

Maximising returns from water in the Australian vegetable industry: South Australia

Shirley Sylvia and Mark Skewes



March 2006



Government
of South Australia



Know-how for Horticulture™



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Maximising returns from water in the Australian vegetable industry: South Australia

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The information contained in this publication is based on knowledge and understanding at the time of writing (March 2006). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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EXECUTIVE SUMMARY

This report is one in a series on vegetable industry water use at state and national levels, and has been funded by Horticulture Australia Ltd (HAL) and AUSVEG. This series outlines how water is used in the major vegetable production regions in Australia, and details the current irrigation practices, water use efficiencies and economics of the vegetable-growing industries in each state.

The vegetable sector is the largest segment of the horticultural industry in Australia. The most recent ABS survey (2000/01) revealed the vegetable industry had a gross value of around \$ 2.1 billion, derived from some 2.9 million tonnes of produce. Export value of Australian fresh and processed vegetable products in 2004/05 was in excess of \$192 million. The major crop types were potatoes (1.2 million tonnes from 36 800 ha), tomatoes (414,000 tonnes from 8300 ha), carrots (283,000 tonnes from 7000 ha) and onions (247,000 tonnes from 5300 ha).

The 2000/01 ABS survey reported 5300 vegetable establishments (with estimated value of agricultural operations worth \$5000 or more) Australia-wide, directly employing 15,621 people. These farms were typically run by single unit farming families who specialise in vegetable production. Average farm size is about 25 hectares, from which produce worth \$230,000 per annum at first point of sale is generated.

Water is an essential input to sustainable vegetable production. The ABS report *Water use on Australian farms 2003–04* (ABS 2005b) stated that, in 2003/04, the vegetable industry accounted for 477,136 megalitres (ML) or just 4.6% of the total water used for irrigation. The report also estimated that average water use per hectare was 4.1 ML/ha, compared with the estimated overall application rate for water across all crops of 4.3 ML/ha. The value return from vegetable production per megalitre increased from \$1762/ML in 1996/97 to \$3207/ML in 2000/01 (ABS 2002b).

The rate of irrigation technology improvements in the vegetable industry since the mid-1990s has been significant, and has come at a time of increased publicly funded incentive programs (such as WaterWise on the Farm, in NSW and the Rural Water Use Efficiency program in Queensland) for improving irrigation efficiency on-farm. This series of reports details the investment made in technology to ensure maximum output and product quality from every megalitre used in vegetable production and processing.

The productivity increases achieved by the vegetable industry can be largely attributed to the increased use of water-efficient delivery systems such as drip irrigation, increased use of recycling on-farm, wide scale adoption of irrigation scheduling and soil moisture monitoring and increased use of whole farm planning and soil mapping. Although more difficult to measure, some part of that increase in product value and quality is most likely to be the direct result of improved irrigation practices.

VEGETABLE INDUSTRY WATER USE IN SOUTH AUSTRALIA

The South Australian vegetable industry used 86,747 ML of water, or 19% of irrigated horticulture, or 9% of irrigated agriculture in South Australia in 2003–04. In South Australia the gross margin per ML of water for the main vegetable crops were \$271/ML and \$306/ML for potatoes and onions respectively, up to \$9,264/ML for glasshouse cucumbers.

Rainfall in South Australian vegetable growing areas ranges from 274 to 1043 mm per annum. Vegetable growing is largely restricted to southern regions of the state with access

to irrigation water from surface (e.g. River Murray), underground (of adequate quantity and quality), or recycled sources.

Regional development opportunities combined with user, state and Commonwealth government funding have enabled significant infrastructure developments benefiting the vegetable industry. Examples of these developments include effluent water recycling on the Northern Adelaide Plains, and Murray River salt-interception schemes and pressurised delivery schemes.

RECOMMENDATIONS

Facilitation is needed of irrigation benchmarking studies with vegetable focus groups to identify potential for optimum performance parameters for each vegetable growing region, and identify further research, extension and training needs within those groups. Successful studies have been conducted with potatoes and other fruit crops in South Australia, providing incentives for growers to self-improve.

Best management practices for linked inputs applied to vegetables e.g. water and fertilisers to prevent toxic buildup or drainage of salinity and nutrients are needed. Also improved understanding of soil chemical analyses and subsequent timely recommendations to improve drainage and nutrient retention (e.g. addition of gypsum, organic matter or deep ripping). Management of these issues is also important for environmental management planning.

There is a need for the development of best management practices to manage vegetable crops and rotations under reduced water allocations, with a focus on crop yield and quality, including a better understanding of the impacts and options from using less water e.g. plant less, forego yield and/or quality.

Increased promotion and support of vegetable grower irrigation training is needed. Concentrated glasshouse production areas on the Northern Adelaide Plains have high water tables, despite modern irrigation and pumping systems. There is a need to develop a culture of irrigation scheduling, recording and monitoring water and fertiliser inputs to manage on-farm and regional water tables.

Identification of impacts of precision irrigation systems (e.g. centre pivots, drip irrigation), on soil structure decline is needed. In dryland areas, precision irrigation systems have been introduced for vegetables, and despite best management practice, have led to a change in soil structure and chemistry, increased silt loads (affecting drip irrigation), and increased sodicity (particularly of subsoil and groundwater).

SECTION 1 – INTRODUCTION

HORTICULTURAL IRRIGATION DISTRICTS COVERED IN THIS REPORT

1. Murraylands

- Riverland (Lower (e.g. Murray Bridge) and Upper Murray (e.g. Loxton))
- Upper Mallee (e.g. Pinnaroo)

2. South East

- Upper South East (e.g. Keith)
- Lower South East (e.g. Penola)

3. Adelaide Hills (e.g. Lenswood)

4. Northern Adelaide Plains (e.g. Virginia)

Notes:

- The Murray Lands & South East districts are as defined by the ABS.
- The Adelaide Hills and Adelaide Plains irrigation districts are a composite of various LGAs for the Adelaide and Outer Adelaide ABS Regions, and defined by the characteristic topographic and climatic differences between the two regions.

OVERVIEW OF VEGETABLE PRODUCTION REGIONS IN SOUTH AUSTRALIA

- 12,000 hectares of vegetables
- Value of vegetable production \$272M

Murraylands

- Value of vegetable production \$126M
- Machine harvested (e.g. carrots, potatoes, onions)
- At Loxton 2–3 hrs to Adelaide, 8 hr to Melbourne
- At Murray Bridge – greenhouse tomatoes, 1 hr to Adelaide
- Climate – wet and cool winter, dry hot summer
- Irrigated from Murray River and groundwater

South East

- Value of vegetable production \$61M
- Machine harvested crops (e.g. processing potatoes, onions, vegetable seed)
- Climate – cold winter, mild summer
- Irrigation via mainly groundwater, small amounts of surface water

Adelaide Hills

- Value of vegetable production \$35M
- Strategically close – 1 hr to Adelaide, domestic and export markets
- Climate – high rainfall, cold winter, mild summer
- Hilly, field crops, hand harvest (e.g. brussel sprouts, leeks)
- Irrigation via ground and surface water

Northern Adelaide Plains

- Value of vegetable production \$50M
- Strategically close to Adelaide, domestic and export markets
- Greenhouse & field crops using hand labour (e.g. tomato, cucumber, capsicum, lettuce, brassicas, bunching vegetables)
- Temperate coastal climate
- Irrigation via groundwater and recycled water from Bolivar effluent

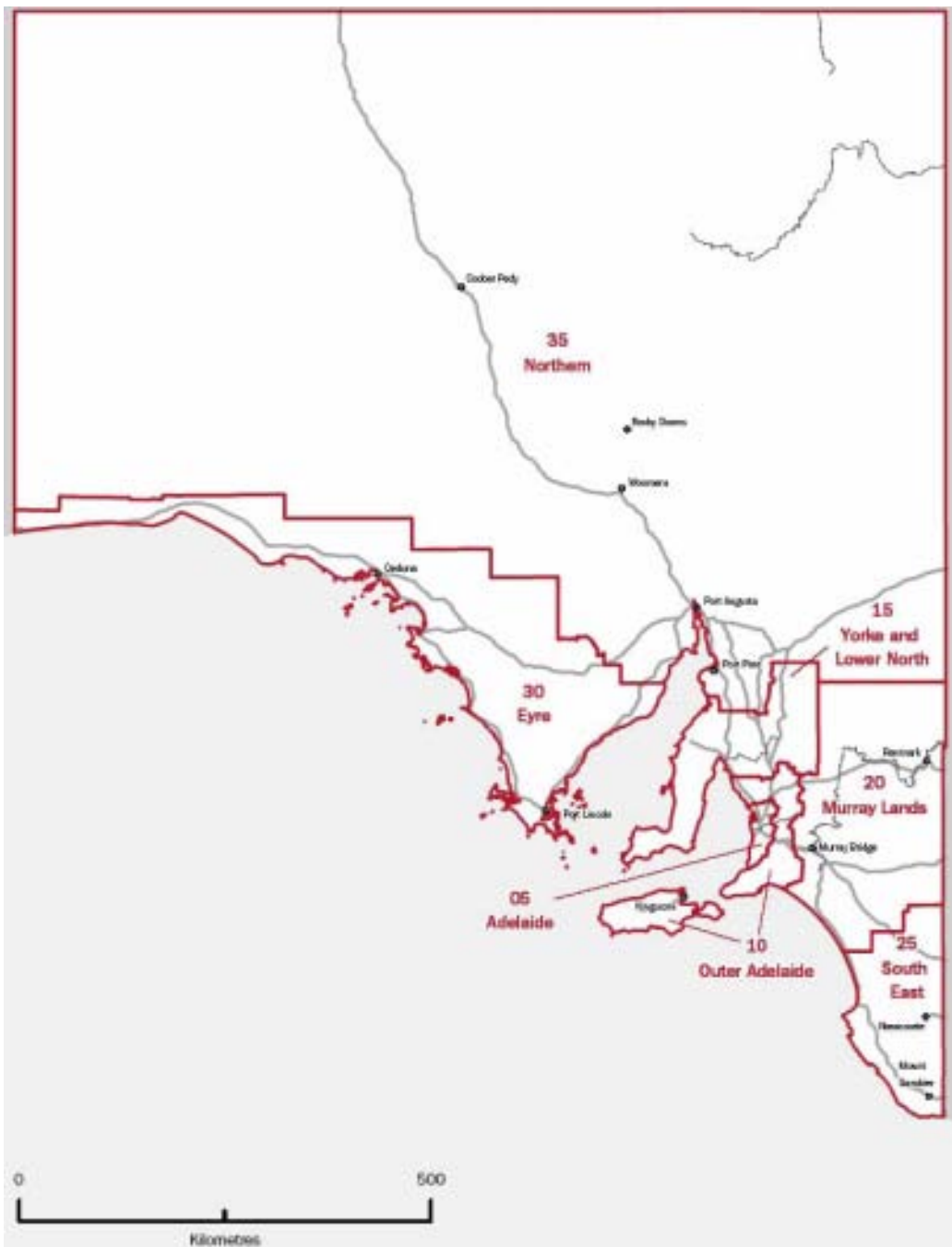


Coloured lettuce production on the Northern Adelaide Plains for the metropolitan market

MAP 1: ABS STATISTICAL DIVISIONS IN SOUTH AUSTRALIA 2001

Reference 6, 89

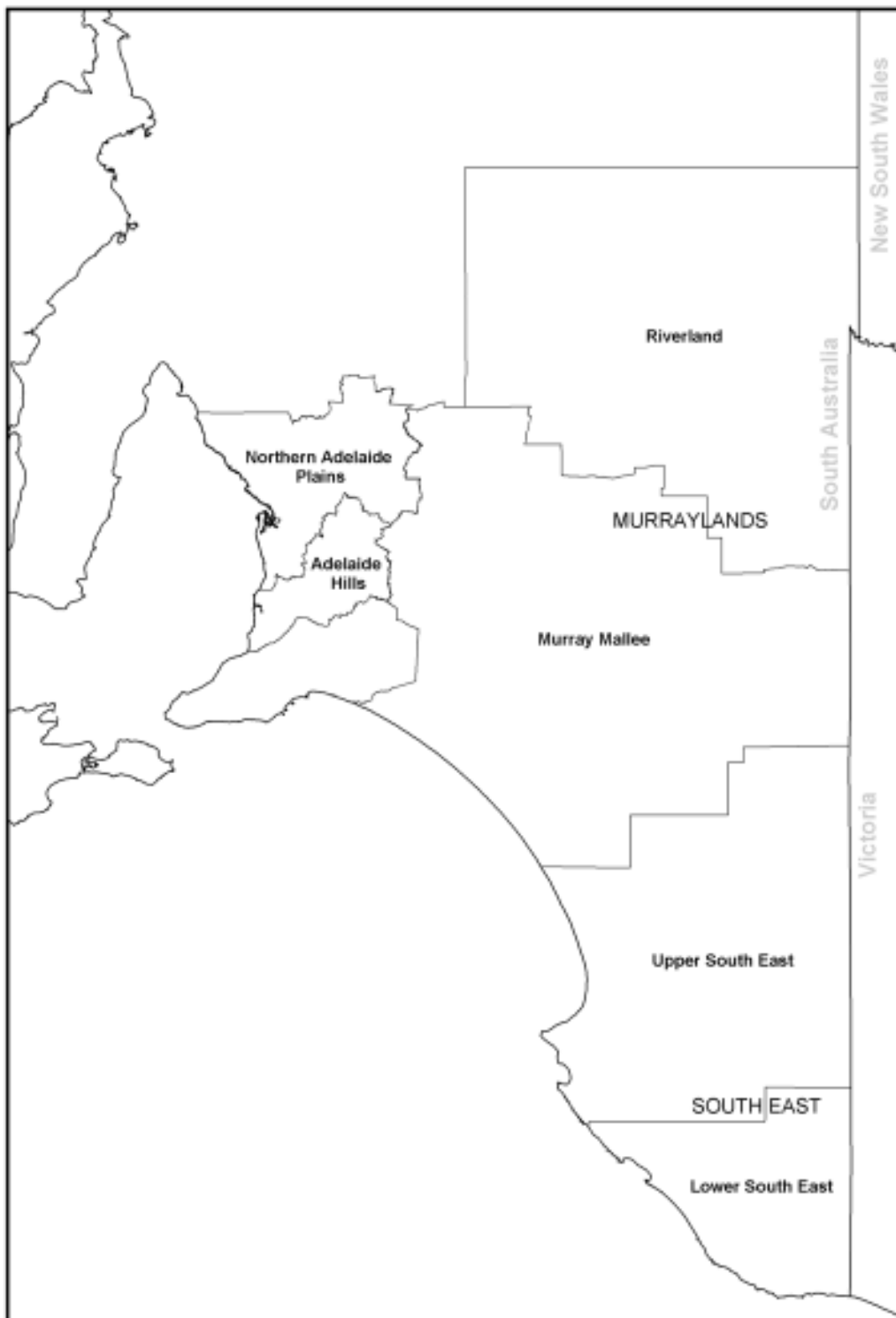
South Australian horticultural regions lie predominantly within 4 of the 7 ABS statistical divisions. These include, Murraylands, South East, Adelaide and Outer Adelaide.



MAP 2: HORTICULTURE REGIONS OF SOUTH AUSTRALIA (PIRSA)

Reference 19

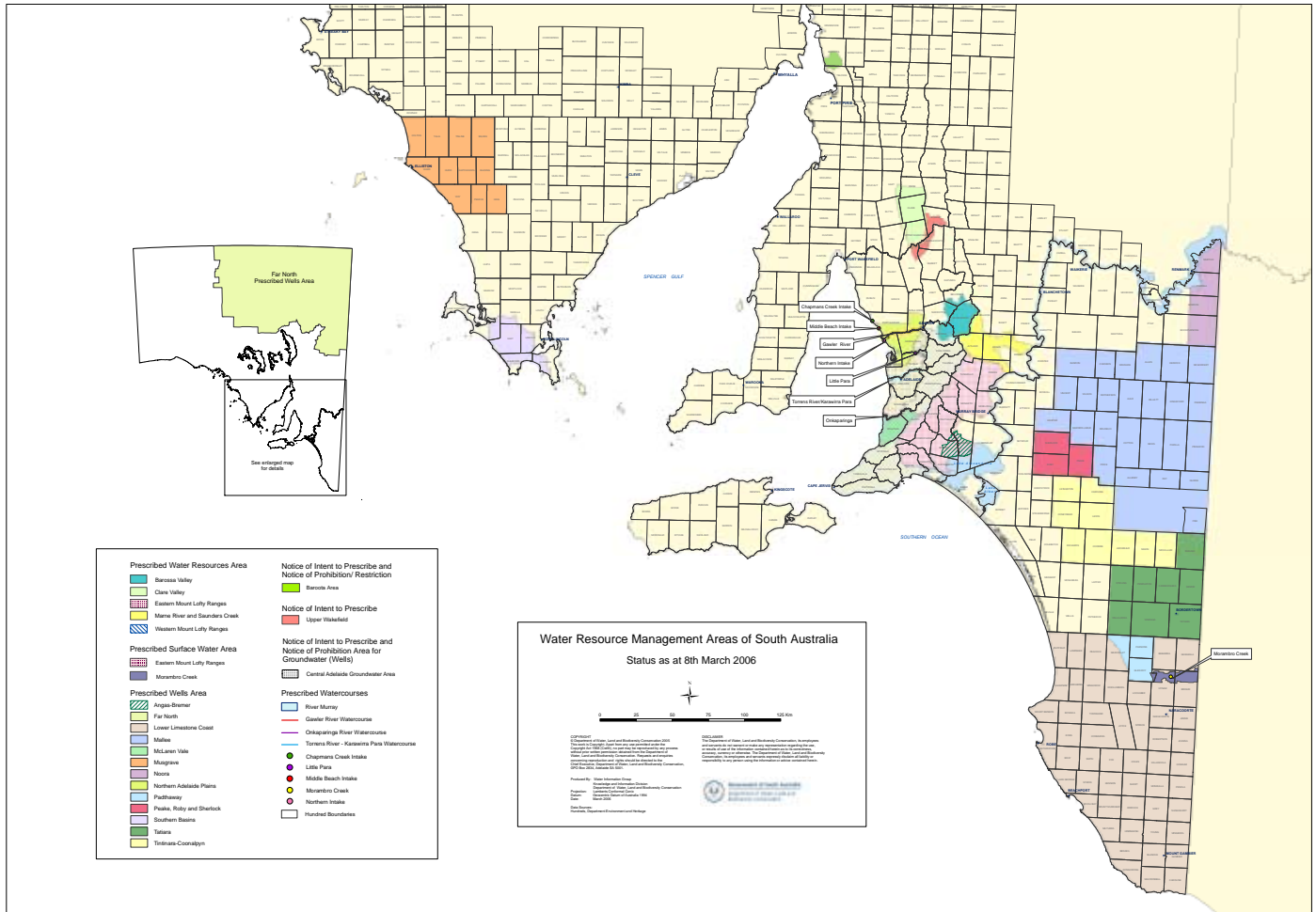
The following horticulture regions of South Australia are defined by PIRSA, and differ from the ABS statistical divisions (Map 1), to take into account geographical and climatic differences, which distinguish horticultural management in those regions.



MAP 3: WATER RESOURCE MANAGEMENT AREAS OF SOUTH AUSTRALIA

Reference 17

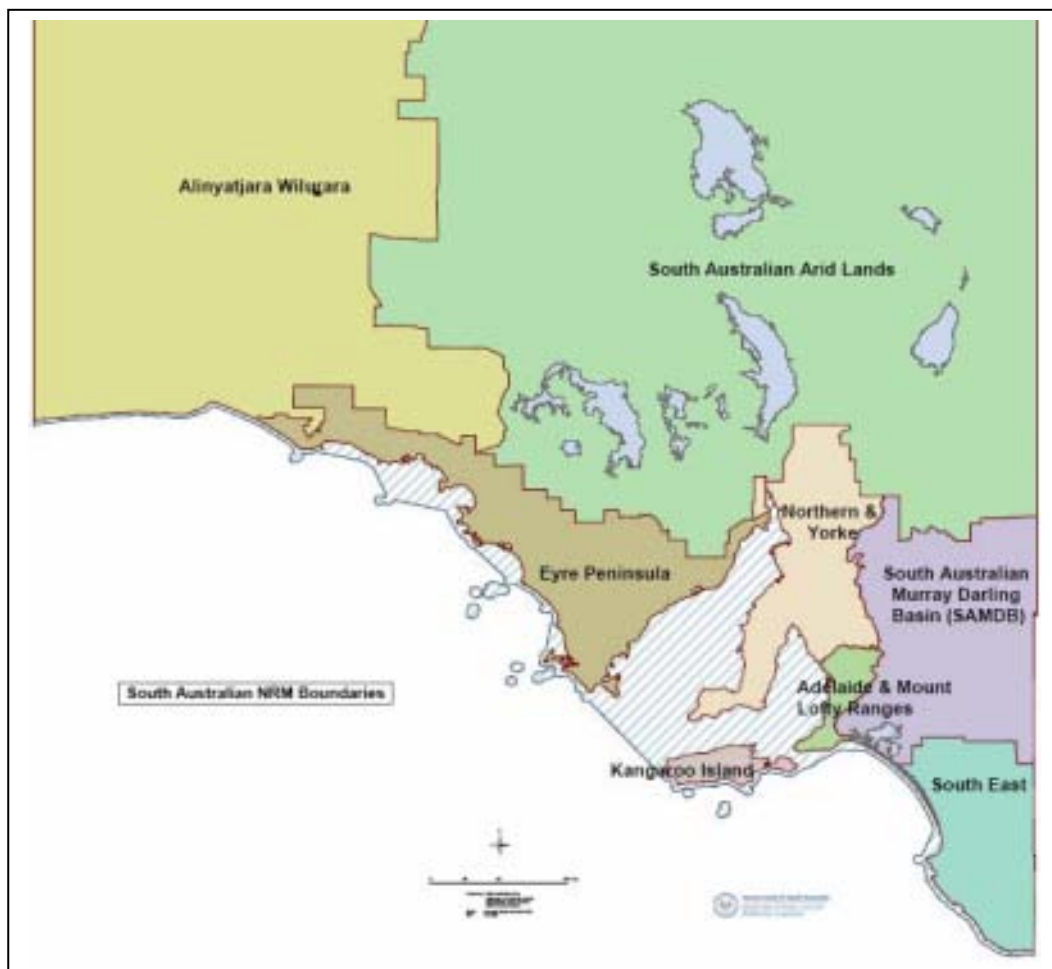
The water resource management areas indicated in Map 3, now operate under the Natural Resource Management Boundaries indicated in Map 4.



MAP 4: NATURAL RESOURCE MANAGEMENT (NRM) BOUNDARIES OF SOUTH AUSTRALIA

Reference 18

The new Integrated Natural Resource Management Boards (INRM) commenced from 1 July 2005, and combine the previous soil, plant & pest control, and catchment boards.



SECTION 2 – VEGETABLE CROPS IN SOUTH AUSTRALIA

1 & 2. CROPS TYPES & AREA

Reference 6, 108

The major 3 vegetable crops by ABS Statistical Division in South Australia, are potatoes, onions and carrots, from the last complete census of 2001. The total area grown to vegetables was 14,649 ha. Competition for land and water with the expanding winegrape industry may have led to a decline in area since 2001. Preliminary area data from the 2005–06 census are also given

Table 2a: Irrigated area planted to major vegetables (ha)

Vegetable Crop	Adelaide	Outer Adelaide	Yorke and Lower North	Murray Lands	South East	Eyre	Northern	South Australia 2000–01	South Australia 2005–06
Potatoes	666.36	1,215.97	-	4,015.57	3,118.71	-	76.00	9,092.6	10,759
Tomatoes (fresh market)	93.90	4.44	-	14.25	0.29	-	0.46	113.3	92
Carrots	390.02	63.36	-	564.51	1.22	1.10	-	1,020.2	1,161
Lettuce	143.77	75.94	-	57.93	0.12	1.21	-	279.0	392
Onions, white and brown	52.52	72.35	-	1,209.35	390.40	-	-	1,724.6	1,366
Melons, rock (incl cantaloupe)	-	-	-	220.00	-	-	-	220.0	28
Broccoli	120.65	117.19	-	28.79	3.75	0.66	-	271.1	108
Capsicum, chillies and peppers	57.17	1.96	-	18.21	-	0.11	2.99	80.4	86
Asparagus	-	-	-	-	-	-	-	-	1
Cauliflower	178.25	54.43	-	7.53	-	1.10	-	241.3	248
Water Melons	-	-	-	14.16	-	-	-	14.2	-
Sweet corn	2.26	13.35	-	61.12	-	-	-	76.7	58
Pumpkins, triambles, trombones, etc	3.75	6.25	-	351.40	16.09	0.11	-	377.6	281
French and runner beans (fresh market)	18.44	0.11	-	-	-	0.11	-	18.7	-
Cabbages	98.75	7.78	-	3.69	1.25	1.21	-	112.7	114
Celery	34.13	0.35	-	-	-	-	-	34.5	42
Zucchini	15.48	5.19	-	3.32	-	0.33	2.99	27.3	-
Melons-other	-	-	-	9.18	-	-	-	9.2	-
Snow peas	1.37	0.11	-	2.46	-	-	-	3.9	-
Parsnips	16.98	-	-	-	-	-	-	17.0	28
Cucumbers	75.75	4.40	-	0.25	-	-	1.68	82.1	97
Leeks	10.25	28.17	-	11.52	1.00	-	-	50.9	-
Brussel sprouts	6.47	85.40	-	-	-	0.11	-	92.0	-
Spring onions and shallots	17.12	0.32	-	-	-	0.33	-	17.8	-
Beetroot	9.25	0.32	-	9.21	-	0.22	-	19.0	8
Green peas for processing (shelled weight)	1.29	-	-	4.92	-	-	-	6.2	0

SECTION 2 – VEGETABLE CROPS IN SOUTH AUSTRALIA

Table 2a cont.

Vegetable crop	Adelaide	Outer Adelaide	Yorke and Lower North	Murray Lands	South East	Eyre	Northern	South Australia 2000–01	South Australia 2005–06
Chinese cabbage (bokchoi and wombok)	2.16	2.71	-	1.23	-	-	-	6.1	-
Marrows and squashes	-	-	-	-	-	-	-	-	-
French and runner beans (processing)	1.55	-	-	0.61	26.82	-	-	29.0	-
Swedes	7.27	20.17	-	-	-	-	-	27.4	-
Parsley	11.34	0.32	-	-	-	0.11	-	11.8	-
Green peas for fresh market	-	-	-	1.21	-	-	1.17	2.4	10
Eggplant	-	-	-	-	-	-	-	-	-
Other Vegetables								570.81	-
TOTAL								14,650	-



Vine-ripened tomatoes have become more popular with consumers



Leeks are produced in the cool climate of the Adelaide Hills region



Potatoes are the main vegetable crop produced in South Australia



Brussel sprouts are a high value crop in the cool climate of the Adelaide Hills region

Table 2b: Irrigated area planted to major vegetables (2001) – Horticultural Regions

Reference 6

Major vegetable areas in South Australia are the Murraylands (Riverland and Mallee) and South-East (Upper and Lower) regions. These areas are dominated by broadacre vegetable crops. More intensive vegetable cropping occurs in regions closer to Adelaide, such as the Northern Adelaide Plains and Adelaide Hills.

	Murray Lands	- Riverland	- Murray Mallee	South East	- Upper South East	- Lower South East	Northern Adelaide Plains	Adelaide Hills	Other Areas	South Australia
Potatoes	4,015.6	2,312.6	1,703.0	3,118.7	826.1	2,292.6	905.5	976.8	76.0	9,092.6
Tomatoes - fresh market	14.3	1.9	12.4	0.3	0.0	0.3	91.4	7.0	0.5	113.3
Carrots	564.5	564.5	0.0	1.2	1.1	0.1	381.0	72.4	1.1	1,020.2
Lettuce	57.9	11.9	46.1	0.1	0.0	0.1	159.1	60.7	1.2	279.0
Onions, white and brown	1,209.4	679.3	530.0	390.4	233.7	156.7	68.5	56.4	0.0	1,724.6
Melons, rock (incl cantaloupe)	220.0	220.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	220.0
Broccoli	28.8	5.8	23.0	3.8	0.0	3.8	168.9	68.9	0.7	271.1
Capsicum, chillies and peppers	18.2	17.0	1.2	0.0	0.0	0.0	54.8	4.3	3.1	80.4
Asparagus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cauliflower	7.5	6.4	1.2	0.0	0.0	0.0	184.2	48.5	1.1	241.3
Water Melons	14.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2
Sweet corn	61.1	61.1	0.0	0.0	0.0	0.0	0.0	15.6	0.0	76.7
Pumpkins, triambles, trombones, etc	351.4	324.8	26.6	16.1	13.7	2.4	0.0	10.0	0.1	377.6
French and runner beans (fresh market)	0.0	0.0	0.0	0.0	0.0	0.0	10.8	7.8	0.1	18.7
Cabbages	3.7	3.7	0.0	1.3	0.0	1.3	80.4	26.2	1.2	112.7
Celery	0.0	0.0	0.0	0.0	0.0	0.0	34.1	0.4	0.0	34.5
Zucchini	3.3	3.3	0.0	0.0	0.0	0.0	19.4	1.3	3.3	27.3
Melons nec	9.2	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2
Snow peas	2.5	0.0	2.5	0.0	0.0	0.0	1.4	0.1	0.0	3.9
Parsnips	0.0	0.0	0.0	0.0	0.0	0.0	15.5	1.5	0.0	17.0
Cucumbers	0.3	0.1	0.1	0.0	0.0	0.0	75.8	4.4	1.7	82.1
Leeks	11.5	0.0	11.5	1.0	0.0	1.0	2.4	36.0	0.0	50.9
Brussel sprouts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.9	0.1	92.0
Spring onions and shallots	0.0	0.0	0.0	0.0	0.0	0.0	16.0	1.5	0.3	17.8
Beetroot	9.2	0.0	9.2	0.0	0.0	0.0	8.7	0.9	0.2	19.0
Green peas for processing (shelled weight)	4.9	4.9	0.0	0.0	0.0	0.0	0.0	1.3	0.0	6.2
Chinese cabbage (bokchoi and wombok)	1.2	0.0	1.2	0.0	0.0	0.0	4.8	0.1	0.0	6.1
Marrows and squashes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
French and runner beans (processing)	0.6	0.6	0.0	26.8	0.0	26.8	0.3	1.3	0.0	29.0
Swedes	0.0	0.0	0.0	0.0	0.0	0.0	2.6	24.9	0.0	27.4
Parsley	0.0	0.0	0.0	0.0	0.0	0.0	10.2	1.4	0.1	11.8
Green peas for fresh market (pod weight)	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.4
Eggplant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other vegetables	17.0	12.1	4.8	253.3	250.0	3.3	176.4	0.0	140.9	570.8
TOTAL	6,627	4,255	2,373	3,813	1,325	2,488	2,472	1,504	233	14,650

Table 2c: Area % planted to major vegetable crops by irrigated vegetable region in South Australia (2001)

Reference 6

The major vegetable crop by area in all regions is potatoes, representing 37%–82% of the area grown under vegetables in each region. The 3 major vegetable crops by area in South Australia are potatoes (62%), onions (12%) and carrots (7%).

Rank	Top 3 Vegetables - % of area planted						
	1	2	3	Cumulative			
Murray Lands	potatoes	61%	onions	18%	carrots	9%	87%
- Riverland	potatoes	54%	onions	16%	carrots	13%	84%
- Murray Mallee	potatoes	72%	onions	22%	lettuce	2%	96%
South East	potatoes	82%	onions	10%	other vegetables	7%	99%
- Upper South East	potatoes	62%	other vegetables	19%	onions	18%	99%
- Lower South East	potatoes	92%	onions	6%	beans	1%	100%
Northern Adelaide Plains	potatoes	37%	carrots	15%	cauliflower	7%	59%
Adelaide Hills	potatoes	65%	brussel sprouts	6%	carrots	5%	76%
Other Areas	other vegetables	60%	potatoes	33%	zucchini	1%	95%
SOUTH AUSTRALIA	potatoes	62%	onions	12%	carrots	7%	81%

3. IN SEASON RAINFALL

Table 3a: Rainfall for selected locations in vegetable irrigation regions of South Australia

References 7 & 8

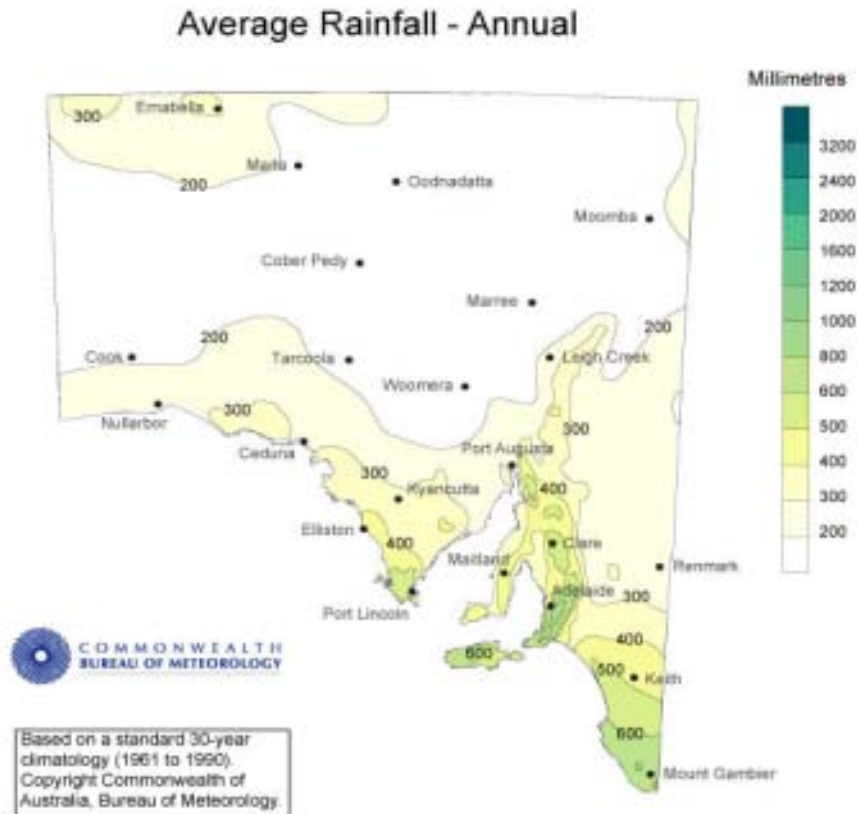
Rainfall peaks in the winter in most vegetable growing areas of the state during the period May–October. Highest rainfall occurs in the upper altitudes of the Adelaide Hills region, and in the cooler climate of the lower South East. Lowest rainfall occurs in the vegetable growing Riverland region of the Murraylands.

Region	Locations	Monthly and Yearly Average Rainfall (mm)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Murray Lands														
- Riverland	Loxton	17	12	10	14	26	32	34	31	27	30	21	20	274
	Murray Bridge	17	17	20	29	35	37	35	37	36	34	25	23	345
- Murray Mallee	Pinnaroo	17	22	18	23	34	35	36	38	35	35	26	20	339
South East														
- Upper South East	Keith	19	21	22	35	54	53	56	59	51	44	32	26	472
- Lower South East	Penola	26	22	29	48	66	80	91	86	70	57	41	35	651
Northern Adelaide Plains	Virginia	20	19	21	36	50	55	50	52	44	39	27	25	438
Adelaide Hills	Lenswood	35	28	43	79	113	134	166	151	118	83	47	46	1043

Figure 3b: Average Annual Rainfall for South Australia

Reference 26

Most areas of South Australia receive less than 200mm pa rainfall. Highest rainfall occurs nearer the coast, in the south of the state. Proximity to water sources (groundwater or river), however, are the key determinants of the location of vegetable production.



Continental cucumbers are an important glasshouse crop in rotation



Carrots are an important root vegetable in South Australia



4. VALUE \$ FARM GATE

Table 4: Farm Gate Value of Production of Vegetables in South Australia (\$) 2001

References 6, 116, 117

Gross value of SA vegetable production in 2000-01 was \$280M (\$240M local value). In 2004-05, gross value was \$289M (\$252M local value).

	SA Horticultural Region									
	Murray Lands	- Riverland	- Murray Mallee	South East	- Upper South East	- Lower South East	Northern Adelaide Plains	Adelaide Hills	Other Areas	South Australia
Potatoes	55,221,895	29,549,829	25,672,066	46,287,738	11,666,205	34,621,533	11,394,532	9,891,292	727,219	123,522,676
Tomatoes - fresh market	568,684	32,770	535,914	5,874	(N/A)	5,874	1,469,242	102,330	7,884	2,154,014
Carrots	21,497,800	21,497,800	(N/A)	5,709	860	4,927	12,660,151	2,501,591	860	36,666,111
Lettuce	1,067,314	0	1,067,314	3,521	0	3,521	5,189,327	1,774,625	2,966	8,037,753
Onions, white and brown	37,206,675	20,694,302	16,512,434	10,869,846	6,782,243	4,087,604	946,214	1,365,669	61	50,388,465
Melons, rock (incl cantaloupe)	3,844,275	3,844,275	0	0	0	0	0	0	0	3,844,275
Broccoli	349,049	59,923	289,126	15,187	0	15,187	2,196,396	827,246	1,998	3,389,876
Capsicum, chillies and peppers	660,389	619,081	41,308	0	0	0	1,013,130	89,556	20,297	1,783,372
Asparagus	0	0	0	0	0	0	0	0	0	0
Cauliflower	76,693	60,345	16,348	0	0	0	3,026,622	759,321	782	3,863,418
Water Melons	217,973	217,973	0	0	0	0	0	0	0	217,973
Sweet corn	1,702,754	1,702,754	0	0	0	0	0	236,141	-160	1,938,735
Pumpkins, triambles, trombones, etc	3,279,265	2,983,170	296,095	133,339	123,868	9,471	0	21,954	481	3,435,039
French and runner beans (fresh mkt)	0	0	0	0	0	0	215,029	55,156	83	270,268
Cabbages	31,633	31,633	0	6,130	0	6,130	1,785,116	658,530	2,330	2,483,739
Celery	0	0	0	0	0	0	551,279	2,681	0	553,960
Zucchini	90	90	0	0	0	0	623,108	44,135	50,255	717,588
Melons nec	156,552	156,552	0	0	0	0	0	0	0	156,552
Snow peas	10,985	0	10,985	0	0	0	18,686	306	1	29,978
Parsnips	0	0	0	0	0	0	624,894	21,935	0	646,829
Cucumbers	13,240	272	12,968	0	0	0	2,880,623	164,302	4,351	3,062,516
Leeks	578,375	0	578,375	21,846	0	21,846	165,744	1,853,624	1	2,619,590
Brussel sprouts	0	0	0	0	0	0	0	5,151,932	43	5,151,975
Spring Onions and Shallots	0	0	0	0	0	0	216,208	43,975	1,757	261,940
Beetroot	41,072	0	41,072	0	0	0	140,746	3,007	560	185,385
Green peas - processing (shelled wt)	2,127	2,127	0	0	0	0	0	1,030	1	3,158

SECTION 2 – VEGETABLE CROPS IN SOUTH AUSTRALIA

	Murray Lands	- Riverland	- Murray Mallee	South East	- Upper South East	- Lower South East	Northern Adelaide Plains	Adelaide Hills	Other Areas	South Australia
Chinese cabbage (bokchoi & wombok)	2,287	0	2,287	0	0	0	15,430	32	0	17,749
Marrows and squashes	0	0	0	0	0	0	0	0	0	0
French and runner beans (processing)	1,785	1,785	0	0	0	0	220	2,197	0	4,202
Swedes	0	0	0	0	0	0	147,829	754,412	1	902,242
Parsley	0	0	0	0	0	0	245,984	46,676	355	293,015
Green peas for fresh market (pod wt)	3,092	3,092	0	0	0	0	0	0	3,903	6,995
Eggplant	0	0	0	0	0	0	0	0	0	0
Other Vegetables	232,929	171,721	61,208	3,954,266	3,902,750	51,516	5,236,435	6,642,782	7,548,383	23,614,795
REGION TOTALS	126,766,933	81,629,494	45,137,500	61,303,456	22,475,926	38,827,609	50,762,945	33,016,437	8,374,412	280,224,183

5. VALUE ADDED (MULTIPLIERS, PROCESS/RETAIL VALUE)

Table 5: Farmgate and Processed Value of Vegetables in South Australia 2003–06

References 6, 20, 21 & 107

The information in table 5 has been sourced through widespread industry consultation and other published sources, hence no multipliers have been used.

Vegetables represent approximately half of the farmgate and processed value of horticulture in South Australia (excluding wine). Processed value of vegetables is almost double that of farmgate value. Figures are incomplete for 2005–06.

Vegetable Group	Includes	2003-04		2004-05		2005-06	
		Farmgate Value \$M	Processed Value (wholesale or FOB) \$M	Farmgate Value \$M	Processed Value (wholesale or FOB) \$M	Farmgate Value \$M	Processed Value (wholesale or FOB) \$M
Potatoes		96.00	213.09	74.90	235.76	123	-
Other Heavy Vegetables	onions, carrots, pumpkin, beetroot	53.68	79.14	37.50	59.86	40	-
Cucumber and capsicum		27.77	52.72	30.90	58.04	-	-
Tomatoes		24.00	50.64	22.60	47.61	23	-
Brassicas	broccoli, cabbage, cauliflower, brussel sprouts, lettuce, spinach	15.81	28.84	13.40	25.36	19	-
Other vegetables	celery, spring onion, sweetcorn, zucchini, marrow, squash, parsnip	6.68	13.46	7.90	15.55	-	-
Melons		2.73	3.32	2.70	3.30	-	-
TOTAL Vegetables		226.67	441.21	189.90	445.49	-	-
TOTAL Horticulture		478.19	838.93	472.60	913.38	562	986

6. EXPORT VALUE

Table 6a: Fresh Vegetable Export Value from South Australia 2003–06

References 6, 20–22, 54

South Australia exported vegetables with FOB value of \$8.5M in 2003–04, of which onions and potatoes were the main exports. There has been a significant increase in fresh tomato exports in 2004–05. Some export values for 2004–05 and 2005–06 are incomplete.

AHECC Code	Export AHECC - Commodity Description	2003-04 Value \$	2004-05 Value \$	2005-06 Value \$
7031019	Onions (excl. brown), fresh or chilled	\$4,503,021	--	\$1,648,361
7019000	Potatoes (excl. seed), fresh or chilled	\$1,008,616	\$249,950	\$1,611,547
7061000	Carrots and turnips, fresh and chilled	\$962,753	\$137,806	\$455,566
7039000	Leeks and other alliaceous vegetables (excl. onions, shallots and garlic), fresh or chilled	\$532,149	--	\$552,455
7042000	Brussels sprouts, fresh or chilled	\$407,616	--	\$303,323
7041020	Headed broccoli, fresh or chilled	\$405,816	\$19,086	\$13,389
8071900	Fresh melons (excl. watermelons)	\$212,775	\$439,003	\$676,484
7051900	Lettuce (excl. cabbage (head) lettuce), fresh or chilled	\$162,799	-	\$574
7041010	Cauliflowers, fresh or chilled	\$104,276	\$275,043	\$1,758
7099000	Vegetables, nes, fresh or chilled	\$52,477	-	\$175,554
7031011	Brown onions, fresh or chilled	\$33,427	\$364,871	\$576,439
7051100	Cabbage lettuce (head lettuce), fresh or chilled	\$25,448	\$89,703	\$15,950
7020000	Tomatoes, fresh or chilled	\$22,526	\$2,188,564	\$4,806
7049010	Chinese cabbage, fresh or chilled	\$18,423	--	--
7049090	Cabbages (excl. chinese), kohlrabi, kale and similar edible brassica (excl. headed broccoli and brussels sprouts), fresh or chilled	\$9,761	--	\$17,124
7069000	Salad beetroot, celeriac, radishes and similar edible roots (excl. carrots and turnips), fresh or chilled	\$9,143	--	\$7,053
7094000	Celery (excl. celeriac), fresh or chilled	\$1,302	--	\$15,828
7032000	Garlic, fresh or chilled	\$238	\$467,961	\$336
7081000	Peas, fresh or chilled	\$225	--	\$160
7092000	Asparagus, fresh or chilled	\$222	\$5,617	\$202
7052900	Chicory (excl. witloof), fresh or chilled	\$202	--	\$2,542
7091000	Globe artichokes, fresh or chilled	\$100	--	\$160
7031020	Shallots, fresh or chilled	\$59	--	--
8071100	Fresh watermelons	\$37	\$12,127	\$16
7082000	Beans, fresh or chilled	\$37	--	\$202
	TOTAL	\$8,473,448	--	-

Table 6b: Value-Added Vegetable Export Value from South Australia 2003–06

References 22, 54

South Australia exported value-added vegetables with FOB value of \$0.5M in 2003–04, of which value-added tomato and asparagus were the main exports. Some export values for 2004–05 and 2005–06 are incomplete.

AHECC Code	Export AHECC - Commodity Description	2003-04 Value \$	2004-05 Value \$	2005-06 Value \$
21032000	Tomato ketchup and other tomato sauces	\$129,795	-	\$441,670
20056001	Asparagus prepared or preserved otherwise than by sugar, vinegar or acetic acid, not frozen	\$115,650	-	-
7122000	Dried onions	\$63,213	-	-
20099020	Vegetable juice mixtures, unfermented and not containing added spirit	\$52,401	-	\$7,336
7102900	Frozen leguminous vegetables (excl. peas and beans), uncooked or cooked by steaming or boiling in water	\$38,920	-	\$62,265
20052000	Potatoes prepared or preserved otherwise than by vinegar or acetic acid, not frozen	\$37,180	-	-
20021000	Tomatoes, whole or in pieces prepared or preserved otherwise than by vinegar or acetic acid	\$34,051	\$689	\$27,014
7129001	Dried vegetables and mixtures thereof (excl. onions, mushrooms and truffles)	\$10,500	-	-
7096000	Fruits of the genus Capsicum or of the genus Pimenta, fresh or chilled	\$9,571	-	\$4,184
7101000	Frozen potatoes, uncooked or cooked by steaming or boiling in water	\$9,114	\$170	\$3,300
9042000	Capsicum or pimenta, dried, crushed or ground	\$8,762	-	-
20041000	Potatoes prepared or preserved otherwise than by vinegar or acetic acid, frozen	\$1,472	-	-
7095900	Vegetables, provisionally preserved, but unsuitable in that state for immediate consumption, (excl. mushrooms of the genus agaricus)	\$1,329	-	\$1,837
20059000	Vegetables and mixtures of vegetables prepared or preserved otherwise than by sugar, vinegar or acetic acid, not frozen (excl. homogenised vegetables, potatoes, peas, beans, asparagus, olives and sweet corn)	\$1,252	-	\$62
20095000	Tomato juice, unfermented and not containing added spirit	\$616	-	-
20011000	Cucumbers and gherkins prepared or preserved by vinegar or acetic acid	\$573	-	-
11051001	Flour, meal and powder of potatoes	\$345	-	-
20051000	Homogenised vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen	\$240	-	-
20055901	Beans (excl. shelled beans), prepared or preserved otherwise than by sugar, vinegar or acetic acid, not frozen	\$124	-	-
7142001	Fresh, chilled, frozen or dried sweet potatoes	\$59	-	-
7104000	Frozen sweet corn, uncooked or cooked by steaming or boiling in water	-	\$66	-
7108000	Frozen vegetables (excl. potatoes, leguminous, spinach and sweet corn), uncooked or cooked by steaming or boiling in water	-	\$8,709	-
20098020	Juice of any single vegetable, unfermented and not containing added spirit	-	\$40	-
20099020	Vegetable juice mixtures, unfermented and not containing added spirit	-	\$353	\$7,336
	TOTAL	\$515,167	-	-



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