

## Overview

This chapter contains information on Victoria's primary industries. Topics covered include agriculture, fishing, forestry and mining.

## Agriculture

The 1997–98 Agricultural Commodity Survey included 36,687 establishments with agricultural activity in Victoria. The dairy cattle farming industry was the largest in terms of numbers, accounting for 22% (8,088) of total establishments with agricultural activity, closely followed by the beef cattle farming industry with 20% (7,371) of total establishments with agricultural activity. The total number of agricultural establishments increased marginally (0.1%) between 1996–97 and 1997–98.

**14.1 ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY,  
EVAO \$5,000 and over**

	1996	1997	1998
Industry	no.	no.	no.
Vegetable growing	1 005	1 001	993
Grape growing	1 733	1 901	1 933
Fruit growing(a)	1 071	1 066	1 093
Grain growing	3 054	3 014	2 657
Grain-sheep/beef cattle farming	2 860	3 308	3 400
Sheep-beef cattle farming	3 084	2 795	2 302
Sheep farming	4 691	4 749	5 107
Beef cattle farming	8 155	7 766	7 371
Dairy cattle farming	7 933	8 064	8 088
Poultry farming (meat and eggs)	271	285	338
Other livestock farming(b)	1 440	1 120	852
Other agriculture(c)	849	927	991
Other industries	758	660	1 563
<b>Total all industries</b>	<b>36 905</b>	<b>36 656</b>	<b>36 687</b>

(a) Comprises Apple and pear growing, Stone fruit growing, Kiwi fruit growing and Fruit growing n.e.c. (b) Comprises Pig farming, horse farming, deer farming, livestock farming n.e.c. (c) Comprises those industries in ANZSIC Subdivision 01 not specified elsewhere in the table.

Source: *Agriculture, Australia* (Cat. no. 7113.0)

## Land management

Agricultural land is generally divided into cropped land, land sown to pastures and grasses, and a broad balance comprising grazing land, land lying idle or under fallow. In 1998, a total of 12.7 million hectares was devoted to agriculture in Victoria, a slight decrease (0.4%) on the 1997 figure (table 14.2). This represented 55.8% of Victoria's land mass. The greatest proportion of agricultural land was devoted to a broad balance of activities (43.2%), compared to 36.6% for sown pastures and grasses, and 20.2% for crops.

## 14.2 LAND MANAGEMENT

	1996	1997	1998
	'000 ha	'000 ha	'000 ha
Crops(a)	2 439	2 552	2 565
Sown pastures and grasses	3 936	3 945	4 639
Agricultural land(b)	12 768	12 745	12 691
Non-agricultural land(c)	9 974	9 997	10 051

(a) Excludes crops harvested for hay and seed. (b) Total area of establishments with an EVAO of \$5,000 or more. (c) Comprises conserved land, forestry, urban, unused land, and establishments not included in the Agricultural Census/Commodity Survey.

Source: *Agriculture, Australia* (Cat. no. 7113.0).

### Agriculture and the economy

In terms of farm income, as measured in the Australian National Accounts, Victoria's share for the latest six year period (1992-93 to 1997-98) fluctuated markedly (table 14.3). The 1997-98 Victorian figure was \$1,786 million, which represented 29.6% of the total Australian farm income of \$6,036 million.

## 14.3 AUSTRALIAN NATIONAL ACCOUNTS, Agricultural Income

Year	Victoria	Australia	Victoria as a percentage of Australia
	\$m	\$m	%
1992-93	1 460	3 918	37.3
1993-94	1 858	5 367	34.6
1994-95	998	2 812	35.5
1995-96	1 988	6 071	32.7
1996-97	1 697	5 962	28.5
1997-98	1 786	6 036	29.6

Source: *Australian National Accounts: State Accounts* (Cat. no. 5220.0).

The Gross Value of Agricultural Commodities Produced (GVACP) provides a measure of the output from farming. In 1997-98, the GVACP for Victoria was \$6,133.2 million (table 14.4). In terms of value, Victoria produced 16% of Australia's crops, 24% of livestock slaughtered, and 36% of livestock products (wool, milk, eggs, and honey).

## 14.4 GROSS VALUE OF AGRICULTURAL COMMODITIES PRODUCED(a)

Particulars	1993	1994	1995	1996	1997	1998	Victoria as a percentage of Australia 1998
	\$m	\$m	\$m	\$m	\$m	\$m	%
Crops	2 111.1	2 172.9	1 770.6	2 764.2	2 527.4	2 450.9	15.8
Livestock slaughterings and other disposals	1 271.5	1 485.8	1 375.4	1 370.6	1 419.6	1 554.1	23.6
Livestock products	1 824.9	1 877.8	2 001.4	2 196.1	2 115.5	2 128.2	35.7
<b>Total</b>	<b>5 207.5</b>	<b>5 536.5</b>	<b>5 147.4</b>	<b>6 330.9</b>	<b>6 062.5</b>	<b>6 133.2</b>	<b>21.9</b>

(a) Reference period for crops is year ended 31 March; reference period for livestock slaughterings and other disposals, and livestock products is year ended 30 June.

Source: *Agriculture, Australia* (Cat. no. 7113.0).

## Wheat

Wheat is Victoria's largest crop in terms of area and production. In 1997–98, the area sown decreased by 11% to 857,000 hectares with a corresponding decrease in production to 1,503,000 tonnes (table 14.5). The average yield per hectare decreased to 1.8 tonnes per hectare from the figure of 2.4 recorded in 1996–97.

**14.5 WHEAT FOR GRAIN**

Season	Area	Production	Average yield per hectare
	'000 ha	'000 tonnes	tonnes
1992–93	821	2 015	2.5
1993–94	780	2 022	2.6
1994–95	822	944	1.1
1995–96	853	1 921	2.3
1996–97	963	2 262	2.4
1997–98	857	1 503	1.8

Source: Unpublished data from Agriculture Census/Survey, Australia.

## Barley and oats

Barley is grown throughout the State, however production has been traditionally centred in two distinct areas where high quality grain is produced. The highest production is in the south-west of the Mallee Statistical Division and the adjacent north-western Wimmera Statistical Division. Despite an increase of 5.6% in the area sown, the production of barley in Victoria in 1997–98 fell by 21.9% from 1996–97 figures (table 14.6).

Oats are sown for grain production, winter grazing, and hay production. A significant portion of the total production of oats is held on farms for future use, with the balance being used for compound/urban feed markets, milling, and export. In contrast to barley, production of oats increased by 21.4% between 1996–97 and 1997–98 to 369,000 tonnes.

**14.6 BARLEY AND OATS FOR GRAIN**

Season	Barley			Oats		
	Area	Production	Average yield per hectare	Area	Production	Average yield per hectare
	'000 ha	'000 tonnes	tonnes	'000 ha	'000 tonnes	tonnes
1992–93	551	1 116	2.0	223	404	1.8
1993–94	639	1 386	2.2	186	362	2.0
1994–95	492	448	0.9	148	201	1.4
1995–96	628	1 342	2.1	187	392	2.1
1996–97	585	1 189	2.0	175	304	1.7
1997–98	618	928	1.5	172	369	2.1

Source: Unpublished data from Agriculture Census/Survey, Australia.

**Other crops**

Other cereal crops grown in Victoria include maize, millet and triticale (a wheat/rye hybrid). Production and area planted for them is small compared to major cereal crops of wheat, oats and barley. Triticale is a recent introduction to agriculture and has shown a steady growth in the area sown and production since 1992. For 1997–98, the area sown to triticale increased by 16.1% over the 1996–97 figure, with an increase of 9.2% in tonnes produced (table 14.7).

**14.7 OTHER CEREAL CROPS FOR GRAIN**

Season	Maize		Millet and Panicum		Triticale	
	Area '000 ha	Production '000 tonnes	Area '000 ha	Production '000 tonnes	Area '000 ha	Production '000 tonnes
1992–93	0.4	2.8	0.8	1.6	22.6	50.0
1993–94	0.2	1.7	1.4	2.1	32.4	70.7
1994–95	0.7	5.1	1.7	2.6	47.0	66.2
1995–96	1.1	6.8	1.0	1.8	54.8	120.5
1996–97	1.0	6.5	2.5	4.1	93.0	167.2
1997–98	**0.9	**10.2	**1.7	**1.9	108.0	182.6

Source: Unpublished data from Agriculture Census/Survey, Australia.

**Oilseeds**

Canola is the main oilseed crop grown in Victoria, with 116,500 hectares sown in 1997–98, an increase of 26.4% from 1996–97 (table 14.8). Canola production increased by 4,300 tonnes (3.3%) between 1996–97 and 1997–98. Other oilseed crops grown in Victoria include safflower, sunflower and soybeans, all of which showed a decrease in production in 1997–98 from 1996–97.

**14.8 SELECTED OILSEEDS PRODUCTION**

Season	Canola(a)		Safflower		Sunflower		Soybeans	
	Area '000 ha	Production '000 tonnes	Area '000 ha	Production '000 tonnes	Area '000 ha	Production '000 tonnes	Area '000 ha	Production '000 tonnes
1992–93	18.5	23.5	15.4	12.3	1.2	1.8	1.2	2.5
1993–94	29.2	46.8	29.4	24.4	2.4	3.7	2.0	4.4
1994–95	74.5	56.7	17.7	8.2	0.9	1.5	1.8	2.3
1995–96	76.2	119.6	25.1	17.1	1.6	2.2	2.0	4.0
1996–97	92.2	131.6	18.0	8.8	1.4	1.7	1.8	4.0
1997–98	116.5	135.9	5.2	1.9	*0.2	**0.2	*1	*2.4

(a) Rapeseed.

Source: Unpublished data from Agricultural Census/Survey, Australia.

**Fruit and nuts**

The main fruit-growing areas in Victoria are in the Goulburn, Mallee, and Melbourne Statistical Divisions. There are other important, but smaller areas throughout the State.

The most significant fruit crops in Victoria in terms of production, despite decreasing in production in 1997–98, are pears (excluding nashi), apples and oranges (table 14.9). Pear production decreased by 10% to 131,442 tonnes in 1997–98, apples decreased by 20.7% to 94,312 tonnes and oranges decreased by 7.1% to 82,614 tonnes. Over the last three years, production of nashi pears has steadily decreased to a level of 3,910 tonnes in 1997–98. Kiwi fruit in comparison has increased steadily over the last three years, with an increase of 11.7% to 2,518 tonnes in 1997–98.

Strawberries are the most significant small fruit crop grown in Victoria, with an increase of 62.2% from 1996–97 to 1997–98, with a total production for 1997–98 of 5,476 tonnes. Raspberries have also shown a large increase in production for 1997–98, an increase of 85% on 1996–97 to 385 tonnes.

Almonds are the most significant nut crop grown in Victoria, with production in 1997–98 increasing by 10.8% to 4,133 tonnes. Almonds are mainly planted in the northern area of Victoria.

#### 14.9 FRUIT AND NUT PRODUCTION

	1996	1997	1998
Commodity	tonnes	tonnes	tonnes
Almonds	2 907	3 731	4 133
Apples	78 988	118 968	94 312
Apricots	7 026	8 935	6 183
Avocados	993	1 782	571
Blueberries	n.a	98	160
Cherries	2 353	2 007	2 525
Grapefruit	n.a.	3 044	3 759
Kiwi fruit	2 063	2 255	2 518
Lemons and limes	4 829	6 371	5 744
Mandarins	4 963	5 320	4 726
Nashi	6 036	4 596	3 910
Nectarines	6 919	7 033	6 982
Oranges	72 358	88 963	82 614
Peaches	36 353	43 487	41 025
Pears (excluding Nashi)	135 189	146 060	131 442
Raspberries	220	208	385
Strawberries	3 279	3 376	5 476

Source: Unpublished data from Agriculture Census/Survey, Australia.

## Grapes

Grape growing, particularly for winemaking, is extensive throughout Victoria. The Mallee Statistical Division is the principal grape-growing region, with most vines being grown under irrigation. Ovens-Murray and Goulburn Statistical Divisions are also major grape-growing regions—irrigation is used extensively in both areas. The increasing interest in wine grapes over recent years has resulted in the establishment of many vineyards of varying sizes throughout the State.

Grape production for winemaking increased by 18% in 1997–98 over 1996–97 to 214,462 tonnes, while grape production for drying and table use increased by 23.4% over 1996–97 to 182,534 tonnes (table 14.10). The area of red grapes grown, both bearing and non-bearing, increased steadily between 1992–93 and 1997–98, while the area of white grapes grown has fluctuated somewhat. The area of red grape vines which are bearing has increased by 56.6% from 1992–93 to 1997–98, while for the same period the area of non-bearing red grape vines has increased by seven and a half times. The area of white grape vines which are bearing has increased by 3.4% over the same time period.

#### 14.10 VITICULTURE, Area and Production

Season	Bearing		Non-bearing		Winemaking tonnes	Drying and table(a) tonnes
	Red	White	Red	White		
1992–93	3 578	15 480	372	642	118 452	192 448
1993–94	3 853	15 682	521	989	167 083	192 150
1994–95	3 833	15 156	868	1 735	137 613	139 822
1995–96	4 199	15 622	1 152	2 115	199 141	227 550
1996–97	4 683	16 655	2 104	1 914	181 772	147 915
1997–98	5 602	16 006	3 185	1 457	214 462	182 534

(a) Production for drying is estimated as fresh weight equivalent of dried weight.

Source: Unpublished data from Agriculture Census/Survey, Australia.

## Vegetables

Most of the fresh vegetable production in Victoria is located in the Melbourne, Central Highlands, Gippsland, East Gippsland and Goulburn Statistical Divisions.

The most significant vegetables, in terms of tonnes produced, are potatoes, tomatoes, carrots and lettuce (table 14.11). Victorian potato production in 1997–98 was 295,102 tonnes, down 6.5% on 1996–97, while carrot production decreased by 3.7% to 95,607 tonnes. Tomatoes and lettuce production on the other hand both increased, by 14.8% and 17.2% respectively. In terms of area sown, potatoes and broccoli are the most significant vegetable crops in Victoria, with 10,301 hectares and 4,302 hectares respectively.

Production of broccoli, capsicum, chillies and peppers increased steadily in the four year period to 1997–98. While the area sown for these crops has also shown a steady increase over the same time period, the area sown for mushrooms has decreased over the same period.

## 14.11 VEGETABLES FOR HUMAN CONSUMPTION

Type of vegetable	Area sown				Production			
	1994–95	1995–96	1996–97	1997–98	1994–95	1995–96	1996–97	1997–98
	ha	ha	ha	ha	tonnes	tonnes	tonnes	tonnes
Broccoli	2 923	3 304	3 384	4 302	14 583	17 349	19 198	22 448
Cabbages	750	864	691	617	27 875	30 603	23 221	21 242
Capsicum, Chillies and Peppers	205	211	215	261	3 106	3 233	3 353	4 306
Carrots	2 253	2 736	2 620	2 753	74 637	91 123	99 274	95 607
Cauliflowers	1 264	1 249	1 243	1 322	19 638	20 780	17 409	16 515
Celery	380	457	514	590	17 257	21 065	22 403	21 497
Lettuce	1 639	2 071	1 969	2 501	34 155	45 785	36 557	42 845
Mushrooms	70	70	61	59	13 545	13 834	14 237	15 071
Onions	512	545	529	661	15 427	17 604	15 615	18 100
Parsnips	238	284	286	241	3 843	6 708	7 238	6 149
Potatoes	10 135	11 457	11 352	10 301	279 876	355 649	315 727	295 102
Pumpkins	394	374	313	220	6 271	5 772	4 595	*4 725
Sweet Corn	610	711	743	419	7 570	7 349	7 366	4 723
Tomatoes	2 812	2 991	2 661	2 884	139 541	171 805	167 563	192 388

Source: Unpublished data from Agriculture Census/Survey, Australia.

### Livestock and livestock products

Sheep numbers (including lambs), in Victoria decreased by 5.4% to 21.1 million head between 1996–97 and 1997–98 (table 14.12). The dairy herd increased by 2.9%, while pig numbers increased by 6.8% to 518,000. In contrast to these increases, the number of beef cattle decreased by 321,000 (12.2%) on 1996–97 figures. Despite this decrease, beef cattle still make up the majority of the Victorian cattle herd (55.7%).

## 14.12 SELECTED LIVESTOCK NUMBERS

Season	Cattle			Sheep	Pigs
	Dairy	Beef	Total		
	'000	'000	'000	'000	'000
1992–93	1 463	2 226	3 689	23 552	423
1993–94	1 585	2 604	4 189	23 439	460
1994–95	1 622	2 663	4 285	21 361	439
1995–96	1 682	2 714	4 396	21 974	459
1996–97	1 784	2 627	4 411	22 325	485
1997–98	1 836	2 306	4 142	21 122	518

Source: Unpublished data from Agriculture Census/Survey, Australia.

Table 14.13 shows the number of livestock slaughterings for human consumption, by type of livestock. There were 6.7 million lamb slaughterings in 1998–99, which far outnumbered other types of livestock. Lambs and pigs were the only livestock types to record an increase in the number of slaughterings between 1997–98 and 1998–99 (4.9% and 0.3% respectively). Although the number of cattle slaughtered increased steadily in the four years to 1997–98, slaughterings declined by 2.4% between 1997–98 and 1998–99.

**14.13 LIVESTOCK SLAUGHTERED**

	Cattle	Calves	Sheep	Lambs	Pigs
	'000	'000	'000	'000	'000
1994-95	1 467.3	635.6	3 229.6	6 303.2	1 196.9
1995-96	1 523.6	589.8	2 488.0	5 897.7	1 142.1
1996-97	1 675.9	697.3	2 806.6	5 978.9	1 397.2
1997-98	1 798.0	767.2	3 285.6	6 385.7	1 567.7
1998-99	1 754.3	725.1	3 070.9	6 697.5	1 572.8

Source: *Livestock Products, Australia (Cat. no. 7215.0)*.

**Wool**

Total wool production in Victoria has fluctuated since 1992-93, and was 167,253 tonnes in 1997-98 (table 14.14). This was a 14.4% increase on the 1996-97 figure of 145,206 tonnes.

**14.14 TOTAL WOOL PRODUCTION**

Season	Clip	Stripped from or exported on skins (greasy)	Total quantity (greasy)
	tonnes	tonnes	tonnes
1993-94	110 035	14 500	124 535
1994-95	123 303	14 827	138 130
1995-96	115 672	12 857	128 529
1996-97	131 682	13 524	145 206
1997-98(a)	152 408	14 845	167 253

(a) From 1997-98, the clip figure represents wool actually received in the State, whereas previously the figure referred to the amount of wool actually produced in the State.

Source: *Agriculture, Australia (Cat. no. 7113.0)*.

**Meat production**

Mutton, the meat from adult sheep, is mainly produced from sheep which are surplus to the wool industry; consequently production patterns correspond closely to expansions and contractions in that industry. In 1998-99, mutton production was 61,463 tonnes, down 3% on the previous year's figure of 63,470 tonnes (table 14.15).

Prime lamb producers are found throughout the State. However, early to mid-season producers are distributed in a broad band across northern Victoria, including some irrigated areas. In addition, a considerable number of early lambs are brought from southern New South Wales for slaughter in Victoria. Mid to late-season producers are located mainly in the Western District, Central Highlands, Gippsland, and parts of the Ovens-Murray Statistical Divisions. Victoria produced 128,343 tonnes of lamb in 1998-99, 41% of the 311,776 tonnes produced in Australia.



The Victorian environment is very favourable for beef production with cattle able to graze on pasture throughout the year. The herd is spread throughout the State, particularly in the Western District, Goulburn, Ovens-Murray, East Gippsland and Gippsland Statistical Divisions. In 1998–99, there were 398,675 tonnes of beef produced, contributing 20% of the Australian total of 1,972,723 tonnes.

#### 14.15 MEAT PRODUCED

Year	Beef tonnes	Veal tonnes	Mutton tonnes	Lamb tonnes	Pig meat tonnes	Red meat	
						Total red meat tonnes	Chicken meat tonnes
1994–95	335 059	14 428	64 440	111 202	84 728	609 857	109 515
1995–96	348 649	12 009	50 910	110 172	83 052	604 792	127 736
1996–97	373 818	14 293	55 545	111 403	99 225	654 284	121 445
1997–98	389 086	15 579	63 470	119 973	112 504	700 612	148 288
1998–99	398 675	14 446	61 463	128 343	114 582	717 507	153 601

Source: *Livestock Products, Australia* (Cat. no. 7215.0).

### Dairy

Victoria is the largest producer of dairy products in Australia. In 1997–98, there were a total of 8,400 milk cattle establishments with over 1.8 million cattle (table 14.16). The number of milk cattle establishments has fluctuated in recent years, but despite this, whole milk intake by factories has shown a steady increase, and totalled 5.9 billion litres in 1997–98.

#### 14.16 SELECTED DAIRY STATISTICS

Season	Total establishments with milk cattle no.	Dairy cattle		Whole milk intake by factories(a) million litres
		In milk and dry '000	Total '000	
1994–95	8 367	1 113.1	1 621.7	5 114
1995–96	8 471	1 160.8	1 681.8	5 482
1996–97	8 585	1 228.9	1 783.6	5 622
1997–98	8 400	1 268.0	1 836.0	5 866

(a) Data is for year ended 30 June.

Source: *Agriculture, Australia* (Cat. no. 7113.0); *Agricultural Commodities, Australia* (Cat. no. 7121.0); *Victorian Dairy Industry Authority*.

### Poultry

In 1997–98, Victoria produced 50.0 million dozen eggs for human consumption, or 26.3% of total Australian production, worth \$80.1 million.

At 31 March 1998, there were 3.9 million chickens for egg production held on farms, including replacement and breeding stock. The average size of farms was 14,100 chickens. The main areas for commercial egg production were centred on the outskirts of the Melbourne Statistical Division, with other significant production in the Goulburn, Barwon, Gippsland and Loddon Statistical Divisions.

In 1997–98, there were 94.5 million chickens slaughtered for human consumption (table 14.17), producing 148,288 tonnes of chicken meat (table 14.15). The total dressed weight was 151,329 tonnes (table 14.18). The gross value was \$277.1 million or 25.0% of the Australian total of \$1,109.2 million.

#### 14.17 POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION

Year ended 30 June	Chickens (i.e. broilers, fryers, or roasters)	Other fowl and turkeys	Ducks and drakes
	'000	'000	'000
1993	78 615	1 391	830
1994	85 798	1 782	821
1995	77 193	1 374	935
1996	85 411	1 789	1 246
1997	86 733	1 652	1 551
1998	94 506	1 636	1 221

Source: Unpublished data, Livestock Products Survey.

The main broiler production centres are located on the Mornington Peninsula, in areas east and south-east of Melbourne, the Geelong area, and the Goulburn Statistical Division—near the processing works and the main centres of consumption. Most of Victoria's production is consumed locally.

#### 14.18 DRESSED WEIGHT(a) OF POULTRY SLAUGHTERED

Year ended 30 June	Chickens (i.e. broilers, fryers, or roasters)	Other fowl and turkeys	Ducks and drakes
	'000 kg	'000 kg	'000 kg
1993	114 587	2 474	1 567
1994	123 529	3 170	1 547
1995	109 515	3 661	1 751
1996	127 736	4 164	2 326
1997	129 930	4 772	2 893
1998	151 329	4 135	2 276

(a) Dressed weight of whole birds, pieces, and giblets intended for sale as reported by producers.

Source: Unpublished data, Livestock Products Survey.

## Exports

A wide range of agricultural products are exported from Victoria—data for some of these commodities are presented in table 14.19. In terms of value, the most important of these in 1998 were greasy wool (\$732.5 million), beef bone-out (\$378.6 million), and wheat (\$241.2 million).

## 14.19 EXPORTS OF SELECTED COMMODITIES—1998

Year ended 30 June	Quantity '000 tonnes	Value \$m
Barley	243.9	58.4
Canola	150.4	65.8
Wheat	1 042.7	241.2
Grapes (fresh or dried)	33.8	69.8
Pears (excluding Nashi)	16.4	17.9
Oranges	28.9	27.6
Beef bone-in	12.1	26.9
Beef bone-out	134.6	378.6
Mutton bone-in	4.0	71.1
Mutton bone-out	15.3	43.8
Lamb bone-in	25.1	82.7
Lamb bone-out	3.2	18.3
Greasy wool	143.9	732.5

Source: Agriculture, Australia (Cat. no. 7113.0)

## Fisheries

Statistics relating to the Victorian fisheries catch are produced by the Marine and Freshwater Resources Institute. Data are supplied by licensed commercial fishers, the Melbourne Fish Market and selected fish processors.

Table 14.20 provides details on the commercial fisheries catch in Victoria. In 1997–98, just over 9 million tonnes of fish were landed commercially, compared to 10.1 million tonnes in 1996–97, a decrease of 11%. The total value of the catch in 1997–98 was \$98.9 million.

In terms of weight, the most important species landed commercially in 1997–98 were abalone (1.4 million tonnes) and pilchards (791,000 tonnes). Abalone also recorded the highest value (just under \$50 million), followed by southern rock lobster (\$17.1 million).

## 14.20 ANNUAL FISHERIES CATCH, Landed Commercially(a)

Species	Catch landings, live weight		Value	
	1996-97	1997-98	1996-97(b)	1997-98
	tonnes	tonnes	\$'000	\$'000
<b>Finfish</b>				
Anchovy, southern	868	326	1 390	485
Australian salmon	308	717	431	717
Carp, European	625	775	476	718
Eel	201	157	852	629
Flathead	204	219	466	527
Mullet	181	119	224	149
Pilchard	773	791	1 005	926
Whiting	305	283	1 710	1 617
Other finfish	1 153	925	4 579	4 218
<i>Total</i>	4 618	4 312	11 133	9 986
<b>Crustaceans</b>				
Rock lobster, southern	459	522	14 582	17 083
Other crustaceans	127	140	2 097	1 990
<i>Total</i>	586	662	16 679	19 078
<b>Molluscs</b>				
Abalone	1 453	1 396	42 011	49 964
Scallop, commercial	106	416	1 146	829
Other molluscs	142	90	483	308
<i>Total</i>	1 701	1 902	43 640	51 101
Other classes	55	76	97	131
Aquaculture	2 790	2 069	n.a.	18 651
<b>Total</b>	<b>9 750</b>	<b>9 021</b>	<b>71 549</b>	<b>98 947</b>

(a) This information is based on mandatory fishing returns submitted by commercial fishers. The figures do not take into account returns not received or processed. (b) Total value for 1996-97 does not include aquaculture.

Source: Department of Natural Resources and Environment, Marine and Freshwater Resources Institute.

The importance of the fishing industry to the Victorian economy is underlined by the value of fish exports (including fish, crustaceans, molluscs and aquatic invertebrates and preparations thereof) from the State. In 1997-98, the value of fish exports from Victoria was \$352.4 million, a 4.7% increase on the 1996-97 figure of \$336.7 million.

## Forestry

Forests are an important sustainable natural resource, providing a wide range of essential products and benefits to the community. Farm forestry is becoming increasingly important as a commercial source of timber, with a broad range of programs operated by government and private agencies to promote landcare and reforestation on Australian farms. In June 1998, there were 269,500 hectares of plantation in Victoria. This comprised 40,870 hectares of hardwood plantation, and 228,680 hectares of softwood plantation. The area devoted to new plantations in Victoria has increased since 1994-95, when there was 2,040 hectares planted, compared to 10,554 hectares in 1997-98.

At June 1997, almost 94% of Victoria's 7.3 million hectares of native forest comprised eucalypt species. The majority (6.2 million hectares) of Victorian native forest was publicly owned with 2.7 million hectares (44% of publicly owned native forest) located in nature conservation reserves, 3.3 million hectares (53%) managed by State forest authorities for various uses, including wood production, and 0.2 million hectares located on other Crown land.

#### 14.21 NATIVE FOREST AREAS, By Forest Type

Victoria	
Dominant canopy species	'000 ha
Eucalypt	6 845
Acacia	17
Melaleuca	18
Rainforest	3
Mangrove	5
Callitiris	37
Other	360
<b>Total</b>	<b>7 285</b>

Source: Bureau of Resource Sciences.

## Mining

Mining has played a significant part in Victoria's economic development since the discovery of gold in central Victoria in 1851. Much of Victoria's industry, transport and infrastructure, including the growth of towns such as Bendigo, Ballarat and Melbourne itself, can be traced back to the impetus of the discovery and mining of gold and other minerals. Today, mineral exploration and extraction remains a significant component of Victoria's economic activity; in particular, the extraction of oil and natural gas from the rich Bass Strait off-shore fields, gold from mining ventures in central Victoria and brown coal for use in the power stations of La Trobe Valley.

In 1997–98, the Victorian mining industry comprised 13.0% of the total Australian mining industry contribution to total factor income (formerly referred to as gross domestic product (GDP) at factor cost). Over the same period, the mining industry contributed 3.0% to Victoria's total factor income (table 13.1) (formerly referred to as gross state product at factor cost).

## 14.22 MINING, Summary of Operations

Year	Establishments at June 30 no.	Employment(b) no.	Wages and salaries(c) \$m	Turnover \$m	Inventories(a)		Purchases, transfers in, selected expenses \$m	Value added(d) \$m
					Opening \$m	Closing \$m		
1992-93	116	2 108	90.1	4 310.5	82.7	65.5	332.6	3 960.7
1993-94(e)(f)	29	2 225	139.6	4 082.6	46.9	43.8	328.5	3 750.9
1994-95(e)(f)	25	2 036	139.5	3 434.6	41.4	52.3	253.1	3 178.8
1995-96(e)(f)	22	1 900	115.3	3 275.6	51.6	51.6	236.5	3 039.1
1996-97	25	1 971	122.2	r 3 307.6	52.0	61.0	243.5	r 3 073.0
1997-98	26	1 995	128.8	3 361.7	76.5	74.7	290.6	3 069.3

(a) Previously referred to as stock. (b) At 30 June, including working proprietors. (c) Excludes drawings of working proprietors. (d) Value added is calculated by adding to turnover the increase (or deducting the decrease) in value of stock and deducting the value of purchases and selected items of expense. All components needed to calculate value added are only collected triennially. (e) The 1990-91, 1991-92, 1993-94 and 1994-95 (truncated) censuses differ from previous mining censuses in that the construction materials and other non-metallic minerals industries have been excluded. (f) Includes brown coal mining operations of the former State Electricity Commission of Victoria.

Source: *Mining Operations, Australia* (Cat. no. 8415.0).

Total employment reported increased by 1.2% to 1,995 persons in 1997-98. Mining employment continued to be predominantly male (95% of all employees).

Wages and salaries paid were \$128.8 million, up 5.4% on the figure recorded for 1996-97. Total turnover for the same period was \$3,361.7 million, up 1.6% from 1996-97.

## 14.23 MINING INDUSTRY EMPLOYMENT

Items	Unit	Total coal mining, oil and gas extraction, and metal ore mining(a)	
		1996-97	1997-98
Establishments at 30 June	no.	25	26
Employment at 30 June			
Males	no.	1 878	1 903
Females	no.	93	92
Persons	no.	1 971	1 995
Persons employed per establishment(b)	no.	r 78.8	76.7
Employees working below ground	no.	88	133
Wages and salaries(c)	\$m	122.2	128.8

(a) Data not available for separate industry classes due to confidentiality restrictions. (b) Includes working proprietors. (c) Excludes amounts drawn by working proprietors.

Source: *Mining Operations, Australia* (Cat. no. 8415.0).

## Brown coal

Brown coal production, predominantly from the Latrobe Valley for electricity generation has recorded strong growth in the three years to 1997-98. Brown coal production in Victoria for 1997-98 was 65.2 million tonnes. This was 7.4% higher than the figure of 60.8 million tonnes recorded in 1996-97 and 20.3% higher than the 54.2 million tonnes recorded in 1995-96.

**Metallic minerals**

Victorian gold production has increased dramatically from a low base of 41 kilograms in 1979–80 to reach a peak of 4,979 kilograms in 1997–98.

**Industrial minerals**

Gypsum and kaolin are the other significant contributors to Victorian mineral production. However, both show a high degree of variability in year-to-year production figures. In 1997–98, 479,820 cubic metres of gypsum and 166,100 tonnes of kaolin were produced (table 14.24).

**14.24 MINERAL PRODUCTION**

Mineral	Unit	1995–96	1996–97	1997–98
Oil and gas(a)				
Crude oil-stabilised (includes condensate)	megalitres	12 260	11 930	n.a.
Natural gas	gigalitres	2.3	2.1	n.a.
Liquefied petroleum gas(a)(b)	giga cubic metres	6.7	6.0	n.a.
Industrial minerals				
Bauxite	'000 tonnes	1	3	—
Gypsum	cubic metres	198 667	501 495	479 820
Kaolin	'000 tonnes	55	115	166
Brown coal	'000 tonnes	54 281	60 795	65 274
Gold	kilograms	4 838	4 710	4 979

(a) Oil and gas figures are for Bass Strait only. (b) Excludes refinery production.

Source: *Australian Mining Industry* (Cat. no. 8414.0); *Department of Natural Resources and Environment: Minerals and Petroleum Victoria*.

**Oil and gas production**

The Bass Strait oil field is one of only three off-shore oil and gas fields in Australia, the other two being in the Timor Sea and North-West Cape, both in Western Australia. Victoria has a much smaller on-shore oil and gas field in the Otway region, but its production is negligible compared with Bass Strait. In 1996–97, Victoria's Bass Strait produced 11,930 megalitres of crude oil, and 2.1 gigalitres of natural gas.

There are two major refineries in Victoria. Mobil Refining Australia have the larger of the two, located at Altona, with a capacity of 135,000 barrels per day, or 6,159,000 tonnes per year. Shell Refining (Australia) run the other refinery, at Geelong, which has a capacity of 119,000 barrels per day (5,343,000 tonnes per year).

Cumulative production of crude oil and condensate, natural gas and LPG has increased steadily over the last few years, particularly natural gas, which increased 4.7% between 1997 and 1998 (table 14.25). Remaining reserves continue to show an overall decline, as the size of new discoveries have not been enough to replace production.

## 14.25 PRODUCTION AND REMAINING RESERVES, Bass Strait

	Crude oil and condensate	Natural gas	LPG
	gigalitres	giga cubic metres	gigalitres
Cumulative production			
1995	510.2	118.2	64.4
1996	522.4	124.8	66.6
1997	534.4	130.8	68.8
1998	547.9	137.0	71.0
Remaining reserves			
1995	110.0	135.3	34.9
1996	110.2	130.8	33.5
1997	106.2	130.7	32.4
1998	99.7	135.3	34.3

Source: Department of Natural Resources and Environment, Minerals and Petroleum Victoria.

## References

### Data sources

The majority of agricultural statistics in this chapter are derived from the Agricultural Census conducted at 31 March each year. In 1997–98 the Agricultural Census was replaced by the Agricultural Commodity Survey, still conducted at 31 March. Readers should be aware that from 1993–94 the Agricultural Census included those establishments with an Estimated Value of Agricultural Operations (EVAO) of \$5,000 or more. In 1992–93 the scope of the census was establishments having an EVAO of \$22,500 or more. This change in scope of the Census means care should be taken when comparing results from census periods 1993–94 onwards with results of previous censuses. Furthermore, prior to 1997–98, data was collected in an annual Agricultural Census, readers should bear in mind when comparing results between years that data for 1997–98 is survey rather than Census based.

The Estimated Value of Agricultural Operations (EVAO) is an aggregation of derived values for all crop and livestock activity for each unit. It should be noted that EVAO is applicable only for industry coding and size valuation purposes. It is not an indicator of receipts obtained by units, nor of the actual value of agricultural commodities produced by these units.

Gross value of production is the value placed on production at the wholesale prices realised in the market place.

### ABS sources

*Australian National Accounts: State Accounts* (Cat. no. 5220.0)

*Agriculture, Australia* (Cat. no. 7113.0)

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**Non-ABS sources** Australian Dairy Corporation.

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