summary:

- The irrigated area increased by 90 hectares, a 2% increase from 1997 to 2006
- Grapevines remained the dominant crop type from 1997 to 2006
- The dominant irrigation method changed from 'Furrow' in 1997 to 'Overhead' in 2006
- Grapevines were predominantly grown for wine production from 1997 to 2006
- The Red Cliffs district has approximately 532 properties, with an average cropped area of 8.5 hectares
- Crops have remained predominantly in the high salinity impact zone, HIZ, from 1997 to 2006

Map of Red Cliffs district showing 2006 crop types:



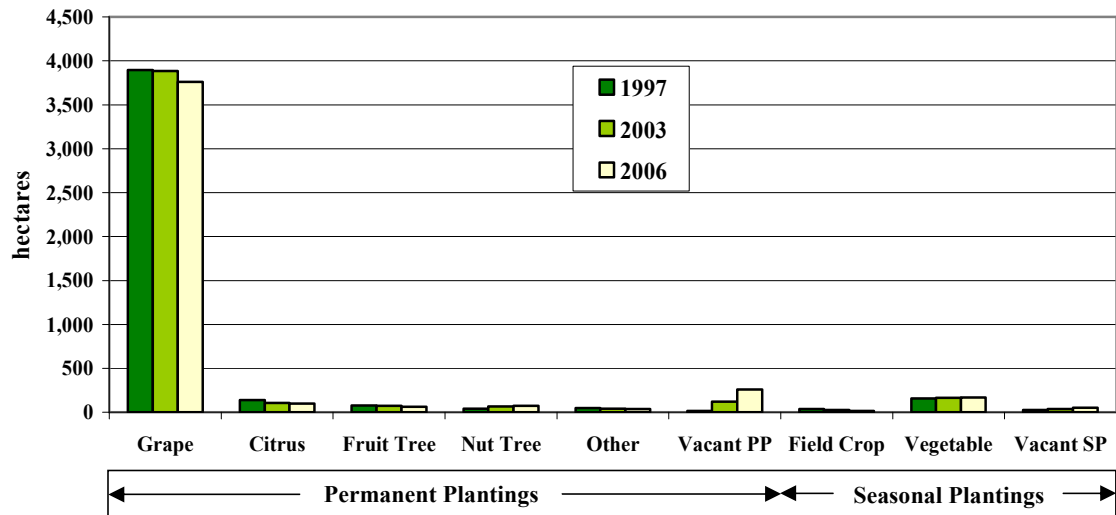
6.1 Red Cliffs Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	3,895	-10	3,885	-125	3,760	-135	-3%
	Citrus	140	-30	110	-10	100	-40	-29%
	Fruit Tree	80	-5	75	-10	65	-15	-19%
	Nut Tree	45	+25	70	+5	75	+30	+67%
	Other	50	-5	45	-5	40	-10	-20%
	Vacant PP	15	+110	125	+135	260	+245	+1,633%
Seasonal Plantings	Field Crop	40	-15	25	-10	15	-25	-63%
	Vegetable	160	+5	165	+5	170	+10	6%
	Vacant SP	25	+15	40	+15	55	+30	+120%
Total hectares		4,450	+90	4,540	0	4,540	+90	+2%

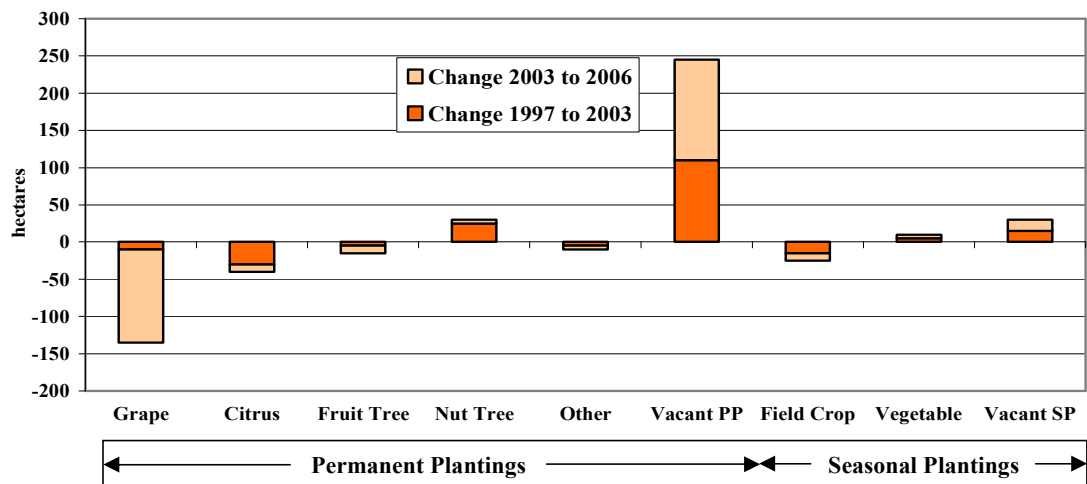
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

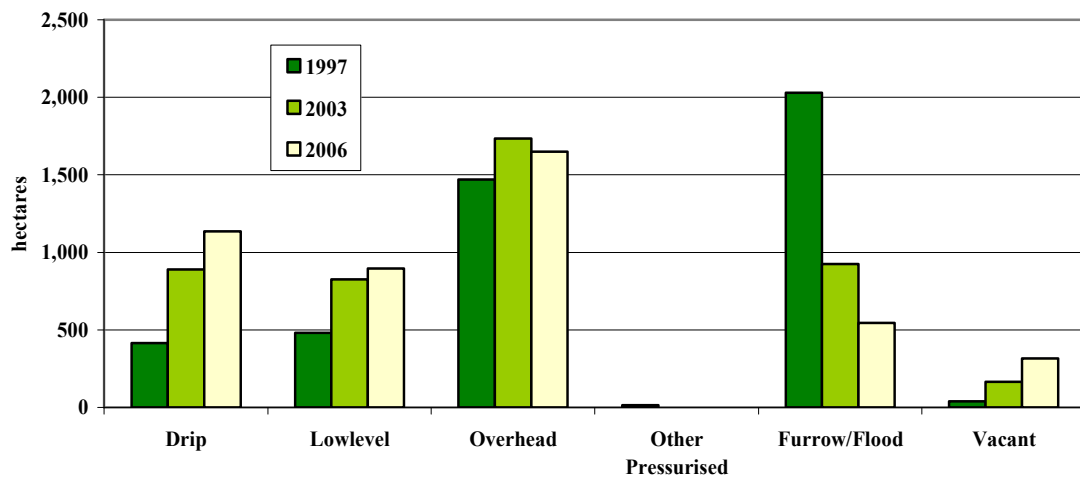


6.2 Red Cliffs Irrigation Methods

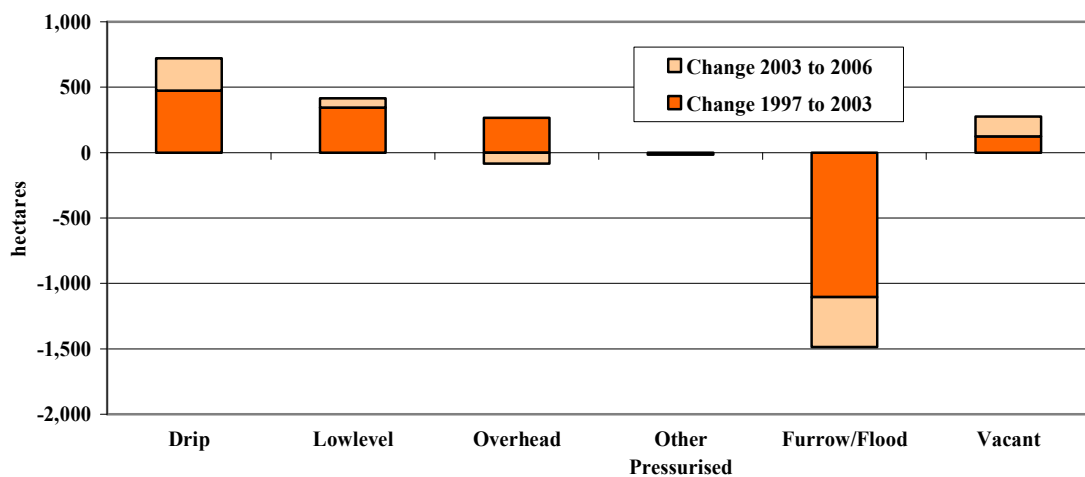
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	415	+475	890	+240	1,130	+715	+173%
Low level	480	+345	825	+65	890	+410	+86%
Overhead	1,470	+265	1,735	-90	1,645	+175	+12%
Other Pressurised	15	-15	0	0	0	-15	-100%
Furrow/Flood	2,030	-1,105	925	-365	560	-1,470	-73%
Vacant	40	+125	165	+150	315	+275	+688%
Total hectares	4,450	+90	4,540	0	4,540	+90	+2%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

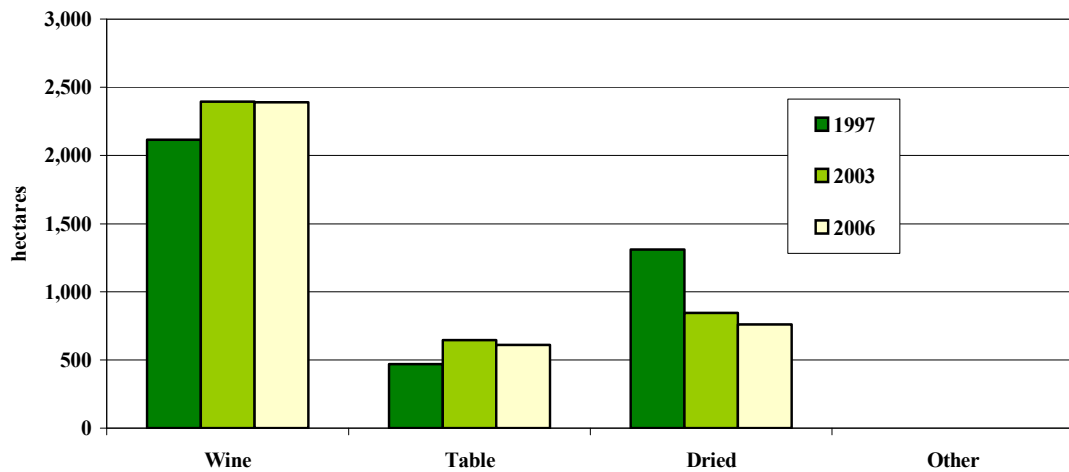


6.3 Red Cliffs Grape Use

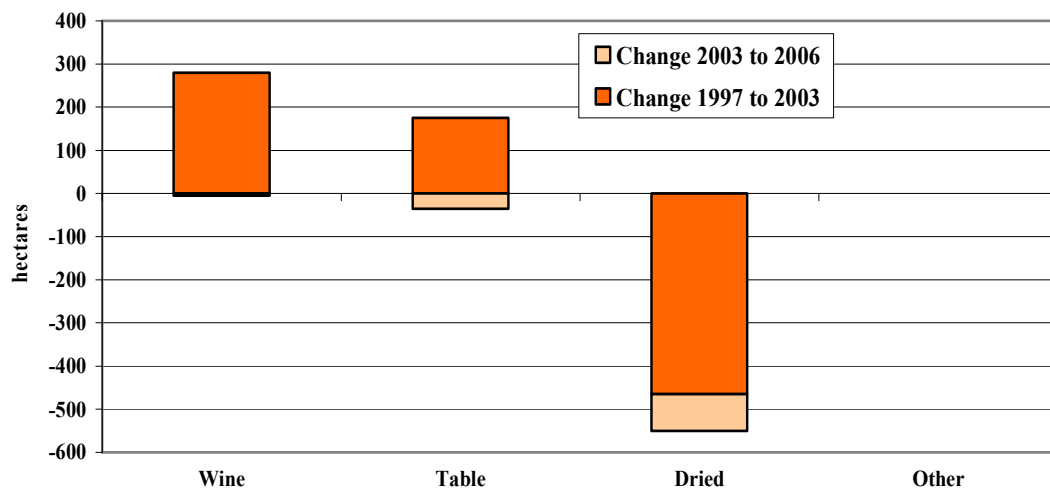
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	2,115	+280	2,395	-5	2,390	+275	+13%
Table	470	+175	645	-35	610	+140	+30%
Dried	1,310	-465	845	-85	760	-550	-42%
Other							0%
Total hectares	3,895	-10	3,885	-125	3,760	-135	-3%

Other = juice, cannery or research

Grape Use per Year



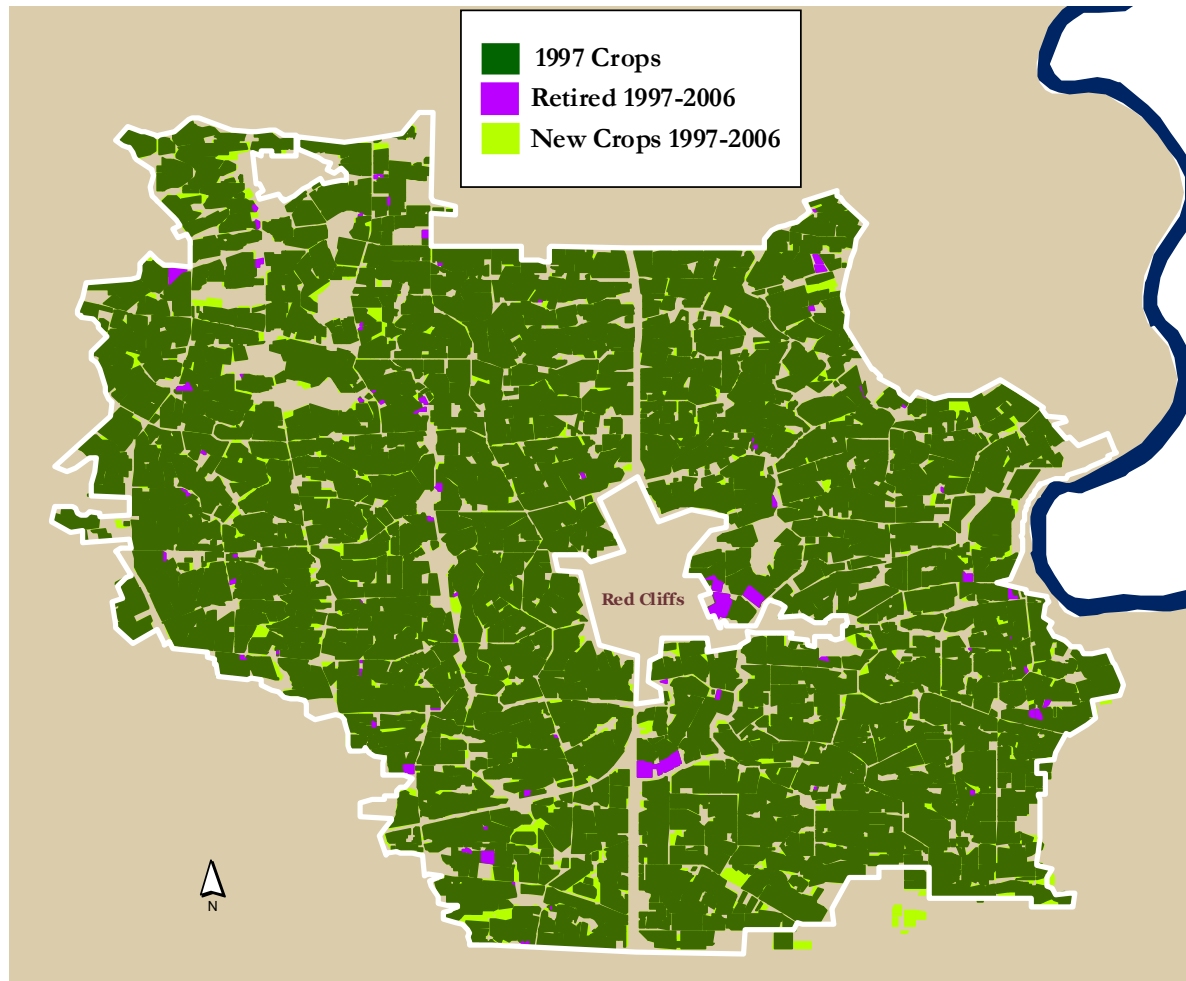
Grape Use Change



6.4 Red Cliffs – Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	4,450		
Retired between 1997 and 2006		-35	-1%
New Areas between 1997 and 2006		+125	+3%
Irrigated Crops in 2006 (2005-06 season)	4,540		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	527	507	503	-24	-5%
20 to 40	17	19	20	+3	+18%
> 40	3	6	9	+6	+200%
Total Properties	547	532	532	-15	-3%
Average Cropped Area (hectares)	8.1	8.5	8.5		

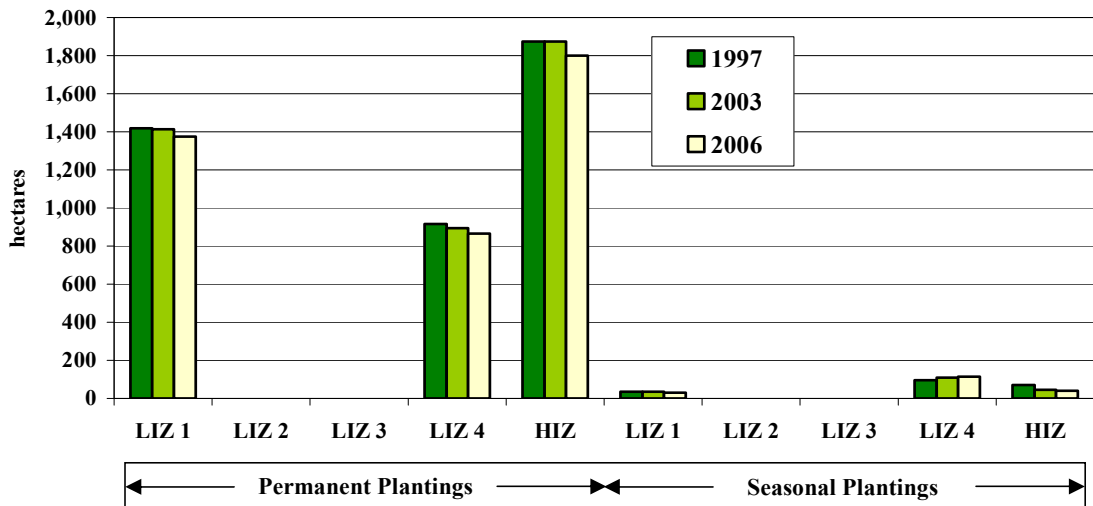
Note that some properties may own irrigated crops outside of this Red Cliffs study area but these are not included in the above figures.

6.5 Red Cliffs Salinity Impact Zones

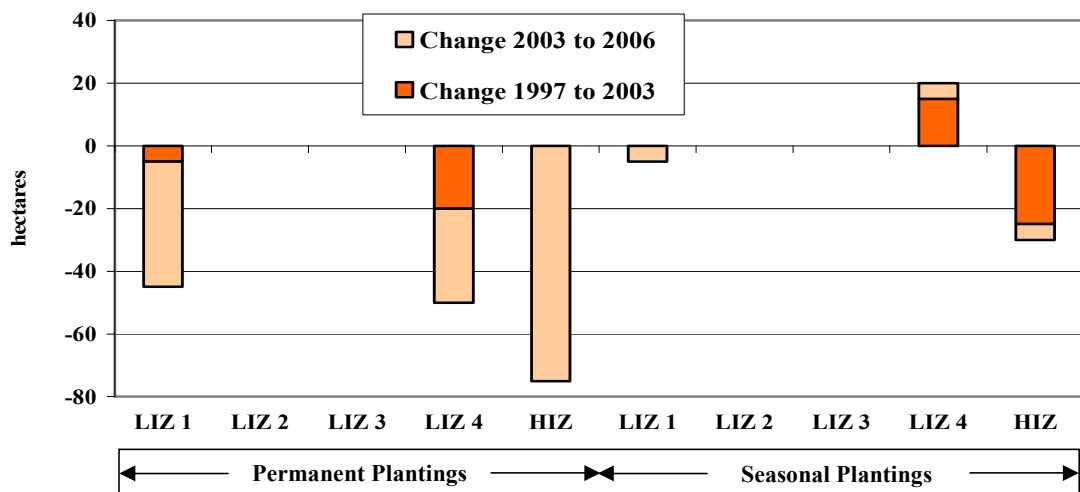
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	1,420	-5	1,415	-40	1,375	-45	-1%
	LIZ 2							
	LIZ 3							
	LIZ 4	915	-20	895	-30	865	-50	-1%
	HIZ	1,875	0	1,875	-75	1,800	-75	-2%
Seasonal Plantings	LIZ 1	35	0	35	-5	30	-5	0%
	LIZ 2							
	LIZ 3							
	LIZ 4	95	+15	110	5	115	20	0%
	HIZ	70	-25	45	-5	40	-30	-1%
Total hectares		4,410	-35	4,375	-150	4,225	-185	-4%
Vacant areas excluded		40		165		315		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



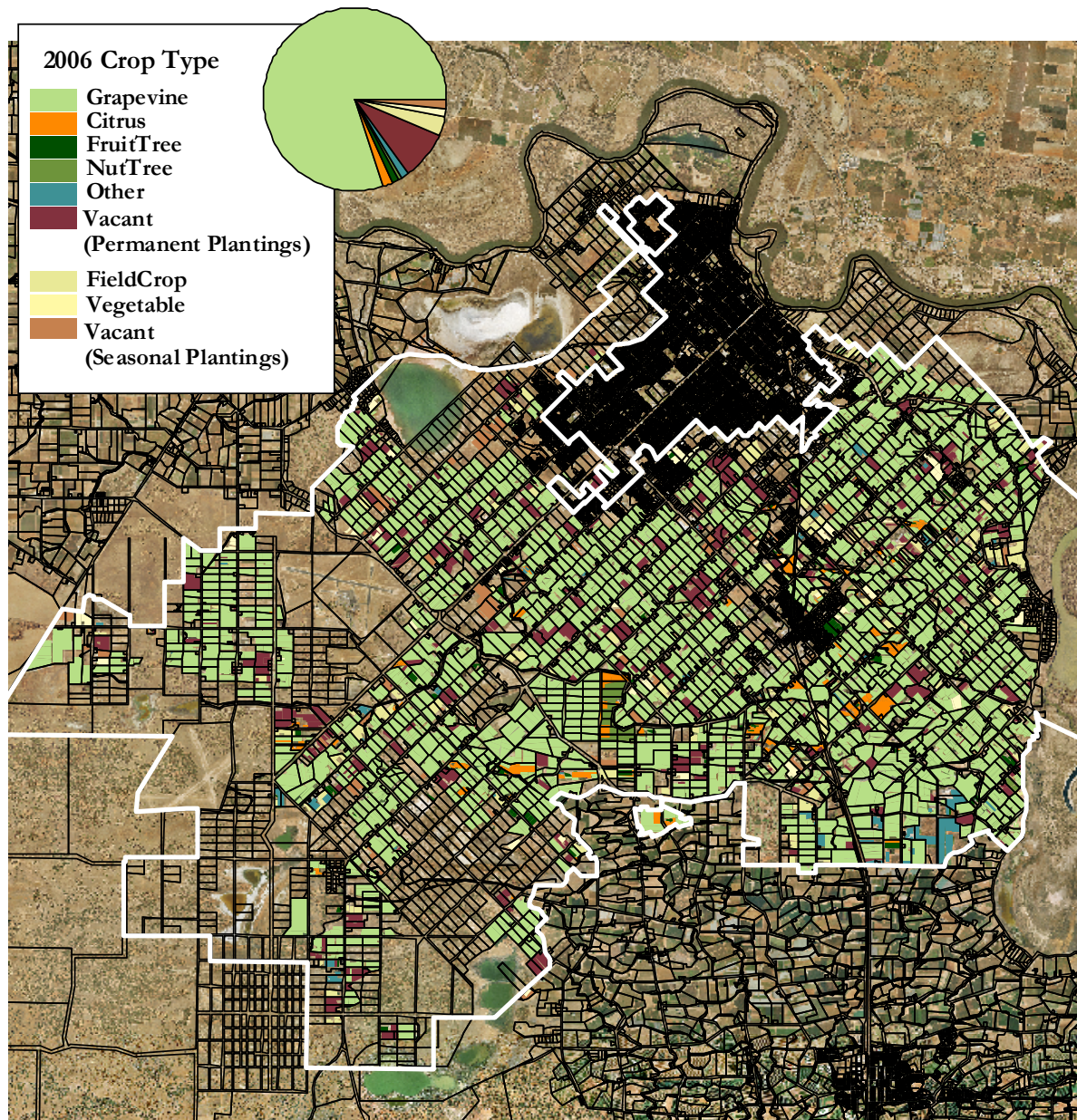
7 First Mildura Irrigation Trust District (FMIT)

The following presents information with respect to irrigated crops for the FMIT district from 1997 to 2006.

In summary:

- The irrigated area decreased by 310 hectares (a 5% decrease) between 1997 and 2006
- Grapevines remained the dominant crop type from 1997 to 2006
- The dominant irrigation method changed from 'Furrow' in 1997 to 'Overhead' in 2006
- Grapevines were predominantly grown for wine production in 1997 and 2006.
- The FMIT district has approximately 842 properties, with an average cropped area of 7.3 hectares
- Crops remained predominantly in the high salinity impact zone, HIZ, from 1997 to 2006

Map of the First Mildura Irrigation Trust district showing 2006 crop types:



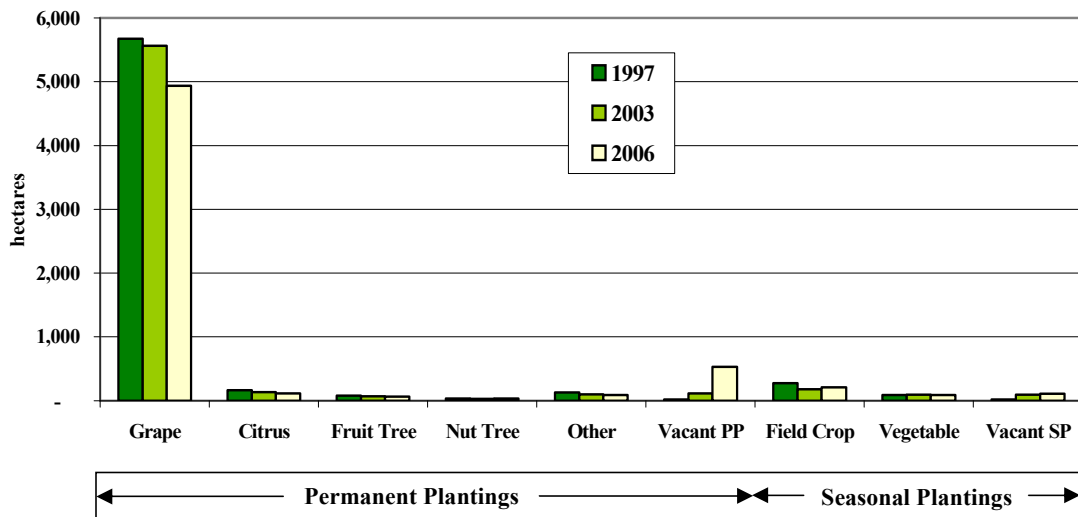
7.1 FMIT Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	5,675	-110	5,565	-630	4,935	-740	-13%
	Citrus	165	-30	135	-20	115	-50	-30%
	Fruit Tree	75	-5	70	-5	65	-10	-13%
	Nut Tree	35	-5	30	+5	35	0	0%
	Other	130	-30	100	-15	85	-45	-35%
	Vacant PP	20	+95	115	+415	530	+510	+2,550%
Seasonal Planting	Field Crop	275	-95	180	+30	210	-65	-24%
	Vegetable	85	+5	90	-5	85	0	0%
	Vacant SP	20	+70	90	+20	110	+90	+450%
Total hectares		6,480	-105	6,375	-205	6,170	-310	-5%

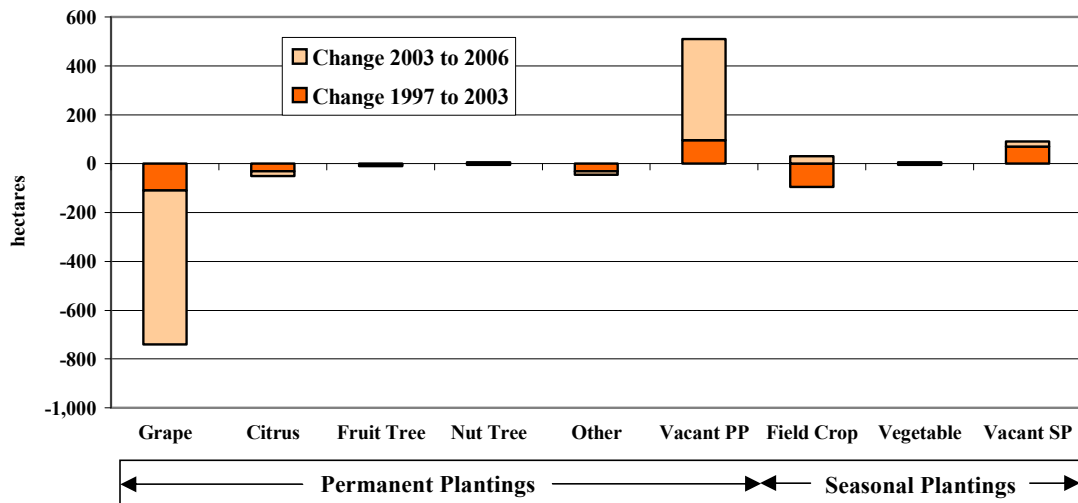
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

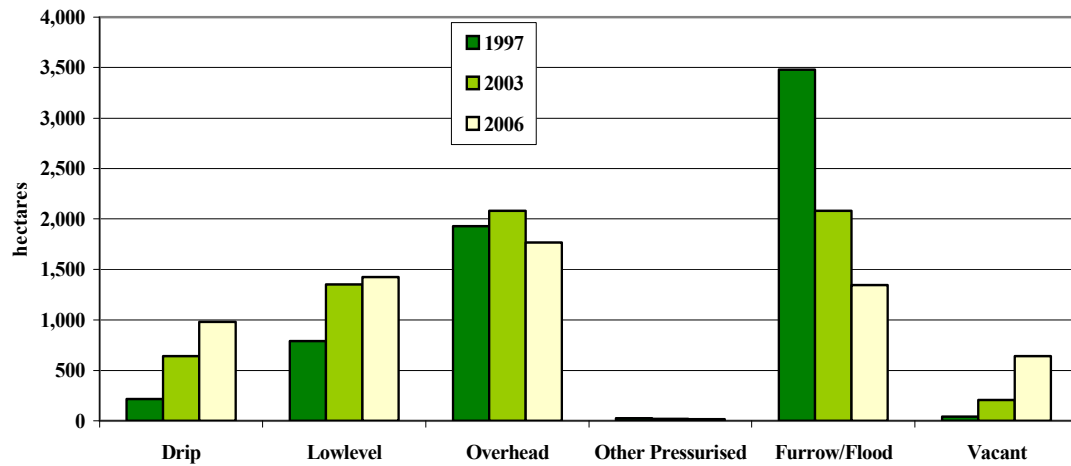


7.2 FMIT Irrigation Methods

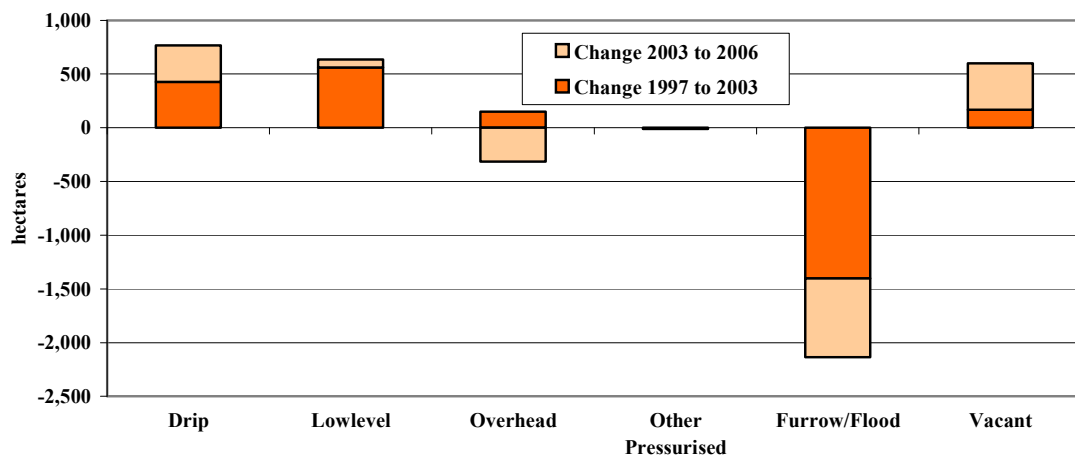
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	215	+425	640	+340	980	+765	+356%
Low level	790	+560	1,350	+75	1,425	+635	+80%
Overhead	1,930	+150	2,080	-315	1,765	-165	-9%
Other Pressurised	25	-5	20	-5	15	-10	-40%
Furrow/Flood	3,480	-1,400	2,080	-735	1,345	-2,135	-61%
Vacant	40	+165	205	+435	640	+600	+1,500%
Total hectares	6,480	-105	6,375	-205	6,170	-310	-5%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

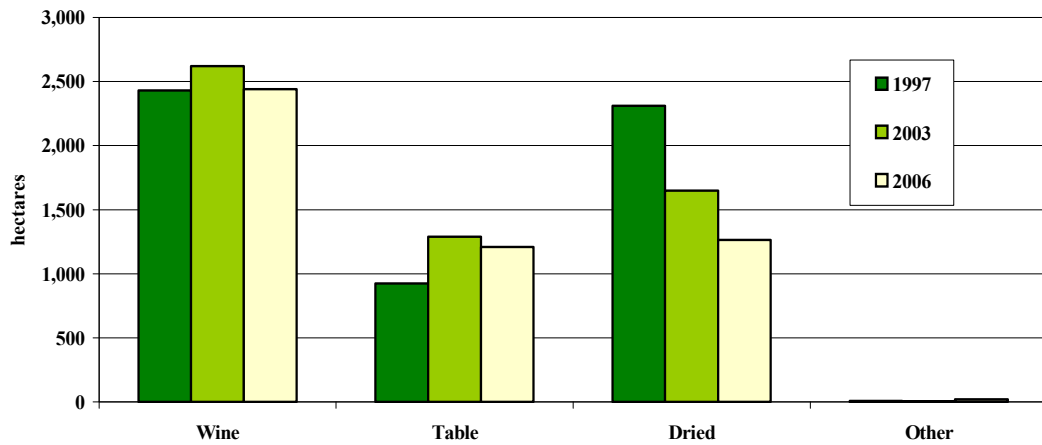


7.3 FMIT Grape Use

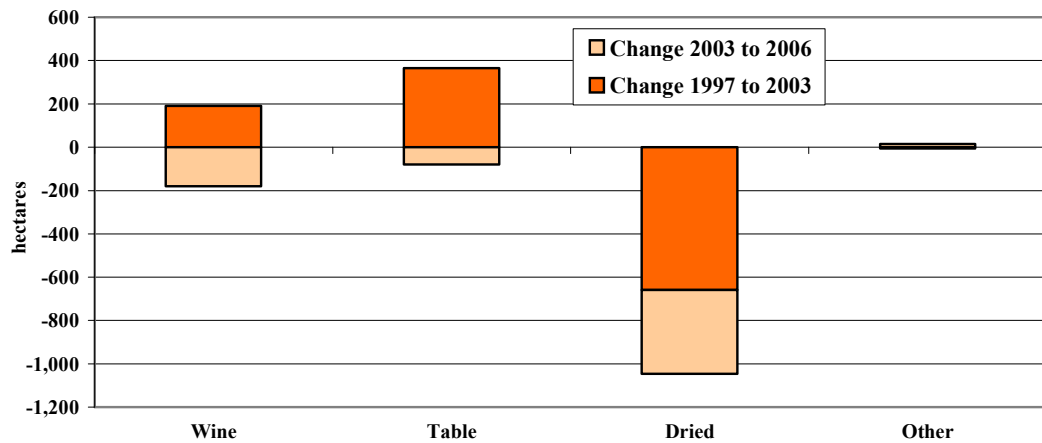
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	2,430	+190	2,620	-180	2,440	+10	0%
Table	925	+365	1,290	-80	1,210	+285	+31%
Dried	2,310	-660	1,650	-385	1,265	-1,045	-45%
Other*	10	-5	5	+15	20	+10	+100%
Total hectares	5,675	-110	5,565	-630	4,935	-740	-13%

Other = juice, cannery or research

Grape Use per Year



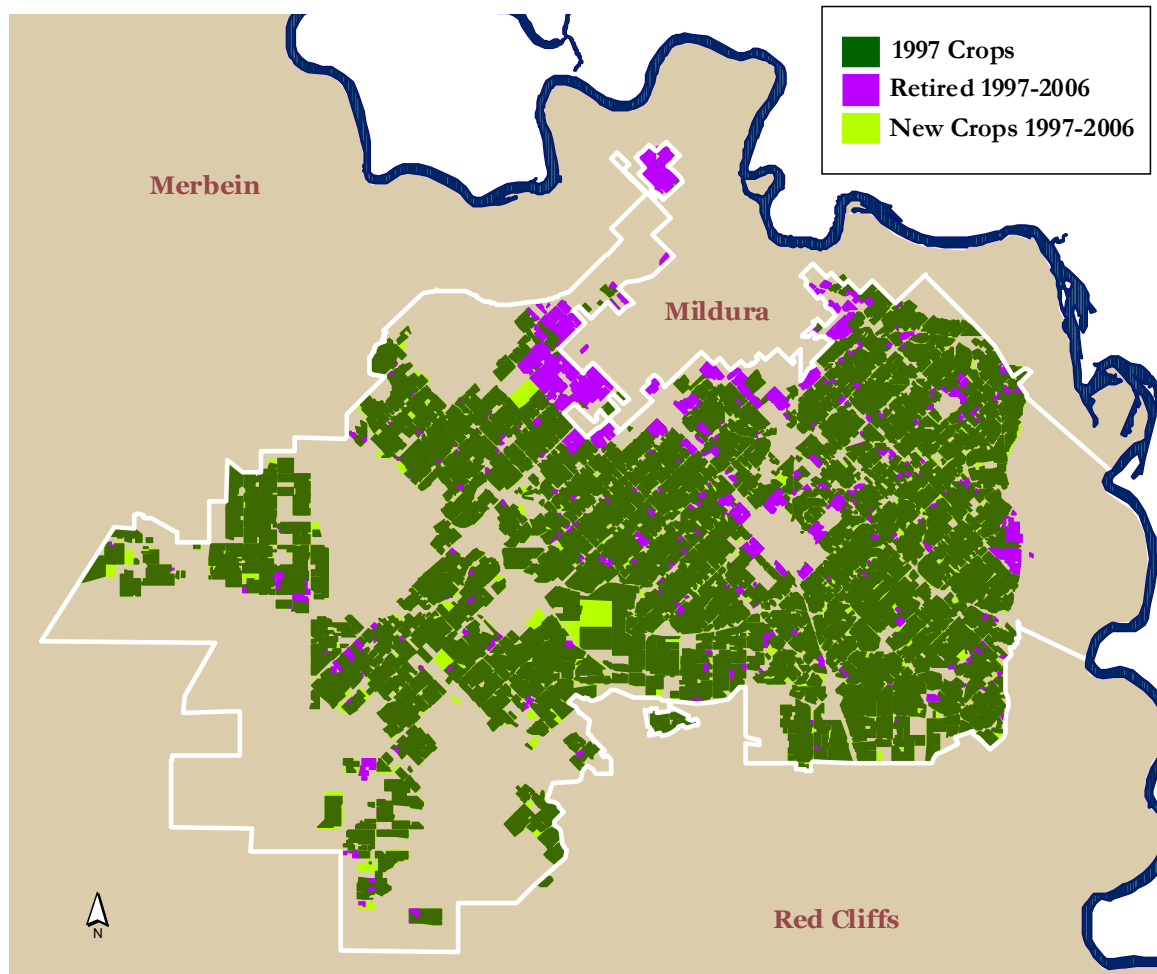
Grape Use Change



7.4 FMIT – Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	6,480		
Retired between 1997 and 2006		-510	-8%
New Areas between 1997 and 2006		+200	+3%
Irrigated Crops in 2006 (2005-06 season)	6,170		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	859	817	790	-69	-8%
20 to 40	46	46	41	-5	-11%
> 40	5	11	11	+6	+120%
Total Properties	910	874	842	-68	-7%
Average Cropped Area (hectares)	7.1	7.3	7.3		

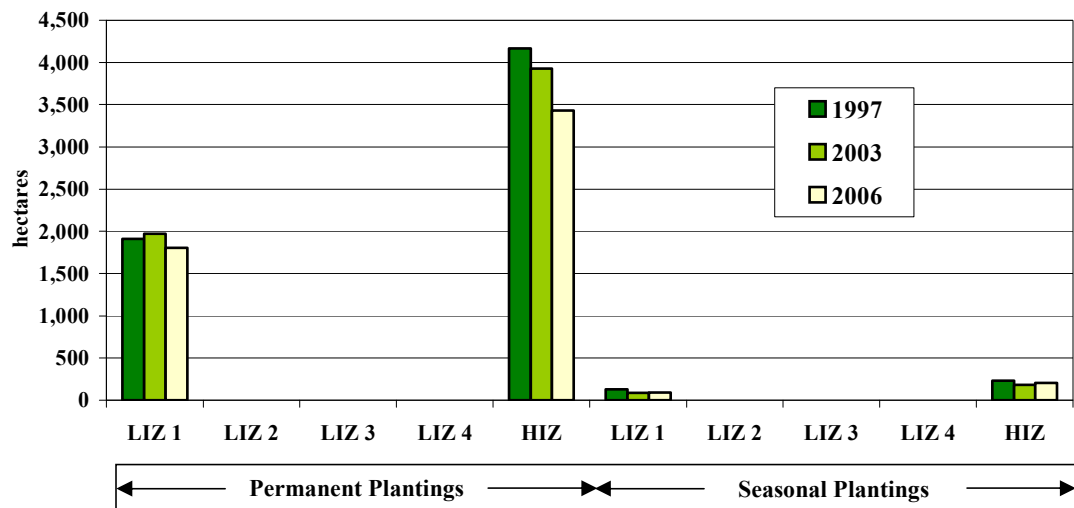
Note that some properties may own irrigated crops outside of this FMIT study area but these are not included in the above figures.

7.5 FMIT Salinity Impact Zones

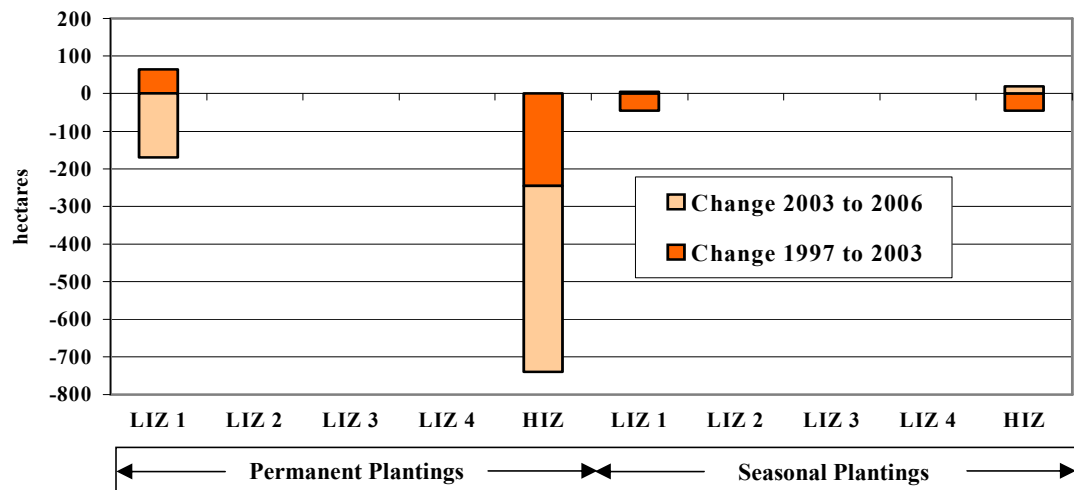
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	1,910	+65	1,975	-170	1,805	-105	-5%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	4,170	-245	3,925	-495	3,430	-740	-18%
Seasonal Plantings	LIZ 1	130	-45	85	+5	90	-40	-31%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	230	-45	185	+20	205	-25	-11%
Total hectares		6,440	-270	6,170	-640	5,530	-910	-14%
Vacant areas excluded		40		205		640		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change

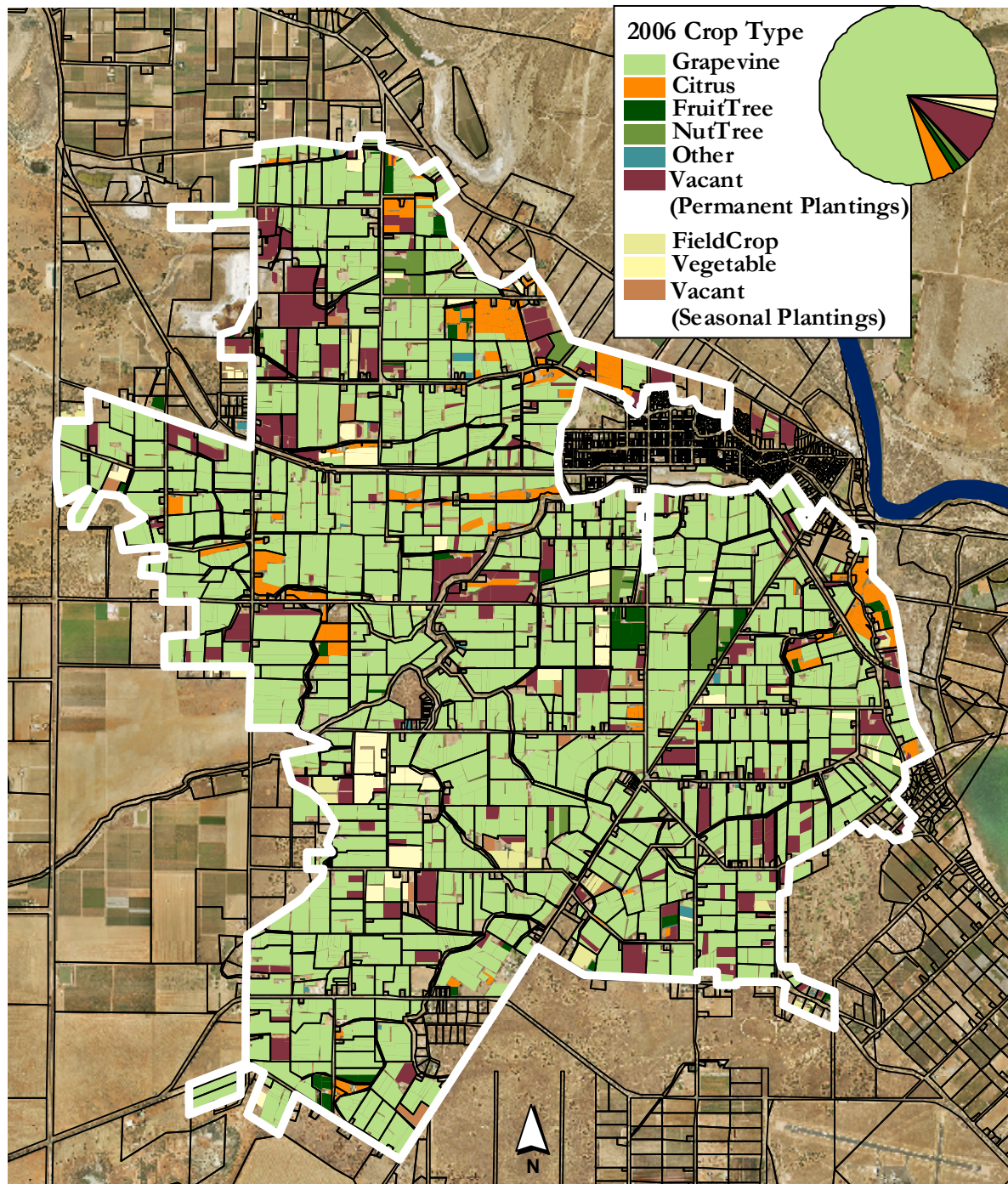


8 Merbein District (Merbein Pumped Irrigation District)

The following presents information with respect to irrigated crops for the Merbein pumped irrigation district from 1997 to 2006. In summary:

- The irrigated area decreased by 30 hectares, a 1% decrease from 1997 to 2006
- Grapevines remained the dominant crop type from 1997 to 2006
- Furrow remained the dominant irrigation method from 1997 to 2006
- Grapevines were predominantly grown for dried fruit production in 1997 and 2006
- The Merbein district has approximately 354 properties, with an average cropped area of 8.8 hectares
- Crops are predominantly in the high salinity impact zone, HIZ

Map of Merbein district showing 2006 crop types:



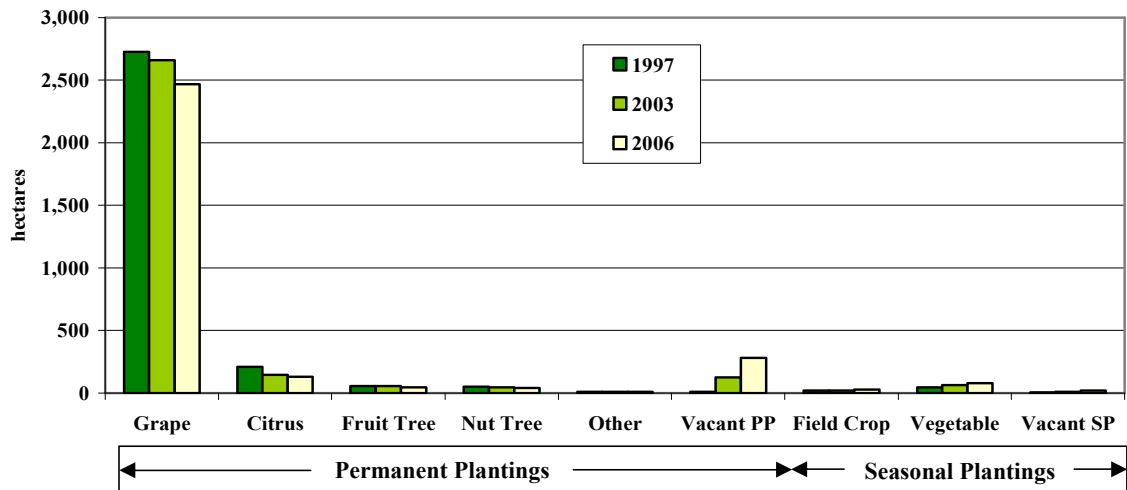
8.1 Merbein Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	2,725	-65	2,660	-195	2,465	-260	-10%
	Citrus	210	-65	145	-15	130	-80	-38%
	Fruit Tree	55	0	55	-10	45	-10	-18%
	Nut Tree	50	-5	45	-5	40	-10	-20%
	Other	10	0	10	0	10	0	0%
	Vacant PP	10	+115	125	+155	280	+270	+2,700%
Seasonal Plantings	Field Crop	20	0	20	+10	30	+10	+50%
	Vegetable	45	+20	65	+15	80	+35	+78%
	Vacant SP	5	+5	10	+10	20	+15	+300%
Total hectares		3,130	+5	3,135	-35	3,100	-30	-1%

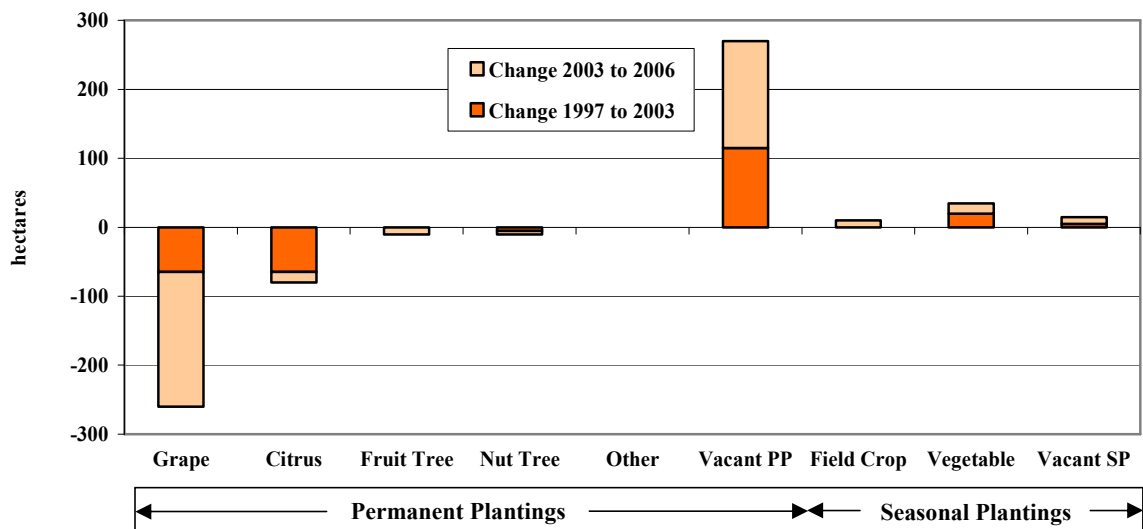
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

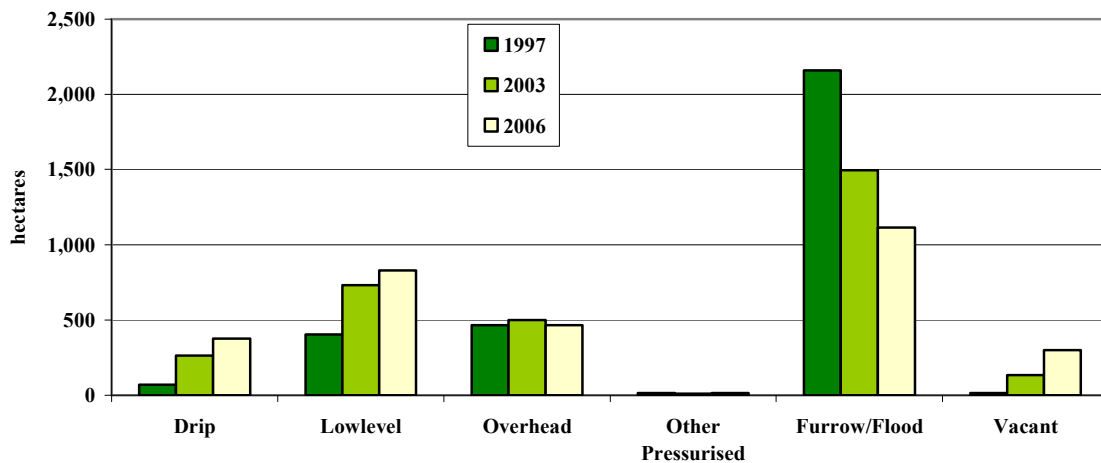


8.2 Merbein Irrigation Methods

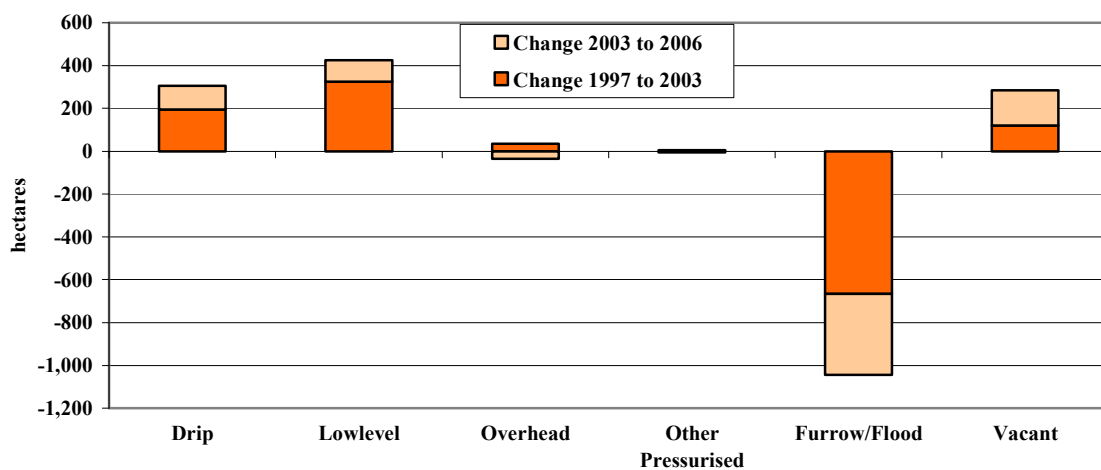
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	70	+195	265	+110	375	+305	+436%
Low level	405	+325	730	+100	830	+425	+105%
Overhead	465	+35	500	-35	465	0	0%
Other Pressurised	15	-5	10	+5	15	0	0%
Furrow/Flood	2,160	-665	1,495	-380	1,115	-1,045	-48%
Vacant	15	+120	135	+165	300	+285	+1,900%
Total hectares	3,130	+5	3,135	-35	3,100	-30	-1%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

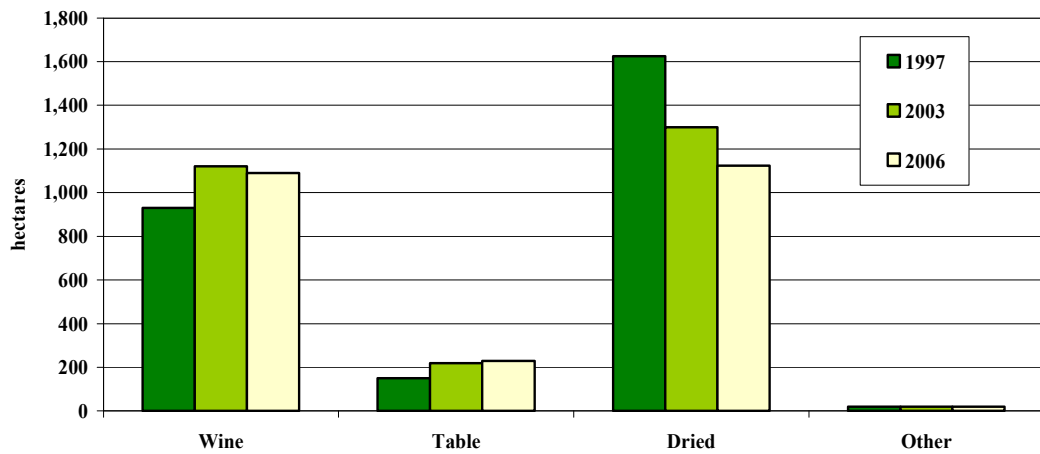


8.3 Merbein Grape Use

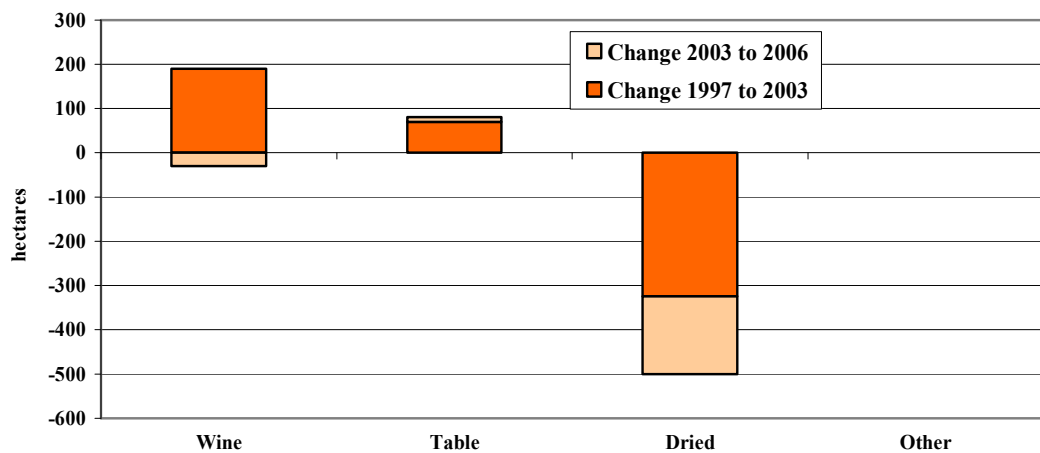
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	930	+190	1,120	-30	1,090	+160	+17%
Table	150	+70	220	+10	230	+80	+53%
Dried	1,625	-325	1,300	-175	1,125	-500	-31%
Other	20	0	20	0	20	0	0%
Total hectares	2,725	-65	2,660	-195	2,465	-260	-10%

Other = juice, cannery or research

Grape Use per Year



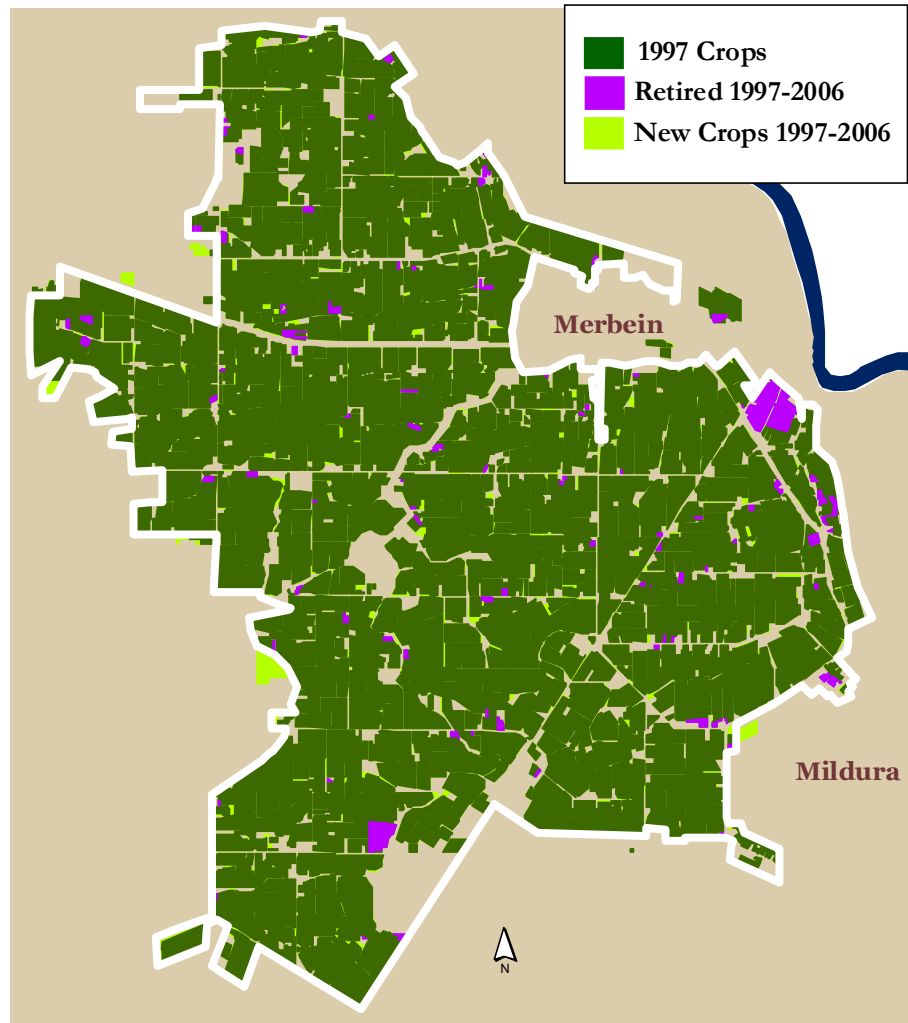
Grape Use Change



8.4 Merbein – Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	3,130		
Retired between 1997 and 2006		-55	-2%
New Areas between 1997 and 2006		+25	+1%
Irrigated Crops in 2006 (2005-06 season)	3,100		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	342	334	333	-9	-3%
20 to 40	16	16	18	+2	+13%
> 40	3	3	3	0	0%
Total Properties	361	353	354	-7	-2%
Average Cropped Area (hectares)	8.6	8.8	8.8		

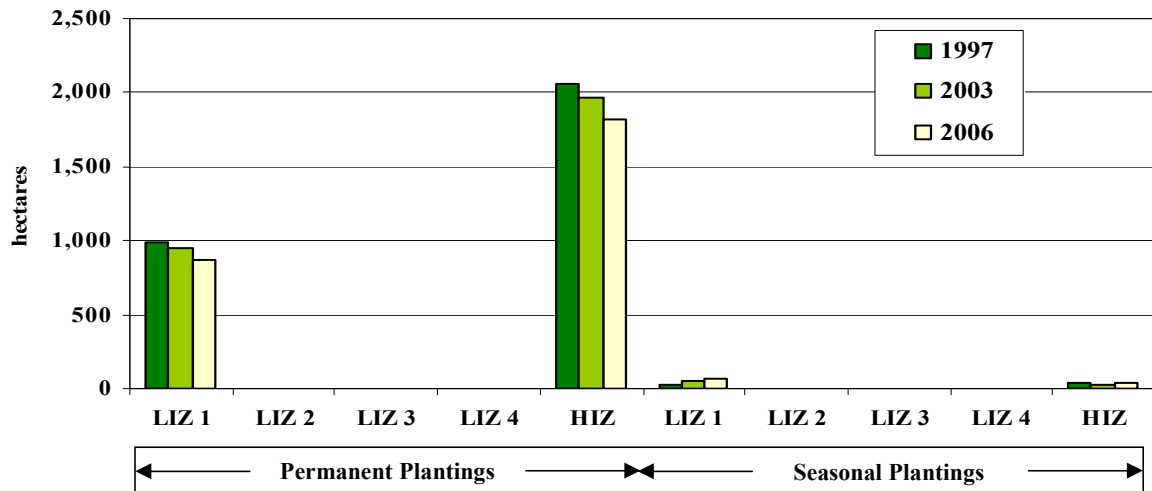
Note that some properties may own irrigated crops outside of this Merbein study area but these are not included in the above figures.

8.5 Merbein Salinity Impact Zones

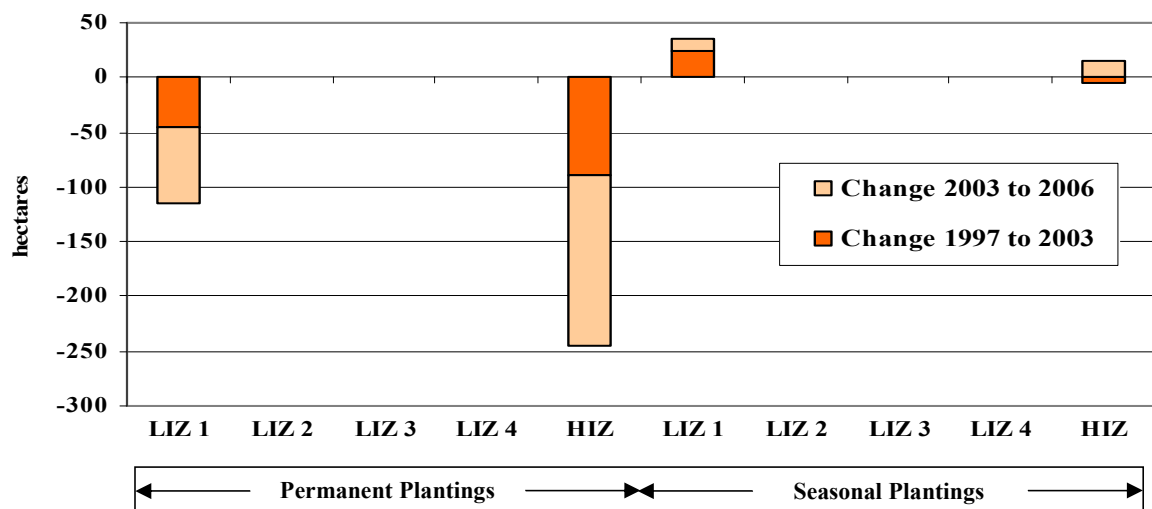
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	990	-45	945	-70	875	-115	-12%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	2,060	-90	1,970	-155	1,815	-245	-12%
Seasonal Plantings	LIZ 1	30	+25	55	+10	65	+35	+117%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	35	-5	30	+15	45	+10	+29%
Total hectares		3,115	-115	3,000	-200	2,800	-315	-10%
Vacant areas excluded		15		135		300		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



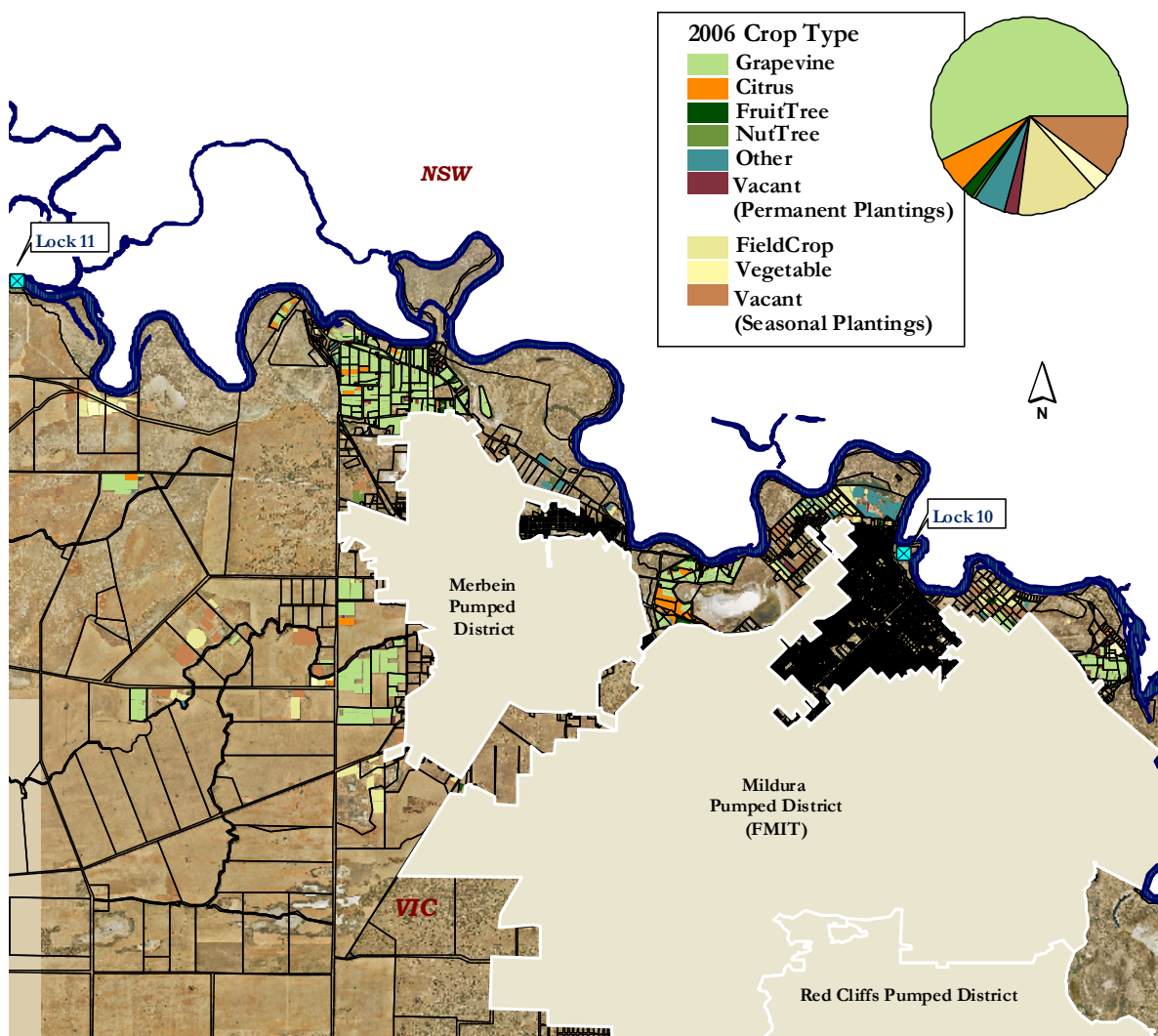
9 Mildura River Reach (Mildura to Darling Junction)

The following presents information with respect to irrigated crops for private diverters in the Mildura river reach from 1997 to 2006.

In summary:

- The irrigated area increased by 310 hectares (a 22% increase) between 1997 and 2006
- Grapevines remained the dominant crop type from 1997 to 2006
- The dominant irrigation method changed from furrow in 1997 to drip in 2006
- Grapevines were predominantly grown for wine production from 1997 to 2006
- There are approximately 143 private diverters in the Mildura river reach, with an average cropped area of 12.1 hectares
- Crops remained predominantly in the high salinity impact zone, HIZ, from 1997 to 2006

Map of Mildura river reach (private diverters) showing 2006 crop types:



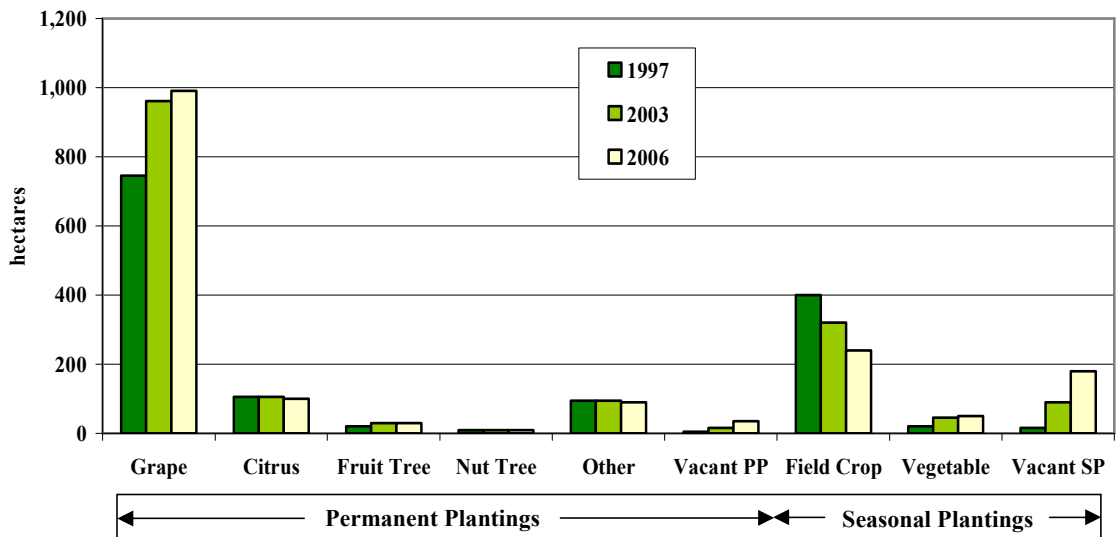
9.1 Mildura River Reach Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	745	+215	960	+30	990	+245	+33%
	Citrus	105	0	105	-5	100	-5	-5%
	Fruit Tree	20	+10	30	0	30	+10	+50%
	Nut Tree	10	0	10	0	10	0	0%
	Other	95	0	95	-5	90	-5	-5%
	Vacant PP	5	+10	15	+20	35	+30	+600%
Seasonal Plantings	Field Crop	400	-80	320	-80	240	-160	-40%
	Vegetable	20	+25	45	+5	50	+30	+150%
	Vacant SP	15	+75	90	+90	180	+165	+1,100%
Total hectares		1,415	+255	1,670	+55	1,725	+310	+22%

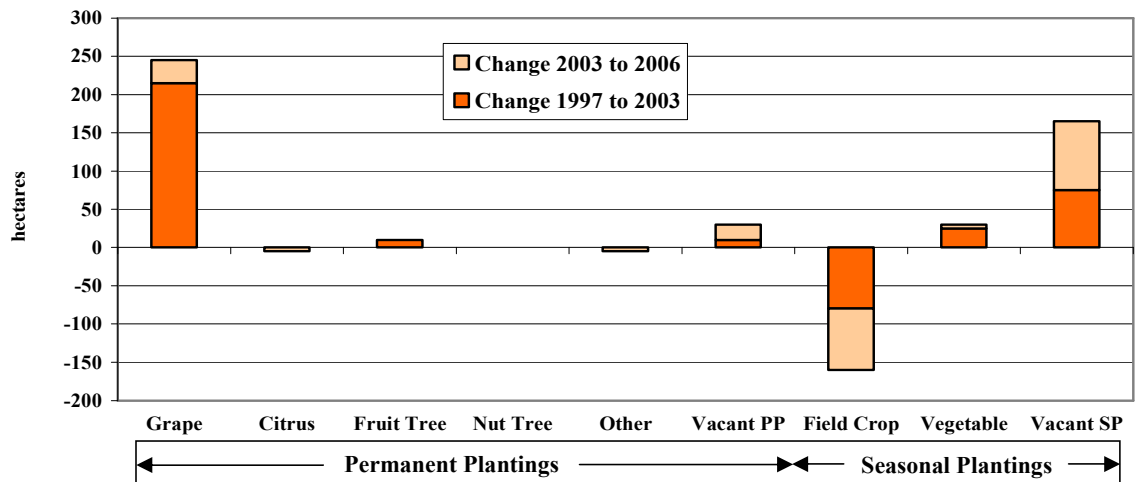
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

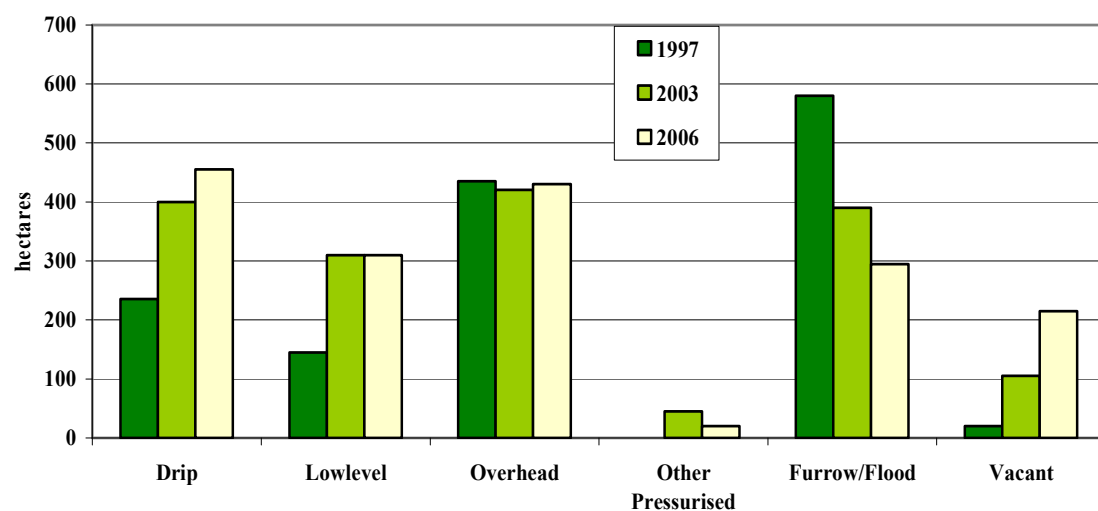


9.2 Mildura River Reach Irrigation Methods

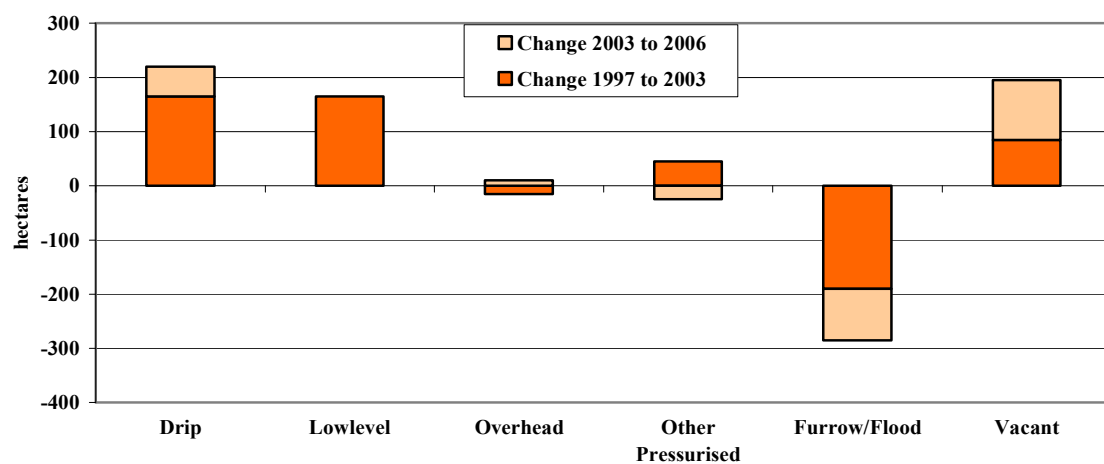
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	235	+165	400	+55	455	+220	+94%
Low level	145	+165	310	0	310	+165	+114%
Overhead	435	-15	420	+10	430	-5	-1%
Other Pressurised	0	+45	45	-25	20	+20	0%
Furrow/Flood	580	-190	390	-95	295	-285	-49%
Vacant	20	+85	105	+110	215	+195	+975%
Total hectares	1,415	+255	1,670	+55	1,725	+310	+22%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

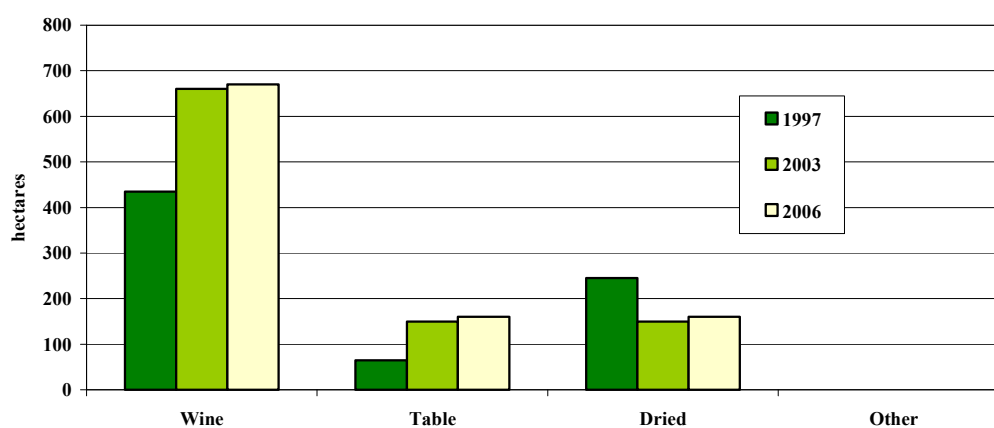


9.3 Mildura River Reach Grape Use

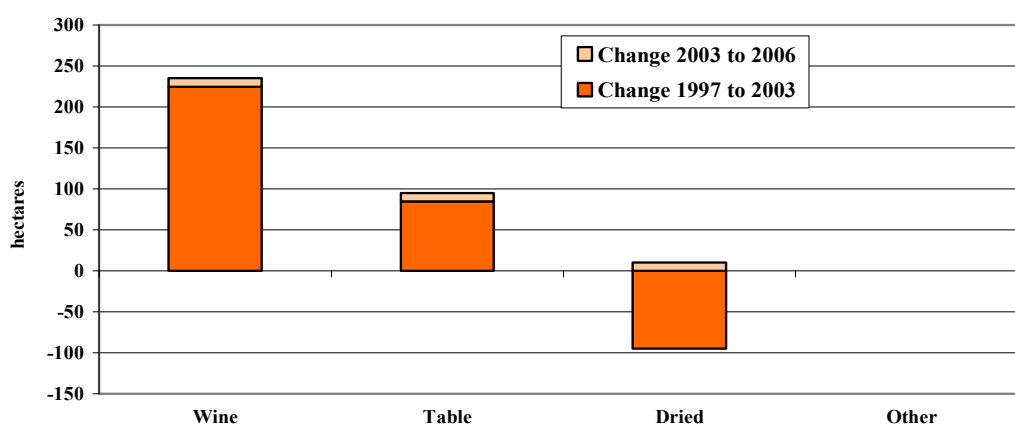
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	435	+225	660	+10	670	+235	+54%
Table	65	+85	150	+10	160	+95	+146%
Dried	245	-95	150	+10	160	-85	-35%
Other							0%
Total hectares	745	+215	960	+30	990	+245	+33%

Other = juice, cannery or research

Grape Use per Year



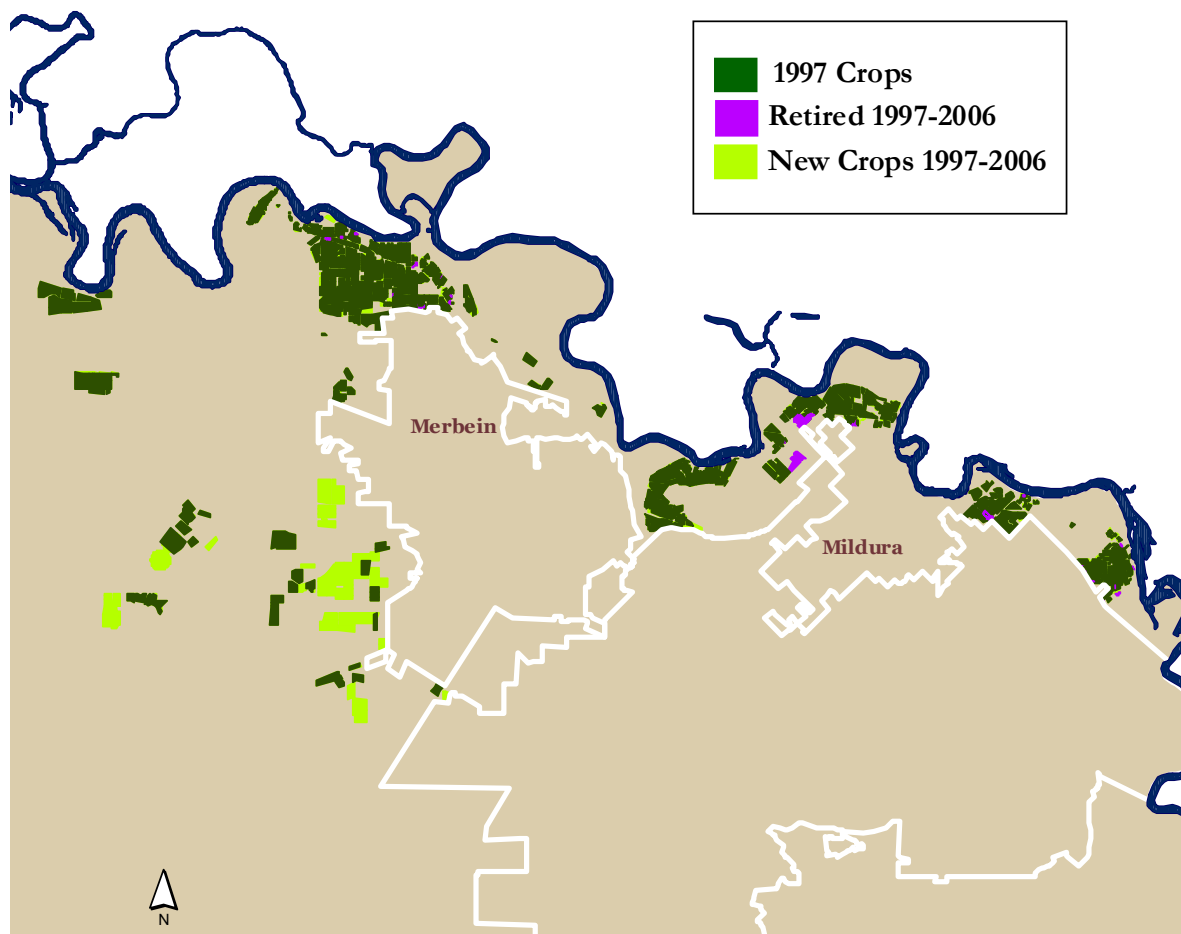
Grape Use Change



9.4 Mildura River Reach – Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	1,415		
Retired between 1997 and 2006		-30	-2%
New Areas between 1997 and 2006		+340	+24%
Irrigated Crops in 2006 (2005-06 season)	1,725		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	122	113	116	-6	-5%
20 to 40	13	17	12	-1	-8%
> 40	8	10	15	+7	+88%
Total Properties	143	140	143	0	
Average Cropped Area (hectares)	9.9	11.9	12.1		

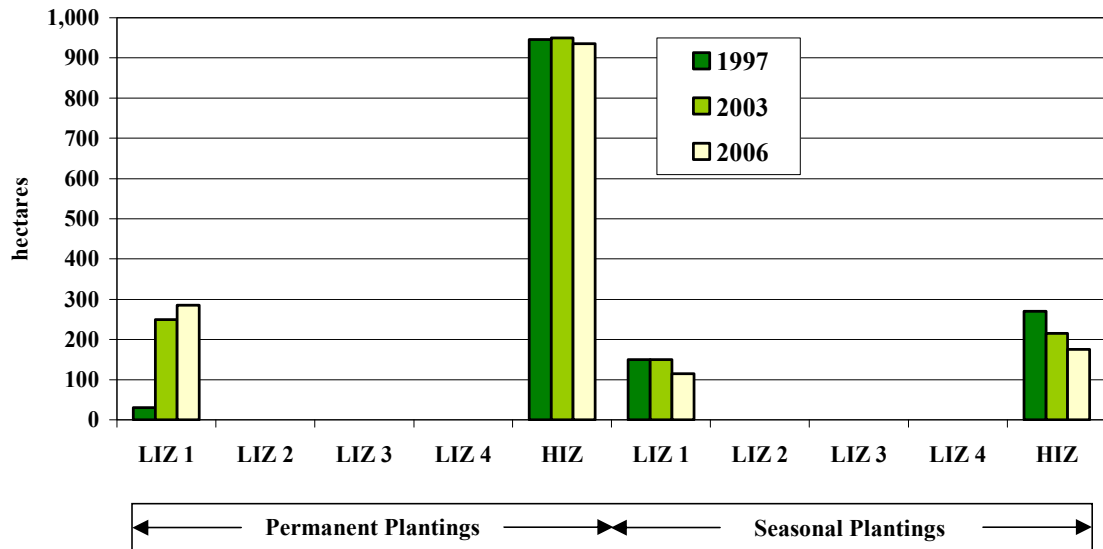
Note that some properties may own irrigated crops outside of this Mildura study area but these are not included in the above figures.

9.5 Mildura River Reach Salinity Impact Zones

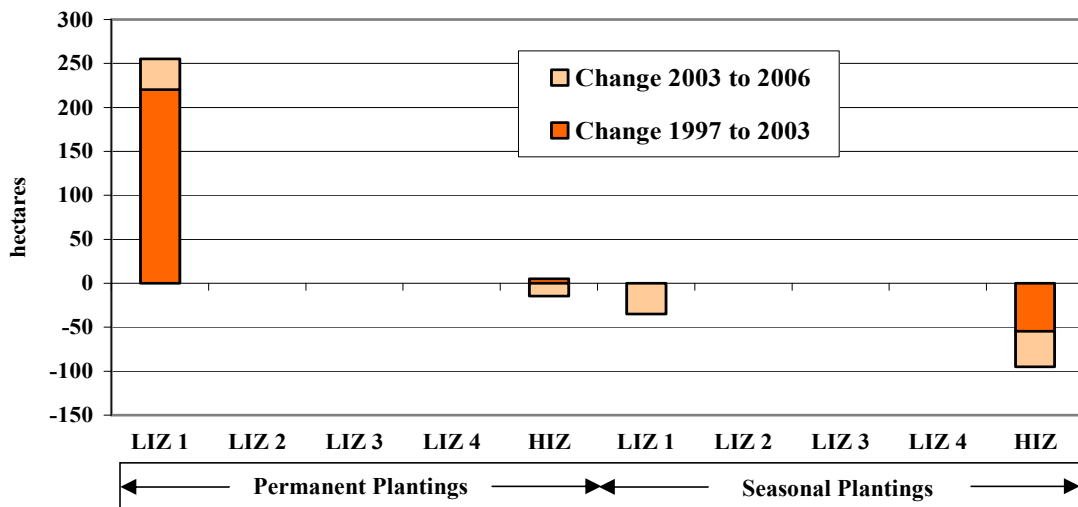
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	30	+220	250	+35	285	+255	+850%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	945	+5	950	-15	935	-10	-1%
Seasonal Plantings	LIZ 1	150	0	150	-35	115	-35	-23%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	270	-55	215	-40	175	-95	-35%
Total hectares		1,395	+170	1,565	-55	1,510	+115	+8%
Vacant areas excluded		20		105		215		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



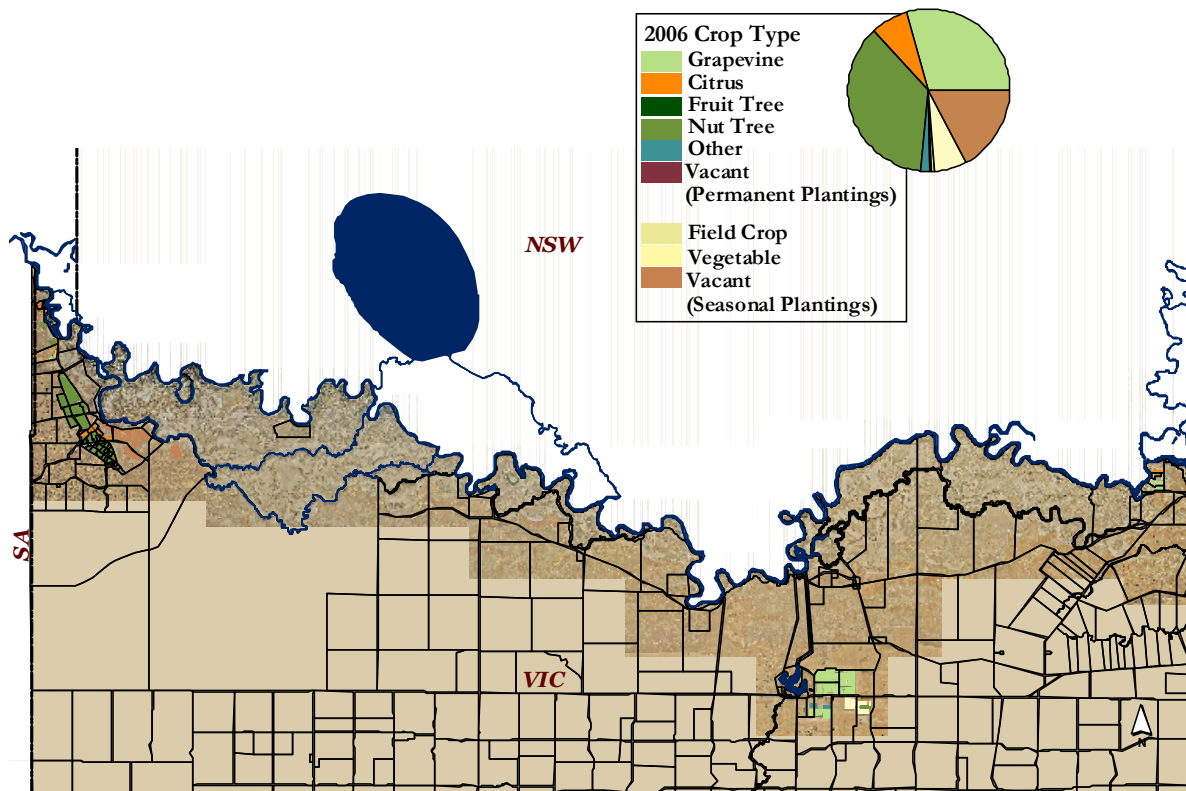
10 Lindsay River Reach (Darling Junction to SA Border)

The following presents information with respect to irrigated crops for the Lindsay River Reach from 1997 to 2006.

In summary, for the Lindsay River Reach:

- The irrigated area increased by 515 hectares, a 29% increase from 1997 to 2006
- Nut trees remained the dominant crop type from 1997 to 2006
- Low level remained the dominant irrigation method from 1997 to 2006
- Grapevines were predominantly grown for wine production from 1997 to 2006
- There are approximately 19 private diverters in the Lindsay river reach, with an average cropped area of 122.1 hectares
- Crops are predominantly in the lowest salinity impact zone, LIZ 1

Map of Lindsay river reach showing 2006 crop types:



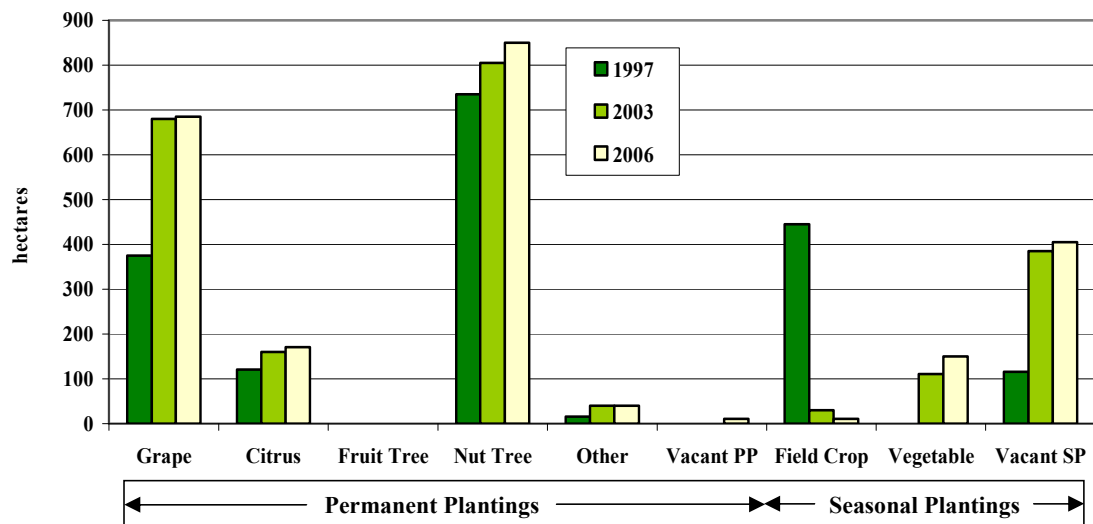
10.1 Lindsay River Reach Crop Types

CROP TYPE		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997-2006	% Change 1997 to 2006
Permanent Plantings	Grapevine	375	+305	680	+5	685	+310	+83%
	Citrus	120	+40	160	+10	170	+50	+42%
	Fruit Tree	0	0	0	0	0	0	0%
	Nut Tree	735	+70	805	+45	850	+115	+16%
	Other	15	+25	40	0	40	+25	+167%
	Vacant PP	0	0	0	+10	10	+10	+0%
Seasonal Planting	Field Crop	445	-415	30	-20	10	-435	-98%
	Vegetable	0	+110	110	+40	150	+150	+0%
	Vacant SP	115	+270	385	+20	405	+290	+252%
Total hectares		1,805	+405	2,210	+110	2,320	+515	+29%

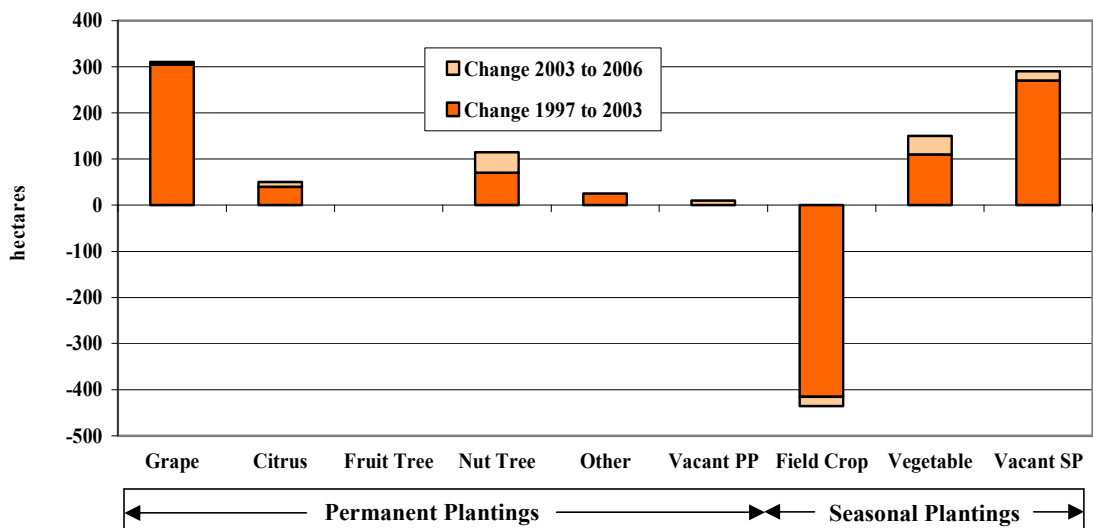
Other = miscellaneous, nurseries or woodlots Vacant PP = previously a permanent planting Vacant SP = previously a seasonal planting. Hectares for seasonal plantings should be treated with caution - see Data Limitations page 4.

Area 1997 = 1996-97 irrigation season, Area 2003 = 2002-03 irrigation season, Area 2006 = 2005-06 irrigation season

Crop Type per Year



Crop Type Change

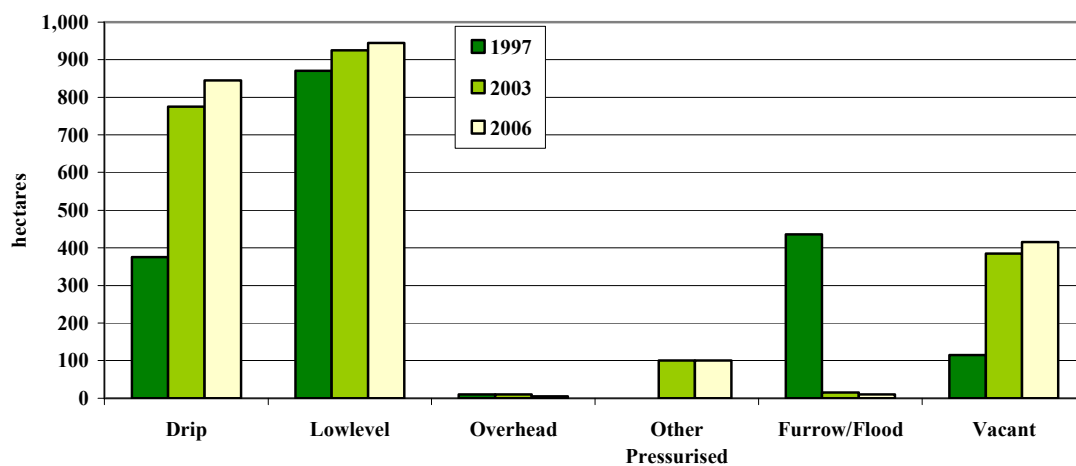


10.2 Lindsay River Reach Irrigation Methods

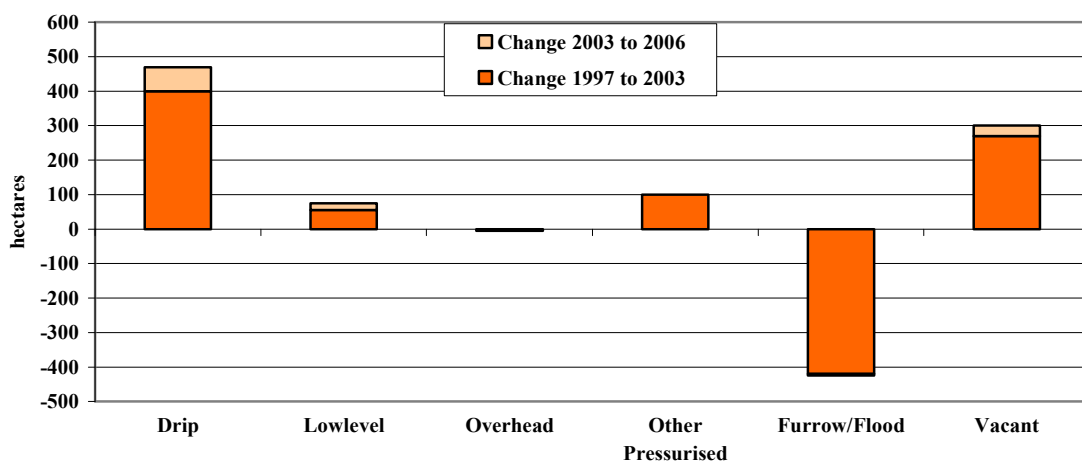
Irrigation Method	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Drip	375	+400	775	+70	845	+470	+125%
Low level	870	+55	925	+20	945	+75	+9%
Overhead	10	0	10	-5	5	-5	-50%
Other Pressurised	0	+100	100	0	100	+100	+0%
Furrow/Flood	435	-420	15	-5	10	-425	-98%
Vacant	115	+270	385	+30	415	+300	+261%
Total hectares	1,805	+405	2,210	+110	2,320	+515	+29%

Other Pressurised includes pivot and micro-sprinkler

Irrigation Method per Year



Irrigation Method Change

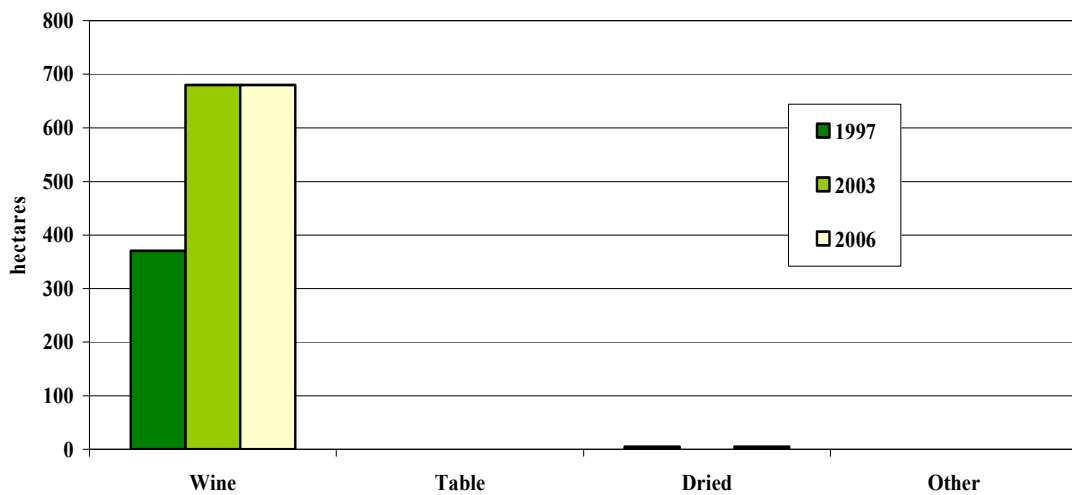


10.3 Lindsay River Reach Grape Use

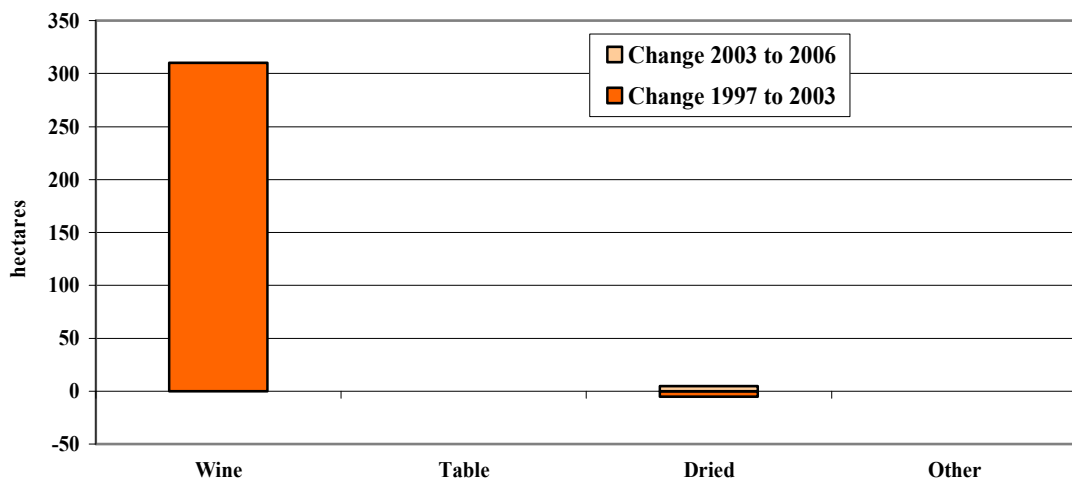
Grape Use	Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Wine	370	+310	680	0	680	+310	+84%
Table							0%
Dried	5	-5	0	+5	5	0	0%
Other							0%
Total hectares	375	+305	680	+5	685	+310	+83%

Other = juice, cannery or research

Grape Use per Year



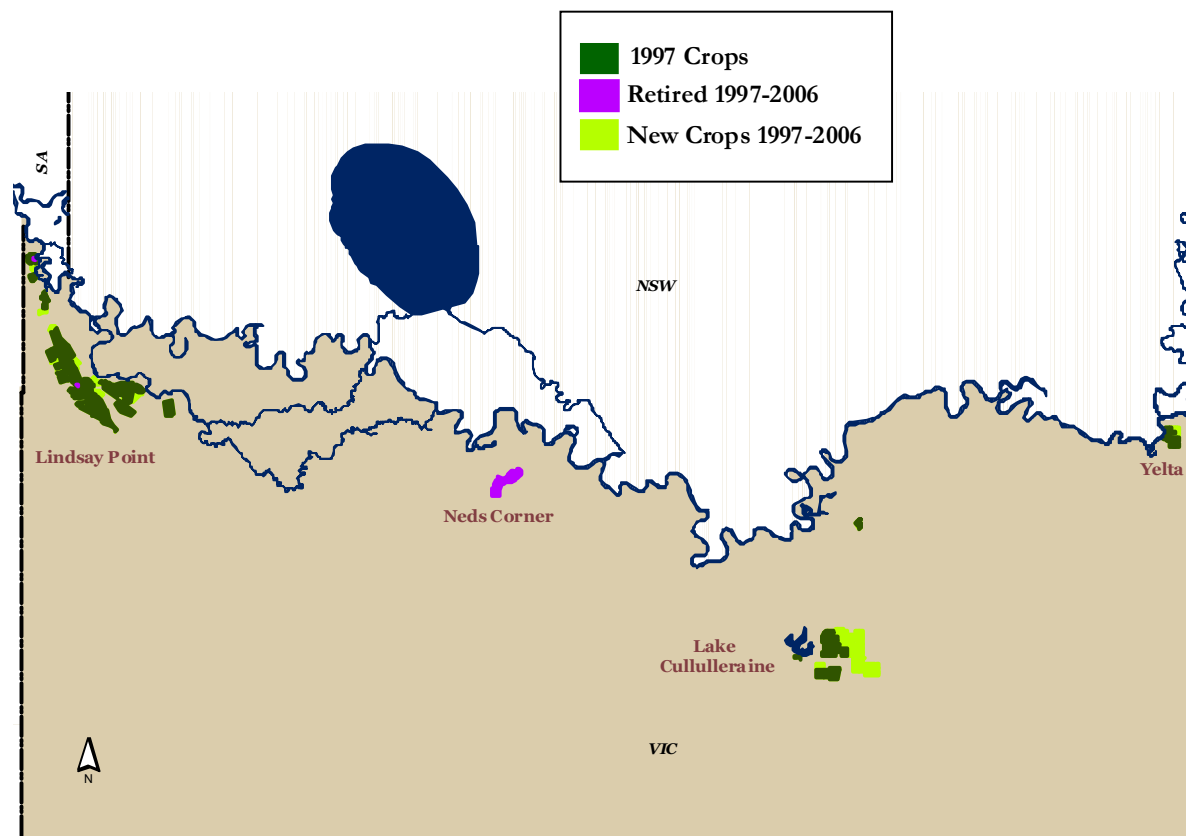
Grape Use Change



10.4 Lindsay River Reach – Irrigation Development and Properties

Irrigation Development from 1997 to 2006

	Hectares		% of 1997
Irrigated Crops in 1997 (1996-97 season)	1,805		
Retired between 1997 and 2006		-145	-8%
New Areas between 1997 and 2006		+660	+37%
Irrigated Crops in 2006 (2005-06 season)	2,320		



Property Change

Property Cropped Area	Number of Properties			Change 1997 - 2006	
	1997	2003	2006	Number	% since 1997
< 20	7	5	5	-2	-29%
20 to 40	2	2	2	0	0
> 40	10	13	12	2	+20%
Total Properties	19	20	19	0	
Average Cropped Area (hectares)	95.0	110.5	122.1		

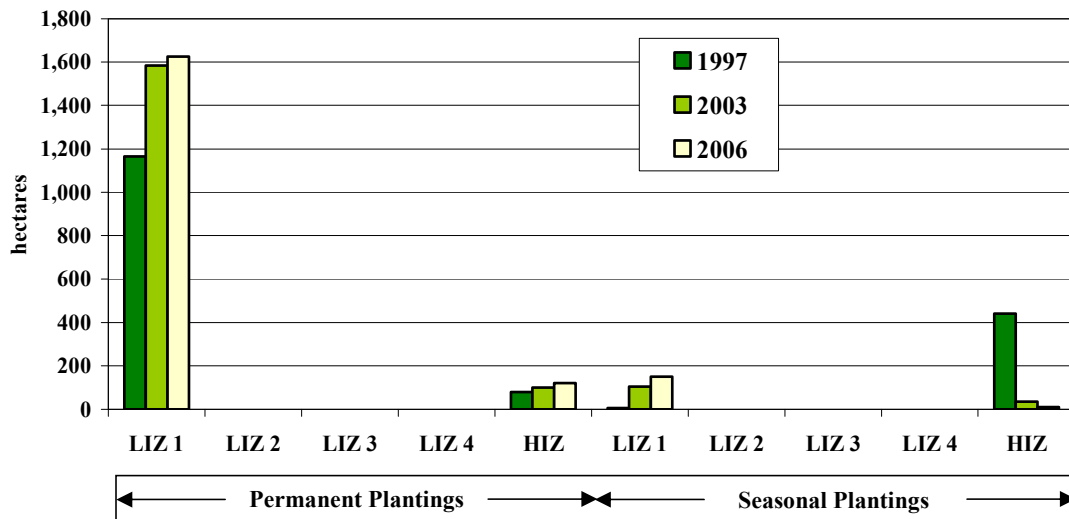
Note that some properties may own irrigated crops outside of this Lindsay study area but these are not included in the above figures.

10.5 Lindsay River Reach Salinity Impact Zones

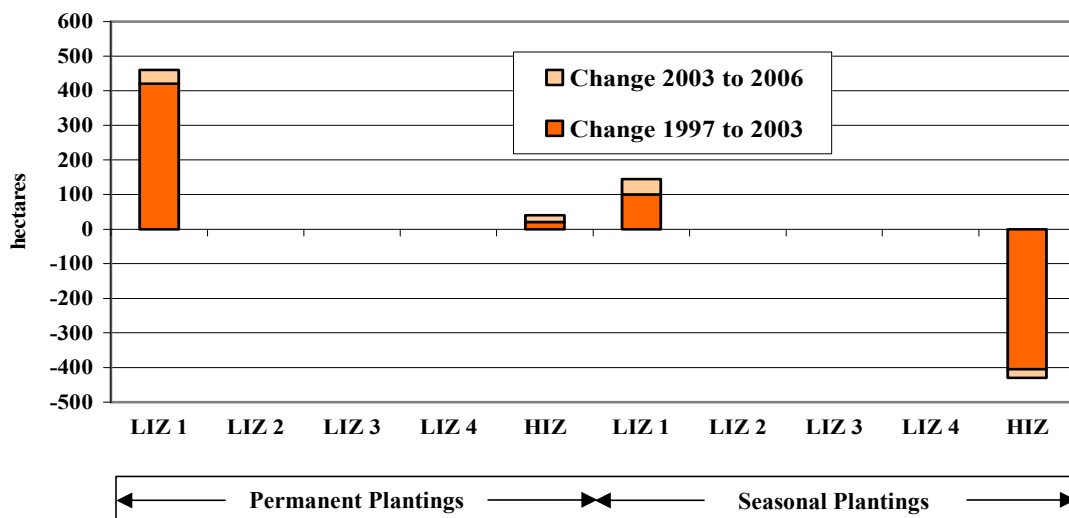
Hazard B Salinity Impact Zone		Area 1997	Change 1997 to 2003	Area 2003	Change 2003 to 2006	Area 2006	Change 1997 to 2006	% Change 1997 to 2006
Permanent Plantings	LIZ 1	1,165	+420	1,585	+40	1,625	+460	+39%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	80	+20	100	+20	120	+40	+50%
Seasonal Plantings	LIZ 1	5	+100	105	+45	150	+145	+2,900%
	LIZ 2							
	LIZ 3							
	LIZ 4							
	HIZ	440	-405	35	-25	10	-430	-98%
Total hectares		1,690	+135	1,825	+80	1,905	+215	+13%
Vacant areas excluded		115		385		415		

LIZ = Low Impact Zone, HIZ = High Impact Zone

Salinity Impact Zone per Year



Salinity Impact Zone Change



Disclaimer

This Report has been prepared by SunRISE 21 incorporated in consultations with the Mallee Catchment Management Authority, industry bodies and individual irrigators. Information contained herein is based on data and information from a range of sources. Whilst SunRISE 21 has endeavoured to correctly interpret, analyse and present the information, SunRISE 21 Inc. does not warrant that this report is definitive nor free of error and does not accept liability for any loss caused or arising from use of or reliance upon information contained herein.