

## RURAL INDUSTRY\*

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### FARMING IN VICTORIA

#### Land settlement

##### *Beginnings*

The first permanent settlement of the then Port Phillip District of the Colony of New South Wales occurred in 1834 when the Henty brothers "squatted" on Crown land at Portland. They were followed by Batman and Fawcner who in 1835 similarly squatted on the present site of Melbourne. Although squatting was illegal, settlement had extended some 130 kilometres inland by 1836.

Efforts were made to legalise the position of the squatters and in 1836 regulations were drafted to enable them to acquire for £10 as much land as they wished. This resulted in some very large holdings. At one time four pastoralists held approximately 3 million hectares of the District. By 1840 most of the southern and western parts had been occupied. Also, because of the favourable reports of Major Mitchell, who led an expedition through the area, pastoralists were bringing their flocks south of the Murray River, resulting in extensive settlement in northern areas from New South Wales.

Various Acts of Parliament were proclaimed to give the squatters security of tenure and to break up the large holdings and make land available to more people. However, by the use of "dummy settlers", vast areas of land still remained in the hands of a few.

The early settlers were all pastoralists. Such crops as were grown were for their own consumption and for food for livestock. With the large increase in population that came with the gold rushes and in the aftermath of the Irish potato famines, land-use had to be diverted from grazing to agriculture and large holdings had to be broken up to make land available to the small farmer.

In all, some ninety Acts of Parliament have been proclaimed dealing with land settlement. To enable closer settlement to take place, the Government re-purchased land from the original holders and then offered it for sale to small farmers to use for cropping instead of grazing. Full details of these Acts of Parliament can be found in the *Victorian Year Book* 1973.

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\*EDITOR'S NOTE.—This chapter has been re-structured. It is now divided into three main sections : Farming in Victoria (pages 349 to 367); Production (pages 367 to 391); and Services to Agriculture (pages 391 to 407). Individual topics link up to previous editions of the *Victorian Year Book*; even if their location now differs they can be traced through previous indexes. As new matter demands inclusion in the chapter, especially on the economic and financial side, it is necessary to shorten certain other topics. However, they will again be described fully in future editions of the *Victorian Year Book*.

*Land occupation*

The following tables show alienation and utilisation of Crown land in Victoria :

## VICTORIA—ALIENATION OF LAND AT 30 JUNE 1976

Particulars	Area
	hectares
Lands alienated in fee simple	13,699,099
Lands in process of alienation	119,832
Crown lands	8,941,069
Total	22,760,000

## VICTORIA—CROWN LANDS AT 30 JUNE 1976

Particulars	Area
	hectares
Land in occupation under—	
Perpetual leases	15,249
Grazing leases and licences	2,395,863
Other leases and licences	12,843
Reservations—	
Reserved forest	2,285,236
Timber reserves (under Land Act)	59,664
Water catchment and drainage purposes	85,653
National Parks (under National Parks Act)	227,320
Wildlife reserves	52,911
Water frontages, beds of streams and lakes (not included above)	342,328
Other reserves	117,255
Unoccupied and unreserved but including areas set aside for roads	3,346,747
Total	8,941,069

NOTE. Crown lands alienated in fee simple during the years ended 30 June 1972, 1973, 1974, 1975, and 1976 were 24,323, 39,195, 33,019, 61,200, and 57,589 hectares, respectively.

**Physical characteristics***Introduction*

In previous Year Books, the description of land utilisation in Victoria has been based on the division of the State into eight Agricultural Districts which were combinations of counties, i.e., land areas with immutable boundaries.

From this edition, land utilisation will be described in terms of twelve statistical divisions (see accompanying map), the standard Australian Bureau of Statistics regions which are combinations of local government areas forming coherent socio-economic zones. These regions were recently adopted by the Victorian Government for planning purposes. Statistical divisions are subject to change as local government areas change and as socio-economic conditions change. (See also pages 195 to 201.)

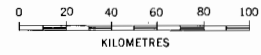
*Statistical divisions**Melbourne*

As the Melbourne Statistical Division is largely occupied by the metropolitan area, it is of comparatively small agricultural significance. Nevertheless there is quite a range of soils, climates, and agricultural activities.

The basalt plains stretch eastwards from the western plains to the mountains and hills. The topography in the west is quite flat, and hilly to mountainous in the north and east. The Mornington Peninsula comprises the southern boundary.

The predominant soils are Podsolc derived from basalt, sedimentary rocks, and unconsolidated sediments; and Red-Brown Earths. Other soils are the Kranzems and the peaty soils (very acidic, black, and consisting mainly of organic matter over clay subsoils). Rainfall varies from 475 mm in the west to 1250 mm in the east.

VICTORIA  
STATISTICAL DIVISIONS



1976



NORTHERN MALLEE

WIMMERA

LODDON-CAMPASPE

GOULBURN

NORTH EASTERN

CENTRAL HIGHLANDS

EAST GIPPSLAND

SOUTH WESTERN

MELBOURNE

BARWON

EAST CENTRAL

CENTRAL GIPPSLAND

The western area has been well regarded for its hay and barley production. The peripheral shires in most of the remainder of the Division support mainly small farms with dairying, orchards, poultry raising, flower growing, and stud farming. Some of these areas are under wooded hills and mountains, although the land is much clearer to the south.

A recent development has been the proliferation of subdivisions into small farms, many of which are owned by city residents. Many of these properties are kept for recreation; others for small commercial ventures. Recreation is in fact a substantial industry in this Division, as there are a number of golf courses and country clubs. Another trend has been the industrialisation of areas away from Melbourne, e.g., Dandenong and Hastings, which has resulted in additional inroads into the rural areas.

VICTORIA—MELBOURNE STATISTICAL DIVISION : NUMBER OF  
AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100+	
Meat cattle	1,910	111	44	6	3	2,074
Orchard and other fruit	261	120	132	54	7	574
Vegetables	158	104	125	81	36	504
Nurseries	114	58	61	51	20	304
Poultry	71	32	57	59	62	281
Potatoes	49	31	54	56	7	197
Other	1,139	481	257	83	17	1,977
Total	3,702	937	730	390	152	5,911

(a) Establishment is a term used in economic statistics and refers to the full range of activities at the smallest operating level of a business, which in general corresponds to a location. Establishments are classified according to their predominant activity based on the estimated value of commodities produced; the sum of these comprises the "estimated value of operations" of the establishment as a whole.

(b) The period covered in this and most subsequent tables in this Chapter is the 1975-76 season, which in general refers to the year ended 31 March 1976, but also includes activities which may have been finalised after 31 March (e.g., grape picking). In most of these the growing period occurred before 31 March.

### Barwon

Barwon is one of Victoria's smallest statistical divisions and lies west of the south-west corner of Port Phillip Bay. It comprises nine shires. In the south, the main topographical feature is the Otway ranges, a steep mountainous region with high rainfall, ideally suited to forestry. To the north is the flat volcanic plain which is used mainly for grazing as well as a little cropping. Intermediate between these extremes are the coastal plains which have a mixture of soil types and topography.

Most of the soils are Podsollic, being derived from basalt, unconsolidated sediments, and sedimentary rocks. Others are Red-Brown Earths. The average annual rainfall varies between 450 mm and 1200 mm in various parts of the Division.

About 75 per cent of the Division is under primary production. The main agricultural industries are dairying, and beef and sheep raising, but there are also quite significant areas of cereal and oilseed crops as well as grass seed production, beekeeping, and pigs. Forestry is also important in and around the Otway Ranges.

There has been a tendency during recent years for farmers to go out of dairying. Beef and wool production are the main activities on the volcanic plains, and prime lambs are raised in the southern areas of the Division.

**VICTORIA—BARWON STATISTICAL DIVISION : NUMBER OF  
AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)**

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)				Total establishments
	<11	11-20	21-40	40+	
Milk cattle	329	447	211	28	1,015
Meat cattle	754	49	29	12	844
Sheep	247	125	108	59	539
Other	434	192	178	144	948
Total	1,764	813	526	243	3,346

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*South Western*

The South Western Statistical Division covers a large portion of the south west of Victoria, being bounded on the south by the sea and the west by the State boundary with South Australia. It is mainly located on volcanic and coastal plains, with some rising country in the south-east of the Division. Rainfall varies from about 500 mm in the extreme north to 1200 mm in the Otway ranges in the south-east corner. Temperatures are generally cooler away from the coast where the sea has an ameliorating influence during the winter.

Few rivers flow through the area, and those that do show a considerable variation in the content of dissolved salts. Lakes in the basalt areas vary from fresh water to brine. Underground water is widely available at fairly shallow levels with salt content varying from 1000 to 7000 parts per million.

Many of the soils have developed from lava flows with acid grey loams and sandy loams coming from the older flows. Some of the more recent lava has not weathered greatly and the soils from it are skeletal with stony rises. The dominant soil type is the one which is derived from basalt and unconsolidated sediments. Sub-dominants are derived from sedimentary rocks and the miscellaneous soil group. Soils in the red gum areas have a sandy topsoil with clay below.

A large proportion of the Division is farmed; the remainder is covered by natural forest or planted commercial forests. Substantial areas of the farmed land are under improved pasture.

The Western District, within this Division, is a traditional woolgrowing area. Sheep numbers fell during the early 1970s but are now recovering. Dairying is popular along the southern section and beef cattle are also raised. Numbers of the latter have begun to decline and the numbers of dairy farms and dairy cattle are also falling.

The main crops are oats, wheat, and barley. Oilseeds such as sunflowers, linseed and rape, have gained popularity during recent years.

**VICTORIA—SOUTH WESTERN STATISTICAL DIVISION : NUMBER OF  
AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)**

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100+	
Milk cattle	572	1,206	685	99	4	2,566
Sheep	399	424	561	252	39	1,675
Sheep and meat cattle	373	369	481	261	71	1,555
Meat cattle	1,149	175	97	28	5	1,454
Other	167	49	90	59	14	379
Total	2,660	2,223	1,914	699	133	7,629

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*Central Highlands*

The Central Highlands are a very important statistical division, with Ballarat near its eastern boundary and Ararat near the west. The district is a mixture of extinct volcanic cores, basaltic plains, and uplifted sedimentary strata of Ordovician age. Elevation ranges from about 200 metres to 500 metres above sea level. The Great Dividing Range passes a few kilometres north of Ballarat, and the Pyrenees Range enters the north-west corner of the Division. The western section stretches into plains, and finishes near the Grampians.

The main soils are Podsollic, derived from basalt and sedimentary rocks; Kranozems are sub-dominant. Annual rainfall varies from 425 mm to 1050 mm. The main streams which rise in the area are the Wimmera, Avoca, Loddon, and Campaspe Rivers, flowing north, and the Mt. Emu, Fiery, Hopkins, Leigh, Woody Yallock, Moorabool, and Werribee flowing south.

About 75 per cent of the Division is farmed, the remainder being Crown land and forest. Most of the Crown land and forest is in the Daylesford-Trentham, Smythesdale, Enfield, and Mt. Cole areas.

The main agricultural produce comprises wool, prime lambs, potatoes, beef, cereals, and oilseeds, with some dairying and small seeds production. The plains produce very heavy crops of oats and good crops of wheat.

Improved pastures have increased the carrying capacity of the plains greatly and have improved soil fertility, enabling productive clover ley farming to be undertaken.

VICTORIA—CENTRAL HIGHLANDS STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100+	
Sheep	606	307	335	202	17	1,467
Meat cattle	727	47	18	4	..	796
Sheep and meat cattle	283	111	112	59	15	580
Potatoes	49	42	57	63	19	230
Other	429	147	163	109	22	870
Total	2,094	654	685	437	73	3,943

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*Wimmera*

The Wimmera is one of Victoria's largest and most productive statistical divisions. It stretches broadly from the South Australian border in the west to Stawell in the south-east and Hopetoun in the north-east. It is primarily a large plain, sloping gently to the north, but has the distinctive Grampians Range of mountains on its south-east border.

The dominant soil groups are Grey and Brown soils of heavy texture (alkaline clay loams and clays over clay subsoils—friable calcareous self-mulching grey soils) and Podsollic soils derived from unconsolidated sediments. The sub-dominant groups are Red-Brown Earths, Mallee soils, Podsollic soils derived from sedimentary rocks, and the Miscellaneous Soil Group. Rainfall ranges from 350 mm to 880 mm a year.

Most of the area, except the uncleared desert country in the north-west and south-west of the Division, is farmed.

Cereal growing is the dominant agricultural industry, with heavy crops of wheat being produced in good seasons. Barley is grown primarily on the Rosebery Ridge between Beulah and Hopetoun, while oats and rye, which are grown in the lighter soils, are also produced. Some sunflowers have also been grown in recent years.

Grazing, which encompasses both the running of some excellent medium to strong Merino sheep flocks in the south and of fat lambs in the north, is also important. A number of beekeepers also use the flowering eucalyptus to advantage.

VICTORIA—WIMMERA STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100+	
Sheep and cereal	170	347	664	497	44	1,722
Cereal grains	165	260	561	470	54	1,510
Sheep	336	200	222	68	16	842
Other	385	137	119	79	20	740
Total	1,056	944	1,566	1,114	134	4,814

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*Northern Mallee*

This large Division extends along the Murray Valley from the Kerang area to Mildura and on to the South Australian border. It is essentially a vast plain, sloping to the north-west from about 100 metres above sea level in the south to 35 metres at Lake Cullulleraine. Low superficial land forms of ridges and dunes are also present.

The dominant soil group is the Solonised Brown Soils (Mallee Soils)—alkaline brown sandy soils over more clayey highly calcareous soils. Several sub-dominant groups occur. These are grey and brown soils of heavy texture, Red Brown Earths, and Alluvial Soils. This Division is relatively dry, with rainfall ranging from 240 mm to 370 mm a year.

Most of the Division has been cleared for agriculture except for two major tracts of country along the South Australian border—the Sunset Country, south-west of Mildura, and the Big Desert which extends south into the Wimmera Division.

The main broadacre farming is cereal growing, associated with wool, prime lambs, and beef cattle. Wheat is the principal crop, followed in order by barley and oats. Dairying is conducted primarily in the irrigated country around Swan Hill and Kerang.

Horticulture is concentrated around Mildura, Robinvale, and Swan Hill. A high proportion of Victoria's grapes, for drying, table use, and wine, olives and citrus fruit are grown in this Division. Vegetables are also grown.

VICTORIA—NORTHERN MALLEE STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100+	
Grapes	489	911	479	68	8	1,955
Cereal grains	76	110	294	567	112	1,159
Sheep and cereal	43	60	143	199	35	480
Orchard and other fruit	99	46	50	40	8	243
Other	585	284	200	78	23	1,170
Total	1,292	1,411	1,166	952	186	5,007

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*Loddon-Campaspe*

The Loddon-Campaspe Division stretches from the Central Highlands in the south to the Murray River. The hilly and woody country of the south gives

way to flat treeless plains. Red-Brown Earths are the dominant soils. Sub-dominant groups are grey and brown soils of heavy texture (both friable and dense grey soils), Podsollic soils derived from sedimentary rocks, and alluvial soils. Rainfall ranges from about 350 mm to 650 mm a year.

Grazing in the south of the Division gives way to heavy cropping in the west and dairying on irrigated land in the north and east. Sheep are run in conjunction with cereal growing, and there are intensive poultry and pig raising industries in the Bendigo area.

**VICTORIA—LODDON-CAMPASPE STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)**

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)				Total establishments
	<11	11-20	21-40	40+	
Meat cattle	1,269	97	31	14	1,411
Sheep	711	218	175	91	1,195
Milk cattle	263	398	331	67	1,059
Sheep and cereal	141	196	362	287	986
Sheep and meat cattle	284	125	107	53	569
Pigs	87	34	52	52	225
Other	510	181	219	191	1,101
Total	3,265	1,249	1,277	755	6,546

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

**Goulburn**

The Goulburn Statistical Division, which occupies an area on the east side of central Victoria, encompasses a wide range of topography and agricultural activities. From the mountainous part of the Great Dividing Range in the south, it stretches to the Murray River as a wide plain, much of which is known as the Goulburn Valley. In the north-west corner, the principal landscape features are treeless plains, old watercourses, riverside woodland, and swamps. The Goulburn, Loddon, and Campaspe rivers drain the area to the north.

The main soils are Red-Brown Earths (slightly acid brown loams over alkaline clay subsoils containing calcium carbonate) and Podsollic soils derived from sedimentary rocks (grey loams, silty loams, and fine sandy loams with a more or less bleached sub-surface over clay subsoils). A sub-dominant group of alluvial soils occurs. Rainfall varies from 430 mm to 1400 mm a year.

Most of the area, apart from the wooded hills, is farmed. Farming activities range from dairying (in the river valleys and highly productive irrigated country) to cereal growing; orchards, especially in the Shepparton and Cobram districts; and grazing. Irrigated cash crops of wheat or oilseeds (principally sunflowers) are becoming important. Vegetables are also grown.

During recent years there has been a decline in dairying, especially in the dry country, and, in the early 1970s, an increase in cattle raising. However, cattle numbers have since declined with the fall in prices for beef.

**VICTORIA—GOULBURN STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)**

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100+	
Milk cattle	457	1,209	754	121	6	2,547
Meat cattle	1,313	182	102	31	5	1,633
Sheep and meat cattle	331	269	210	65	9	884
Orchard and other fruit	76	86	185	157	51	555
Meat cattle and cereal	62	72	56	22	..	212
Other	877	523	548	278	64	2,290
Total	3,116	2,341	1,855	674	135	8,121

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.



*North Eastern*

The North Eastern Statistical Division is characterised by mountainous country and some highly productive river valleys. There is also some cultivable country in the north-west corner of the Division.

Two dominant soil groups occur—Podsollic soils derived from sedimentary rocks and a miscellaneous group comprised of Podsollic, peaty and skeletal soils, and red loams of the mountainous regions. Rainfall varies from 500 mm to 1900 mm.

Traditional agricultural industries have included cropping, particularly around Rutherglen and Yarrawonga; winegrowing in the Rutherglen-Wahgunyah district; dairying along the valleys; beef cattle, particularly in the upper reaches of the Murray River; and hop growing, stonefruits, walnuts, and a high proportion of Victoria's tobacco growing, in the Ovens Valley, centered around Myrtleford.

A recent innovation has been the attempt to grow oilseed crops, particularly lupins, in the higher rainfall area to the south and as an addition to the cereal rotation in the north. There have been increases in the area of vines, lucerne production, and the area irrigated; and a decline in hop gardens, due to higher yields from the currently recommended variety of hops.

VICTORIA—NORTH EASTERN STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975-76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11-20	21-40	41-100	100 +	
Meat cattle	1,183	256	102	21	5	1,567
Milk cattle	154	272	185	34	..	645
Tobacco	35	29	100	149	30	343
Sheep and meat cattle	136	111	63	22	..	332
Other	359	146	183	96	21	805
Total	1,867	814	633	322	56	3,692

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*East Gippsland*

East Gippsland covers a large area of south-east Victoria with the Great Dividing Range in the north, the New South Wales border on the north-east, and Bass Strait on the south. The Division can be divided into five main areas:

- (1) The coastal plain from south of Sale to Lakes Entrance, including the Gippsland Lakes. Here there are mainly sandy to sandy loam soils over clay or gravel. Sheep and cattle are the main industries in this area.
- (2) The foothills, undulating country which carries mainly sheep and cattle.
- (3) The highlands, carrying sheep and cattle on undulating to steep country.
- (4) The river valleys beginning in the west at the sources of the La Trobe and McAlister Rivers, and running east along the Tambo, Snowy, Cann, and other rivers.
- (5) The productive irrigation district around Sale and Maffra.

Soils are mainly Podsollic, derived from sedimentary rocks, and the Miscellaneous Soil Group. The sub-dominant group comprises Podsolis derived from unconsolidated sediments. This Division has quite a wide range of annual rainfall varying from 520 mm west of Bairnsdale to 1150 mm in the mountains.

Apart from major areas of development in the plains in the western part of the Division which includes the irrigated area around Sale and Maffra, and the Omeo and Gelantipy districts, most agriculture is confined to the river valleys.

Beef cattle, sheep, and dairying are the most important livestock industries in the area. There is little broadacre cultivation. Vegetables are grown on the

river flats at Lindenow and Orbost. The main crop, beans, is harvested green and sent to Melbourne to be frozen. Other crops include edible beans, sweetcorn, capsicums, and gherkins.

VICTORIA—EAST GIPPSLAND STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975–76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)				Total establishments
	<11	11–20	21–40	40+	
Meat cattle	822	143	58	26	1,049
Milk cattle	167	258	188	50	663
Sheep and meat cattle	147	133	120	40	440
Other	215	84	64	46	409
Total	1,351	618	430	162	2,561

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*Central Gippsland*

Central Gippsland is bounded on the south by Bass Strait, on the north by the mountains, on the west by an irregular line running north from near Wonthaggi, and on the east by a diagonal line passing just east of Sale. The main part of the area consists essentially of two mountain systems—the foothills of the Great Dividing Range and the Strzeleckis—separated by an east-west trough known as the Great Valley of Victoria. The remainder consists of low lying hills and coastal plains.

The average rainfall ranges from 900 mm to 1,150 mm over most of the area, falling to about 700 mm at Yarram and 760 mm in the vicinity of Western Port Bay. The Division has a large number of soil-types ranging from sands to clays and loams, with some acid swamp soils and calcareous sand dunes. The dominant group is the Podzols, derived from sedimentary rocks and unconsolidated sediments. Krazozems also occur.

There are about 6,000 rural establishments, a substantial portion of which are under pasture. The main improved pasture species are perennial ryegrass, cocksfoot, white clover, and subterranean clover.

The main agricultural and pastoral industries are potato growing, fruit growing, vegetables, dairying, beef raising, and fat lamb production. Other industries include forestry, coal mining, and sand mining. There are several milk processing factories and an important paper mill in the Division.

VICTORIA—CENTRAL GIPPSLAND STATISTICAL DIVISION: NUMBER OF AGRICULTURAL ESTABLISHMENTS (a), 1975–76 (b)

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)					Total establishments
	<11	11–20	21–40	41–100	100+	
Milk cattle	806	1,716	894	113	4	3,533
Meat cattle	1,280	201	103	26	4	1,614
Other	364	153	172	130	27	846
Total	2,450	2,070	1,169	269	35	5,993

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

*East Central*

The East Central Statistical Division forms a very narrow corridor between what is virtually Melbourne's metropolitan area and Central Gippsland which has Moe as its approximate geographic centre. The East Central Division stretches from Bass Strait to the Upper Yarra area of the Great Dividing range.

The soils are mainly Podsollic, derived from sedimentary rocks and unconsolidated sediments (sandy loams over clay subsoils and deep sands). Other groups include peaty soils and Kranozems (red loams). Rainfall is fairly uniform at about 900 mm to 1000 mm a year. Some of the Division is still under forest, scrub, and Crown land. There is a relatively small orchard industry around Pakenham, some berry growing in the hills and dairying in some of the valleys. There are a number of small farms engaged in potato growing and flower production, and some stud properties.

**VICTORIA—EAST CENTRAL STATISTICAL DIVISION: NUMBER OF  
AGRICULTURAL ESTABLISHMENTS (a), 1975–76 (b)**

Main activity of establishment (a)	Estimated value of agricultural operations (\$'000)				Total establishments
	<11	11–20	21–40	40+	
Meat cattle	275	37	9	3	324
Milk cattle	74	155	70	5	304
Other	81	30	33	17	161
<b>Total</b>	<b>430</b>	<b>222</b>	<b>112</b>	<b>25</b>	<b>789</b>

(a) See footnote to table on page 351.

(b) See footnote to table on page 351.

### Land improvement

#### *Forest clearing\**

Before settlement, much of Victoria was covered by forests of various kinds. There were magnificent mountain ash forests in areas of higher rainfall, such as West Gippsland and the Otway ranges, and patches of sub-tropical rain forest species in East Gippsland. In the eastern highlands, alpine forest gave way to snow gums and alpine meadows above the snowline.

Large areas were covered by dry sclerophyll forests consisting of such trees as stringybark and peppermint. On many of the river flats and plains there were open woodland forests of red gum and yellow box. In some of the wetter coastal areas tea tree and other species grew thickly. In the Mallee in the north-west of the State, there were large areas of mallee scrub, in which multi-stemmed eucalypts rose from ligno-tubers below the ground.

The first effect of these forests on land settlement was that land was settled most quickly in the parts that were not covered, or only sparsely covered, by forest.

The gently undulating basalt plains of western Victoria were dominated by grasses, with trees and shrubs occurring only along the steep-sided watercourses. This grassland was rapidly taken into sheep runs in the earliest days of settlement during the 1840s, and quickly became widely renowned for wool production.

Open woodland, such as the red gum lands, in which red gum and yellow box grew as large trees forming an open canopy above natural grasses and sparse shrubs, provided grazing immediately for flocks and herds.

In the high plains of Victoria where winter snow prevented the growth of trees, grazing was available for sheep and cattle during the summer, but the grazier had to have a lowland property on which the stock could be grazed during winter.

In the Mallee, pastoralists stocked most of the better grazing country during the 1840s, mainly in the lightly forested plains along the Murray River and the intermittent inland streams. The areas of mallee scrub were not generally settled by pastoralists because the ground feed was poor, water was scarce, and it was difficult to muster stock in the scrub.

Settlers who took up forested land did not necessarily choose the land that was easiest to clear; they assumed that the forest cover indicated something

\* This article should be read in conjunction with Chapter 1.

about the fertility of the soil and the amount and reliability of the rainfall. In fact, because the growth of vegetation depends as much on moisture as on soil fertility, the kind of forest cover was not an infallible guide to the richness of the soil. But the pioneers had no soil testing facilities, and they used what indicators they had: the nature of the forest cover, the colour and texture of the soil, and local experience of the climate.

Mountain ash and blue gum land, for example, was selected and cleared before the land covered with stringybark and peppermint in a particular district. Long after all the land in a district was cleared, it was described according to the nature of its original cover, as for example, blue gum land, or in the Wimmera, buloke land and plains (originally treeless) land.

Most of the early clearing was done by muscle power and the axe. It was followed up by piling the timber and scrub into heaps or rows, allowing it to dry, and burning it. The intensity of the "burn" was on some lands of vital importance in killing the stumps of the vegetation and retarding or preventing regeneration.

In many cases the bigger trees were left standing, either ringbarked or killed by huge forest fires; they stood for decades as grey limbless pillars while the pasture on which the farmer's livelihood depended grew at their feet.

In the Mallee the lighter timber and scrub was cleared by rollers, drawn by teams of bullocks or horses, that could flatten up to four hectares (10 acres) a day. The scrub was allowed to dry, and was then burned. The mallee stumps remained in the ground; it was common practice to sow the area with wheat, harvest it with a comb stripper and then burn the straw, which would in some cases burn fiercely enough to kill the suckers of the mallee roots that had grown in the crop.

Stump-jump implements were first used (in South Australia) about 1876 and were improved in the 1880s and 1890s. The mouldboards or discs of stump-jump ploughs were pivoted and could rise independently of the others to ride over obstructions in the ground; they made it possible to cultivate recently cleared land without grubbing out all the stumps by hand labor.

The forests provided the settler with timber for fuel and for building houses, sheds, and fences. Nonetheless, the lack of trees on the volcanic plains of the Western District made them attractive to settlers. Timber and fuel could be carted to the property from elsewhere as required, and the local stone was used for building houses and sheds.

The clearing of Victorian farmland was not conducted according to an overall plan of rational land-use. For example, some very steep land in the Strzelecki ranges was cleared, and the families that settled it endured heartbreaking hardship.

The part played by trees in the water balance of some areas was not readily apparent, and over-clearing in some cases caused problems. In some of the red gum plains of Western Victoria the deep-rooted, evergreen red gums, with their tremendous leaf area, had transpired huge amounts of water every year. After they were cleared, increased quantities of water percolated through the topsoil above the impermeable clay subsoil, taking salt from the soil with it. The salt became concentrated at the bottom of slopes, damaging the pastures. Attempts are now being made in some areas to re-establish trees in order to reduce the amount of water that flows down the slopes.

It is not clear why some settlers felled or ringbarked so many of their red gums, as good pasture grows right up to the trunks of the trees. Some settlers completely cleared the land, by axe and shovel, while others left many of the trees, and their properties have an open parkland appearance. On smaller farms, where hay is made in small paddocks, the sticks that fall from trees can jam or break mowers and haymaking machinery, and that was one reason why all the trees were cleared from some paddocks.

Much of the land that was not cleared by the axe and fire was cleared after the Second World War by heavy machinery. Tracked diesel tractors equipped with tree-pushers and bulldozer blades cleared land much more quickly than the old hand methods, but at considerable cost.

Large areas were cleared by two tracked tractors operating as a team, dragging a chain or wire between them and pulling over all the lighter trees and scrub between their parallel paths. In some cases a huge steel sphere was dragged at the middle of the chain, keeping it several feet above the ground and allowing it to pull over trees more effectively. Larger trees were pushed over by a third tractor equipped with a tree-pusher. Huge areas of the Heytesbury forest of Western Victoria have been converted into dairying land by these methods. The uprooted vegetation was pushed into rows, allowed to dry, and then burned.

It is now not always profitable to clear forested land for farming, even by the most efficient mechanical methods. Indeed, some farm land in east Gippsland and south Gippsland is being planted to trees, mainly *Pinus radiata*, but in some areas to mountain ash, for the production of timber and paper. Few farmers have planted trees other than for windbreaks and for the production of timber and fuel for their own use. Commercial plantations of trees are generally made by public companies and the Forests Commission of Victoria.

#### *Pasture improvement*

A substantial amount of Victoria's beef, sheep, and dairy farming is carried out on improved pastures, which can support many more stock than native pastures. During the past 40 years, the area of improved pasture in the State has increased from about 2 million to 7 million hectares. Much of this increase has resulted from widespread use of superphosphate and subterranean clover. At present, improved pastures are based on introduced clovers, medics, and perennial grasses, such as ryegrass, cocksfoot, and phalaris.

There are still about 4 million hectares of unimproved (or "native") pasture in Victoria. These consist mainly of unproductive indigenous grasses with no leguminous species of any value, such as wallaby grasses, kangaroo grass, weeping grass, and spear grasses. They do not respond to fertiliser, and have a low carrying capacity.

Where annual rainfall is 750 mm or more, i.e., mainly south of the Divide, improved pastures of perennial grasses, white clover, and subterranean clover are used for intensive dairying and beef production. In the medium rainfall areas (500–750 mm) of north-east through to south-west Victoria, beef and sheep are run on pastures of perennial grasses and annual clovers, particularly subterranean clover. The remaining pastoral areas (250–500 mm rainfall) grow pastures of annual medics or clovers, with volunteer annual grasses such as barley grass, Wimmera ryegrass, and bromes, which are suitable mainly for sheep.

Irrigated pastures, based on highly productive perennial grasses and clovers, are grown on about 400,000 hectares of the northern plains, and about 40,500 hectares in southern Victoria, mainly in Gippsland. They are primarily used for dairying.

In the past 20 years, the use of fertilisers such as potash, nitrogen, molybdenum, and copper as well as superphosphate, has contributed greatly to increased pasture productivity. Other developments have included a more informed approach to pasture management and the introduction of improved cultivars of cocksfoot and phalaris grasses, and white and subterranean clovers.

#### *Fertilisation*

James Cuming, who arrived in Victoria in 1862, established the superphosphate industry in Australia, using bones and guano as a source of

phosphate. Later, rock phosphate was imported from the United States of America. Since the First World War, supplies of rock phosphate from Nauru, Ocean Island, and Christmas Island have provided almost all of the requirements for superphosphate manufacture in Australia. Recently, Christmas Island has become the major supplier, with Nauru remaining important, but Ocean Island providing little. Most of the sulphur used in the industry comes from Canada.

Since the 1920s, the need to topdress pastures with superphosphate for high productivity has become generally accepted, and soil fertility has been much improved by the practice. Although superphosphate is designed to supply mainly phosphorus, its contents of sulphur and calcium are also essential for plants in certain areas of Victoria. In 1975-76, 463,481 tonnes of superphosphate were used in Victoria of which 269,124 tonnes were applied to pastures. This represented an extraordinary fall in use and was associated with unfavourable conditions in the pastoral industries and, to some extent, with the rapid increase in the cost of superphosphate. Re-introduction of the Government bounty early in 1976 partly offset the increases in the cost of superphosphate.

While phosphorus and, to a lesser extent, nitrogen are the most important nutrients in Victorian agriculture generally, in certain areas potassium and sulphur are no less important. The use of nitrogenous fertiliser has become almost static in recent years and, despite the wide range of forms available, requirements are met mainly by ammonium nitrate, calcium ammonium nitrate, urea, and sulphate of ammonia. However, since the 1950s, there has been a rapid and continuing expansion in the use of potassic fertilisers in southern Victoria. Usually, potassium is applied to pastures as mixtures of muriate of potash and superphosphate. In Victoria, the trace elements molybdenum, copper, zinc, and cobalt are also supplied in a variety of mixtures with superphosphate.

Since the Artificial Manures Act was introduced in 1897, the law has required fertilisers to be sold according to a guaranteed analysis. Under the *Fertilizers Act* 1974 manufacturers must register the brands and analyses of their products with the Department of Agriculture. A list of registrations is published in the Victorian Government Gazette.

In 1975-76, 545,828 tonnes of artificial fertilisers were used on 916,590 hectares of wheat; 493,179 hectares of other cereal crops; 18,119 hectares of vegetables; 20,497 hectares of vineyards and orchards; 22,417 hectares of other crops; and 1,953,474 hectares of pastures. Superphosphate is the main fertiliser used on both crops and pastures and in 1975-76 amounted to 463,481 tonnes, or 85 per cent of the total artificial fertiliser used on all crops, and 269,124 tonnes or 83 per cent of that used on pastures.

#### VICTORIA—ARTIFICIAL FERTILISERS

Year (a)	Crops			Pastures		
	Number of holdings	Area fertilised	Quantity used	Number of holdings	Area fertilised	Quantity used
		'000 hectares	'000 tonnes		'000 hectares	'000 tonnes
1971-72	22,147	1,585	237	33,827	3,763	684
1972-73	n.a.	1,565	232	34,274	4,277	782
1973-74	n.a.	1,547	240	35,374	4,488	869
1974-75	n.a.	1,383	223	n.a.	3,487	654
1975-76	n.a.	1,473	223	n.a.	1,953	323

(a) See footnote (b) to table on page 351.

#### Superphosphate, 1971

*Irrigation*

Information about water supply and land settlement can now be found in Chapter 13 of the Year Book, but previous references to this material when it appeared in this chapter are as follows :

**Irrigation, 1962; Wimmera-Mallee region water supply, 1963; Flood protection, river improvement, and drainage, 1963; Underground water, 1964; Water supply in Victoria, 1964; Goulburn-Murray Irrigation District, 1965; Spray irrigation in agriculture and dairying, 1965; Private irrigation development, 1966; Water Research Foundation, 1966; River improvement, 1967; Rivers and streams fund, 1967; Dandenong Valley Authority, 1968; Water conservation, 1969; Water supply to Western Port, 1971; Lake William Hovell dam, 1972; River Murray Agreement and the River Murray Commission, 1972; Ten year plan, 1974; Millewa pipeline project, 1974; Snowy Mountains Hydro-Electric Scheme, 1974; Millewa Scheme, 1975; Tarago-Western Port pipeline, 1975.**

*Private storage dams*

Early Victorian pastoralists commenced constructing small private dams and weirs in the 1850s. Sir Samuel Wilson became one of the first developers of farm water supplies, when he built private weirs on creeks near his property at Longerenong and so diverted water, primarily for stock purposes. By the turn of the century small dams were being built throughout the State, particularly in areas near highly populated cities. Doncaster orchardists, for example, had built a vast network of dams by this time.

Due to the concentration on large-scale public irrigation schemes by successive Victorian Governments, the later development of private dams did not progress as rapidly as it did in other States. However, a start was made in 1944, when the Victorian Government passed the Farm Water Supplies Act, which established a scheme under which advances were made to farmers to finance farm water supply projects. The Act was administered by the Department of Lands. The State Rivers and Water Supply Commission formed a Farm Water Supplies Branch for the special purpose of providing advice to all farmers interested in taking advantage of its provisions.

In 1965, the Soil Conservation (Water Resources) Act was passed, which permitted the Soil Conservation Authority of Victoria to ". . . provide for landholders an advisory service with respect to the development and use of the water resources available to them". Under this Act, the Authority provides advisory, survey, and design services. A loan scheme to finance private soil and water conservation projects (the latter not to be located within declared irrigation districts), including the construction of private farm dams, was initiated in 1971. The Soil Conservation Authority assesses the technical feasibility of the projects and the Rural Finance and Settlement Commission of Victoria administers the financial aspects of the scheme. By the end of June 1976, over \$1m had been advanced to Victorian landholders on a long term, low interest basis.

Originally, in the 1850s, private dams were erected with a centre core of puddle clay. These dams were built up gradually from thin layers of materials set in place by using horse-drawn carts or barrows. Compaction of these thin layers was effected by the combined traffic of feet, both human and animal, and vehicle wheels. Later contractors, using horse teams and scoops, developed successful techniques of placing layers of soil, which were trodden down and compacted by the horses.

Horse power was gradually replaced by mechanised earth-moving plant during the Second World War. With the adoption of this equipment in private dam construction, it was reasonably assumed that improved compaction would result, but unfortunately this progress did not automatically follow. A major problem was that, when a bulldozer alone was used, many small dams suffered from inadequate compaction, because the tracks of bulldozers are designed to spread and not concentrate their load. In the absence at the time of suitable rollers, such as the modern sheepsfoot roller, many private dams failed because of insufficient compaction.

Today, Victorians spend about \$1.5m each year on private dam construction, and government engineers and agricultural officers ensure that contractors are aware of the need for correct compaction and moisture content when building dams. However, the costs of this work have risen steeply over recent years, and private dams for irrigation are now costing farmers about \$200 per megalitre.

One current problem in Victoria, particularly in the semi-arid regions, is the poor run-off from small catchments into private dams. The Soil Conservation Authority, in conjunction with the Agricultural Engineering Section of the University of Melbourne, is at present conducting a joint investigation into methods of developing low cost treatment of small catchments to provide an improved yield or run-off.

### *Plant diseases and insect pests control*

The systematic study of plant diseases and insect pests in Victoria began in the 1880s with the appointments of the first Government Entomologist and Plant Pathologist.

Records around and prior to that period are sparse, but it is known Phylloxera almost destroyed the grape vine industry, and that codling moth on fruit, and locusts on pastures and crops, caused enormous losses in some years. Rust, which blighted wheat crops, devastated part of the vital food supply of the pioneers.

The Phylloxera problem was overcome by using resistant rootstocks for new vine plantings, but control of other important insect pests was generally restricted to relatively ineffective attempts on high value fruit and vegetable crops. The available insecticides, such as baits with arsenical compounds, kerosene and soap emulsions, nicotine sulphate, rotenone, pyrethrum, sulphur, and lead arsenate were too few, too expensive, too toxic or too phytotoxic for widespread use.

The discovery of the insecticidal qualities of petroleum oils and tar distillate was a major advance, which led to effective control of green peach aphid and various scale insects on deciduous fruits, but further advances had to wait until the late 1940s and the advent of the new synthetic organic insecticides. These included an increasing number of contact and systemic insecticides which were inexpensive, highly insecticidal, and persistent. They included such products as DDT, BHC, dieldrin, parathion, and schradan, which greatly affected agricultural pest control.

Fruit losses of up to 40 per cent from codling moth and Oriental fruit moth were reduced to negligible proportions by three to four well-timed sprays of DDT or azinphos, and aphid and caterpillar pests of vegetables were also successfully controlled for the first time.

The greatest impact, however, was felt in the pasture and field crop industry. Previously, economic control could not even be contemplated, but with new insecticides which were effective as well as inexpensive, successful control methods could be devised for controlling the pasture cockchafer which annually destroyed thousands of hectares of improved pasture, the plague locust which periodically invaded Victorian pastures and crops in dense swarms from northern States, and a number of hepialid and noctuid caterpillars which caused frequent and severe damage in particular regions.

There were, however, some disadvantages arising from the use of the new insecticides, such as persistence of toxic residues in the environment, production of insecticide resistant strains of some insect species, and heavy mortality of some beneficial predatory and parasitic insects, which led to increased numbers of some pests previously under biological control. For these reasons entomological



research has in recent years emphasised the need to integrate all appropriate control methods—insecticidal, biological, and cultural—for the optimum results in pest control.

A successful example has been the importation of parasites and the simultaneous reduction of spraying, which has led to satisfactory control of red scale, the major pest of Victorian oranges. Introduction of other wasp parasites and predatory mites has greatly reduced dependence on insecticides for the control of carrot aphid, green vegetable bug, and two spotted mite. Normally the predator or parasite must be supplemented by judicious applications of insecticides, and the insecticides must be carefully selected for minimal adverse effects on the beneficial insects.

Early work on plant diseases concerned their recognition and description, and the development of control measures using a limited range of chemical and other methods. Major advances in Victorian agriculture were made when the beneficial effects of small dressings of zinc sulphate in increasing the yield of cereals and other plants grown on Wimmera black soils were demonstrated. Later it was shown that one of the major disorders of flax, known as wither tip, was in fact caused by a deficiency of calcium and could be corrected.

Intensive investigations using a range of fungicides, developed after the Second World War, led to control measures for several fruit tree diseases, which greatly improved the quality of export canned and fresh fruit.

A major recent advance has been the recognition that many diseases of crops which are propagated vegetatively, e.g., potato and several ornamental plants, can be controlled by using disease-free propagating material; schemes have, in fact, been developed whereby specialist propagators multiply plants for commercial sowing, starting from a small nucleus stock from which viral, fungal, and bacterial diseases have been eliminated.

The emphasis in plant disease control, as in insect pest control is on integrated control, using chemicals when necessary in an environmentally acceptable way, in combination with other disease control methods such as resistance breeding, sanitation, and clean seed schemes.

#### *Livestock diseases eradication*

Most of the diseases of livestock which have been major problems to farmers in Victoria were introduced with the foundation stock from which the flocks and herds grew. For instance, the mite which causes sheep scab was present in the skin of sheep carried by the First Fleet, and other diseases were known to have been introduced with imported stock at later dates.

At the time Victoria was settled, the causes and nature of most infectious diseases were still unknown. Bacteria and viruses had not been discovered. Keen observers had noted, however, that it was possible to bring plagues and epidemics in livestock under control by means of quarantine, isolation, and, where appropriate, slaughter of diseased animals.

For many years before the appointment of the Honourable J. J. Casey as Victoria's first Minister of Agriculture in 1872, the Government and graziers had been active in controlling animal disease. The *Scab in Sheep Act* 1852 was part of a series of legislative enactments to enable sheep inspectors to be appointed for supervising the campaign to eradicate sheep scab from Victorian flocks. After two decades of effort, a significant decline in the incidence of infection with the skin mite of scab was achieved in the early 1870s. By 1876 it was possible to report complete eradication, some seventy-five years before older countries such as Britain and the United States of America eradicated the disease.

The development of an efficient disease control organisation under an able leader, Mr. E. M. Curr, proved its value when Victoria experienced and eradicated its first and only outbreak of foot and mouth disease in 1872. Soon afterwards in the same year, the Department of Agriculture was founded and the first Stock Diseases Act was proclaimed. The Cattle Compensation Act of 1924 and the Swine Compensation Act of 1927 were passed later and enabled funds provided by the livestock industries to be made available to pay compensation for stock necessarily slaughtered during disease eradication. The fear of economic disaster for individual stockowners was thus removed and this overcame their reluctance to report suspected disease.

Contagious bovine pleuropneumonia has been eradicated; the last outbreak occurred in 1966. The incidence of tuberculosis in Victorian herds of cattle has been reduced from about 10 to 15 per cent in the last century to a very low level in this one, by testing cattle and slaughtering reactors. The State is now provisionally free of tuberculosis. The campaign to control brucellosis in cattle has recently been intensified by the use of test and slaughter procedures as well as vaccination, and bovine mastitis is controlled by hygiene and antibiotics. Brucellosis and tuberculosis have almost been eradicated from pigs; Newcastle disease, Fowl plague, and Pullorum Disease of poultry have all been investigated and eradicated in the last forty-five years; and sheep lice and footrot of sheep are controlled by strict market inspection and compulsory treatment where necessary. By the use of vaccines and by burning the carcasses of animals dying from anthrax and the clostridial diseases such as blackleg, the incidence of these diseases and the consequent economic losses have been steadily reduced.

The quarantine service, for which the Department of Agriculture of Victoria acts on behalf of the Commonwealth Government, aims to keep Victoria free from foot and mouth disease and other serious animal diseases, despite the increased dangers of introduction from overseas by trade and migration.

#### *Vermin and noxious weeds control*

The control of pest animals and plants affects both the agricultural and pastoral industries of Victoria, as well as the forests and natural bushlands environments, such as wildlife and game reserves. The Vermin and Noxious Weeds Destruction Board, which was established in 1959 to work with the Department of Crown Lands and Survey, is responsible for intensifying the control of vermin and noxious weeds and implementing a philosophy of pest control.

The targets of the Board's operation are the 95 plants which are proclaimed noxious weeds, under the *Vermin and Noxious Weeds Act* 1958, throughout Victoria except in the Melbourne metropolitan area, and the eight proclaimed vermin animals, such as rabbits and foxes. Two birds, the sparrow and the starling, are also considered vermin. Blackberries, ragwort, and rabbits are the most serious pests in Victoria.

Noxious weeds and vermin control policy decided on by the Board is implemented throughout Victoria by 142 Departmental Land Inspectors under the supervision of eighteen regional Senior Land Inspectors. Each Land Inspector has a team of workmen together with appropriate equipment to carry out weed and vermin control, and is backed up by workshop and research facilities. The annual cost of maintaining this service to the rural community in Victoria is more than \$10.5 m.

As well as being responsible for maintaining a good working relationship with landholders, the Land Inspector is also responsible for the control of vermin and noxious weeds on Crown land, and as the Board has agreements

with many other government departments concerned with agriculture, forestry, national parks, roads, railways, municipalities and so on, he may also be called upon to carry out control work in these areas.

#### *Land cultivation*

The following table shows details of the broad utilisation of land under occupation in Victoria for agricultural and pastoral purposes for the season 1975-76:

**VICTORIA—LAND IN OCCUPATION FOR AGRICULTURAL AND PASTORAL PURPOSES, 1975-76 (a)**

Statistical division	Number of holdings (b)	Area of crops	Area of sown pasture and lucerne	Balance of holding (c)	Total area of holdings
		'000 hectares	'000 hectares	'000 hectares	'000 hectares
Melbourne	4,828	27,216	169,284	127,626	324,126
Barwon	3,354	41,469	324,382	160,861	526,712
South Western	7,687	51,998	1,349,172	502,606	1,903,776
Central Highlands	3,953	65,315	583,727	280,606	929,648
Wimmera	4,851	631,592	969,775	881,542	2,482,909
Northern Mallee	5,044	545,307	622,715	1,485,151	2,653,173
Loddon-Campaspe	6,479	246,705	727,640	750,308	1,724,653
Goulburn	8,105	172,367	787,543	637,399	1,597,309
North Eastern	3,671	48,010	329,342	494,015	871,367
East Gippsland	2,550	7,350	250,676	1,016,780	1,274,806
Central Gippsland	6,023	10,020	494,502	217,985	722,507
East Central	1,923	3,160	86,882	43,376	133,418
<b>Total</b>	<b>58,468</b>	<b>1,850,509</b>	<b>6,695,640</b>	<b>6,598,255</b>	<b>15,144,404</b>

(a) See footnote (b) to table on page 351.

(b) A rural holding is an area of land of 10 hectares or more in extent, used for the production of crops or for the raising of livestock and the production of livestock products. Rural holdings of less than 10 hectares operated by a legal entity with \$1,500 or more estimated gross value of agricultural operations are also included. In general, a holding corresponds to an establishment; however, an establishment can comprise more than one holding if their operational financial records are combined. (See also footnote (a) to table on page 351.)

(c) Balance of holding includes fallow.

#### **Economic contribution**

##### *Gross value of agricultural production*

The gross value of agricultural commodities produced provides a measure of the output from farming. The gross value of commodities produced is the value placed on recorded production at the wholesale prices realised in the principal markets. In general, the "principal markets" are the metropolitan markets in each State. In cases where commodities are consumed locally or where they become raw materials for a secondary industry, these points are presumed to be the principal markets.

Quantity data is, in the main, obtained from the Agricultural Census held at 31 March each year, and from supplementary collections which cover crops that have not been harvested at the time of the Census. Information covering such commodities as livestock slaughterings, dairy produce, and beefarming is obtained from separate collections and from organisations such as the Department of Primary Industry. Price data for commodities is obtained from a variety of sources including statutory authorities responsible for marketing products, e.g., the Australian Wheat Board, marketing reports, wholesalers and brokers and auctioneers. For all commodities, values are in respect of production during the year, irrespective of whether or when payments are made.

The gross value of agricultural commodities produced in Victoria during 1975-76 (\$1,256m) contributed 21.3 per cent of the Australian total of \$6,184m.

**VICTORIA—VALUE OF PRIMARY COMMODITIES PRODUCED  
(EXCLUDING MINING)  
(\$'000)**

Particulars	Year ended 30 June—			
	1973	1974	1975	1976
<b>Crops—</b>				
Cereals for grain	96,615	199,053	276,873	224,404
Hay	53,941	79,598	67,025	61,378
Industrial crops	16,973	20,558	22,491	23,168
Vegetables	39,435	61,064	62,371	73,270
Grapevines	27,971	38,555	37,453	37,477
Fruit	49,855	53,993	54,961	47,382
Other	19,053	23,081	19,245	17,120
<b>Livestock slaughterings and other disposals—</b>				
Cattle and calves	246,568	245,661	114,309	184,873
Sheep and lambs	106,809	103,958	58,410	75,225
Other	43,297	64,943	71,334	71,440
<b>Livestock products—</b>				
Wool	254,434	248,232	193,623	174,055
Dairy products	237,670	239,767	266,659	220,867
Other	33,434	42,038	45,869	45,353
<b>Total</b>	<b>1,226,055</b>	<b>1,420,501</b>	<b>1,290,623</b>	<b>1,256,012</b>

## PRODUCTION

### Introduction

In the following pages some detailed descriptions and statistical information about all the main crops, livestock, and livestock products produced in Victoria are given. The section deals, first, with the broadacre crops including wheat, barley, and oats; and then with the intensive crops including fruit and vegetables. The section then discusses livestock including sheep, cattle, pigs, poultry, bees, and goats, together with the various livestock products.

It should be noted that the statistical information is in terms of Statistical Divisions, *not* Agricultural Districts as in previous *Victorian Year Books* (see page 350 for further details).

### Broadacre crops

The cereals wheat, barley, and oats, are the principal crops grown in Victoria. These, together with hay production, represent about 90 per cent of the total area sown, although there is some variation from year to year.

#### *Wheat*

Wheat is Victoria's largest crop. The average area sown in the ten-year period 1965–66 to 1974–75 was 1.20 million hectares, about 60 per cent of the State's total cropping area. The area under wheat is normally subject to fairly minor fluctuations. The 1968–69 season produced a Victorian record harvest of 2.47 million tonnes of wheat from 1.6 million hectares. However, this production coincided with a large Australian harvest and a saturated world wheat market. As only about 20 per cent of Victorian production is used for home consumption, the difficulties in marketing export wheat in 1969 led to considerable storage problems. To reduce production levels, the *Wheat Marketing Act* 1969 implemented the Wheat Delivery Quota Scheme which allocated deliveries in accordance with market demand and storage capacity. Quotas effectively reduced the area of wheat sown in 1970–71 to 760,000 hectares. Effective quota restrictions were removed by 1973–74 in response to a world demand for wheat, and the legislation ceased to operate from 30 September 1975. In 1975–76, 1.6 million tonnes of wheat were produced from 1.07 million hectares.

More than 90 per cent of Victorian wheat is grown in the Northern Mallee, Wimmera, and Loddon–Campaspe Divisions. The average annual rainfall in the main wheat belt varies from about 300 mm in the north–west to about

500 mm to 750 mm in the eastern and southern areas. With the exception of a small area of intensive cropping in the Wimmera, wheat is grown on a ley system of farming in which it is produced in rotation with fallow, pastures, and other crops, principally oats and barley. Surveys of the Wimmera have shown that many paddocks are under-cropped and that the potential exists to increase cropping intensity without risk to the stability of the farm system. Levels of soil nitrogen in the region are highly correlated with the ability to support cereal crops, and a soil nitrogen testing service introduced by the Department of Agriculture in 1974 now adds precision to the complex decision on cropping rotations within the ley farming system of the Wimmera.

Since the adoption of legume (subterranean clover or medic) based pastures into Victorian cropping rotations, nitrogenous fertilisers have found only limited application. Nitrogen is applied only in specific circumstances, namely, on light sandy soils and land infested with skeleton weed in the Northern Mallee, and on intensively cropped land in the Wimmera and southern areas. Superphosphate is applied at seeding to virtually all crops to correct a phosphorus deficiency inherent in nearly all Australian soils.

Diseases of wheat are not normally a major problem but in 1973-74 heavy losses were incurred through attack by stem rust, Septoria leaf spot, root diseases, and weather damage.

During the 63-year period from 1911 to 1973, stem rust occurred in some part or parts of Victoria, in varying degrees of severity, in sixteen seasons. In only four of these years, 1934, 1947, 1955, and 1973, did the disease cause heavy losses of production, 1973 being the heaviest on record. The only effective control is to breed disease-resistant varieties, a continuing project in Victoria since 1950. The main variety, Kalkee, which was released in 1976, is currently resistant to all known rust strains. Another disease problem, the ball smut fungus, is effectively controlled by the use of fungicide applied when the seed is graded. Crop failures following the use of seed which had been "pickled" with fungicide in 1973 and sown in 1974, and field experiments by the Department of Agriculture, emphasised the fact that "pickled" seed should not be carried over from one season to the next as seed viability is greatly reduced and re-sowing costs are high.

The most serious problem facing the cereal industries, wheat in particular, is the control of insect pests in grain storage, as the loading of wheat and other cereals for export is prohibited if insects are present. Strains of insects, resistant to rates of insecticides approved for the international grains trade, have developed. The grain insect campaign initiated by the Department of Agriculture in 1973 has improved awareness of farmers to the problem of ensuring the delivery of insect-free grains to the export terminal. Processors and retail outlets have also been encouraged to improve their standards of grain hygiene.

Wheat marketing in Australia is controlled by the Australian Wheat Board under the provisions of the present *Wheat Industry Stabilization Act* 1974 operating until 1978. This legislation provides for a guaranteed "stabilisation" price, adjusted annually on the basis of movements in export markets. When average export prices are higher than the stabilisation price, growers are required to contribute to a fund (subject to a minimum and maximum level.) These monies are used to maintain returns to growers should export prices fall below the stabilisation price. In the event of the fund being exhausted, the Commonwealth Treasury will provide an interest-free loan, up to a maximum of \$80m, to operate the plan.

Most wheat varieties grown in Victoria are of the soft white class. The environment generally does not favour the production of wheat of the harder types, although large areas of the newer hard variety Condor are now sown in north-west Victoria where wheat with protein content above the Victorian average is usually produced.

## VICTORIA—PRINCIPAL VARIETIES OF WHEAT SOWN

Variety in order of popularity in season 1975-76	Season 1973-74		Season 1974-75		Season 1975-76	
	Hectares sown	Percentage of total area sown	Hectares sown	Percentage of total area sown	Hectares sown	Percentage of total area sown
Halberd	422,248	33.3	520,043	45.2	494,707	45.8
Olympic	216,579	17.1	302,574	26.3	323,061	29.9
Summit	204,305	16.1	122,199	10.6	109,521	10.1
Insignia	185,909	14.6	67,683	5.9	36,266	3.4
Pinnacle	50,468	4.0	32,921	2.9	29,566	2.7
Emblem	70,313	5.5	38,112	3.3	24,589	2.3
Heron	59,931	4.7	34,503	3.0	22,975	2.1
Condor	(a)	(a)	(a)	(a)	15,023	1.4
Insignia 49	36,399	2.9	13,283	1.2	6,916	0.6
Falcon	2,044	0.2	2,528	0.2	3,590	0.3
Sherpa	2,336	0.2	3,009	0.3	2,806	0.3
All other (including mixed and unspecified)	18,177	1.4	13,241	1.1	11,399	1.1
Total	1,268,709	100.0	1,150,096	100.0	1,080,419	100.0

(a) Included with "All other".

## VICTORIA—WHEAT FOR GRAIN

Season	Holdings growing wheat	Area	Production	Average yield per hectare	A.S.W. (a)
	number	'000 hectares	'000 tonnes	tonnes	kg/h.l.
1971-72	10,822	1,040	1,894	1.82	80.4
1972-73	10,428	1,087	1,405	1.29	82.3
1973-74	9,524	1,258	1,490	1.18	77.5
1974-75	9,156	1,141	2,091	1.83	81.2
1975-76	9,265	1,073	1,579	1.47	76.9

(a) Australian Standard White.

## Australian Wheat Board, 1977; Grain Elevators Board of Victoria, 1977

## Oats

Oats are sown for grain production, winter grazing, and hay production. The average annual area sown between 1970-71 and 1975-76 was 353,000 hectares of which about 80 per cent was harvested for grain, some of it after being grazed during the winter. During the last decade, oats have been displaced by barley as Victoria's second most widely grown cereal crop. This change has been most evident on the lighter soils where winter waterlogging is not a problem.

The predominance of oats in the higher rainfall areas has been maintained by the greater tolerance shown by oats to wet conditions and by the demand for oats for stock feed. About half of the oats produced in Victoria is held on farms or used as stock feed, especially during periods of seasonal shortage or in drought conditions. About a quarter of the crop goes to mills, but only a small fraction of this is processed for human consumption. The bulk of the "milled" oats is destined for incorporation in proprietary stock feeds or as unkilned oats for export. The remaining 25 per cent of the crop is exported as grain.

Unlike wheat and barley which are marketed through the Australian Wheat Board and the Australian Barley Board, respectively, oats are sold on the free market. Domestic prices are markedly affected by the size of the crops and pasture conditions during winter and spring.

Since 1972, the world feed grains market production base has been eroded by land being redirected to wheat production. As the U.S.A. provides 50 to 60 per cent of the total world trade in feed grains, the U.S.A. crop decisively influences the market. Other factors which can influence export markets include the general level of economic activity and the demand for coarse grains for lot-fed livestock enterprises. The dominant export market for oats is Japan which accounts for almost 80 per cent of Australian exports. Italy is the only other significant importer.

#### VICTORIA—OATS FOR GRAIN

Season	Area	Production	Average yield per hectare
	'000 hectares	'000 tonnes	tonnes
1971-72	329	449	1.36
1972-73	255	238	0.93
1973-74	271	233	0.86
1974-75	198	186	0.94
1975-76	243	282	1.16

#### *Barley*

Barley is now the second largest crop grown in Victoria. Barley production in Victoria (95 per cent of which is of the two-row type) increased significantly between 1965-66 and 1975-76. In 1975-76, a record 344,000 hectares of barley produced a record 445,000 tonnes harvest. By comparison, production in 1965-66 was only 73,000 tonnes from 78,000 hectares. So far, the Australian Barley Board in Victoria has been successful in selling this large increase in production.

During this period, impetus was added to an already established trend of increased production by the introduction of the Wheat Delivery Quota Scheme in 1969-70, which had the effect of reducing the area of wheat sown in the cereal belt. Barley proved to be the most popular alternative crop to wheat, particularly in the Northern Mallee. In other areas, oilseeds, such as rapeseed and safflower, were also prominent.

Increased wheat quota allocations in 1972-73 and 1973-74 resulted in a slight fall in the area sown to barley as land was diverted back into wheat. However, the general trend for increased production of barley in Victoria is well established and seems unlikely to suffer further significant reduction in the absence of a marked shift in the price ratios between the cereal crops. The provision of bulk handling facilities for barley by the Grain Elevators Board of Victoria since 1963 has contributed to the increased production of this grain.

While some barley is grown in all divisions, production has been traditionally centred in two distinct areas where high quality grain is produced. The largest production is in the south-west of the Northern Mallee and the adjacent north-western Wimmera where the best quality barley is grown on the sandier soil types. The crop is sown either on cultivated ley ground without fallow or on wheaten stubble land. Until 1970, the variety Prior was almost exclusively sown in this area.

A new variety Weeah, was introduced in 1968 and steadily displaced Prior to a significant extent. However, another barley variety, Clipper, is now recommended to replace Weeah for sowings in the Northern Mallee and Wimmera. The barley industry is hoping for a complete changeover to Clipper by 1979. Clipper has a 5 per cent greater yield than Weeah and is less susceptible to wind damage. The Victorian malting industry processes most of Victoria's barley production for both the local brewing industry and export to overseas breweries. Clipper is better for malting than Weeah and is being sought by overseas markets.

The second source of high quality barley grain is in an area between Melbourne, Geelong, and Bacchus Marsh in southern Victoria. In this area, barley is the principal crop and it is normally sown with superphosphate on fallowed land. Yields of barley in this region average about 1.7 tonnes/hectare compared with about 1.0 tonnes/hectare in the northern Mallee-Wimmera. The area has the further advantage of proximity to the main barley shipping terminals. Consequently, freight costs are much lower than for northern areas.

The variety Lara, which was introduced in 1971, has displaced Research types as the main variety grown in this area. Lara suffered some initial resistance to its acceptance by growers, in spite of its inherent higher yielding potential than the Research type varieties. Its small grain led to a number of samples being refused classification as suitable for malting, and being declared unsuitable for handling in mixed bulk samples with Research types. Lara has since gained acceptance with both growers and maltsters, and has been declared compatible with Research for the purposes of bulk handling.

The substantial increase in barley production has meant that Victoria is now self-sufficient in barley for malting, food, and manufacturing in the distilling, pearling, and prepared stock feed industries. It also contributes to Australian export markets. Barley is sold in Victoria through the Australian Barley Board on a pool basis. The Board is responsible for setting prices for both domestic and export sales. Japan provides the main export market; smaller quantities go to the United Kingdom and Europe. In 1973-74, the Australian Barley Board negotiated its first direct sale to the U.S.S.R. and is hopeful of developing this market in the future. However, Australia is a minor contributor to the world barley market, which is determined by climatic and economic conditions in the principal exporting countries, namely, Canada and France.

#### VICTORIA—BARLEY PRODUCTION

Season	Area		Production		Average yield per hectare		
	2-row	6-row	2-row	6-row	2-row	6-row	Total
	'000 hectares	'000 hectares	'000 tonnes	'000 tonnes	tonnes	tonnes	tonnes
1971-72	286	9	382	13	1.34	1.44	1.34
1972-73	269	9	207	7	0.77	0.78	0.77
1973-74	217	4	281	5	1.29	1.25	1.29
1974-75	238	5	314	5	1.32	1.00	1.31
1975-76	337	7	436	9	1.29	1.29	1.29

#### Australian Barley Board, 1976

#### Maize

Maize is grown on a small scale in Victoria, both for grain and for green fodder, and is cultivated mainly in Gippsland. Lower values in the late 1960s and other more profitable alternatives in vegetables and livestock, led to a substantial decline in the production of maize grain. The area and yield of maize for each of the five seasons 1971-72 to 1975-76 are given in the following table:

#### VICTORIA—MAIZE PRODUCTION

Season	For green fodder	For grain						
		Area			Production			Average yield per hectare
		Hybrid	Other	Total	Hybrid	Other	Total	
	hectares	hectares	hectares	hectares	tonnes	tonnes	tonnes	tonnes
1971-72	806	370	5	375	1,907	12	1,919	5.12
1972-73	636	493	3	496	1,490	16	1,506	3.04
1973-74	536	646	8	654	1,873	17	1,890	2.89
1974-75	485	536	10	546	1,891	36	1,927	3.53
1975-76	359	521	5	526	2,510	3	2,513	4.78



*Rye*

Cereal rye is of minor importance in Victoria and is not usually grown as a cash crop. European migrants to Australia have created a small demand for this cereal for human consumption, thus helping to stabilise the market for rye grain. The chief purpose for which rye is grown is the stabilisation of loose sand or sandhills in the Northern Mallee Statistical Division. There is also some interest in it for winter grazing in cold areas during the winter months.

## VICTORIA—RYE FOR GRAIN

Season	Area	Production	Average yield per hectare
	hectares	tonnes	tonnes
1971-72	5,062	2,597	0.51
1972-73	2,615	975	0.37
1973-74	2,956	882	0.30
1974-75	1,750	671	0.38
1975-76	1,471	648	0.44

*Fodder*

The stability of livestock production on Victorian farms depends largely on fodder conservation. Natural irregularities in the diet of grazing animals are met by conserved fodders, fed as supplement, when the paddock ration of crop or pasture is deficient in quantity or quality. Such deficiencies occur regularly with seasonal changes, e.g., spring lush growth contrasts with winter-short or summer-dry pastures. Deficiencies also occur when the unexpected turns up, such as extended dry, or excessively cold or wet periods; ravishment of pasture by pests or disease; failed crops; floods or fire. All or any of these events may result in feed shortages for grazing animals. Fodder conservation provides a means of overcoming such shortages.

## VICTORIA—HAY PRODUCTION, SEASON 1975-76

Variety	Area	Production	Average yield per hectare
	hectares	tonnes	tonnes
Meadow	391,661	1,490,349	3.81
Oaten	47,533	174,747	3.68
Lucerne	39,888	167,760	4.21
Wheaten	5,715	17,330	3.03
Barley and other	2,757	7,874	2.86
Total	487,554	1,858,060	3.81

## VICTORIA—ENSILAGE MADE AND FARM STOCKS OF ENSILAGE AND HAY (tonnes)

Statistical division	Ensilage made, season 1975-76	Stocks at 31 March 1976	
		Ensilage	Hay
Melbourne	13,835	8,649	89,490
Barwon	5,448	5,711	144,380
South Western	17,266	19,261	487,391
Central Highlands	3,686	7,060	212,306
Wimmera	1,832	8,338	174,320
Northern Mallee	569	3,487	74,837
Loddon-Campaspe	5,023	8,449	288,989
Goulburn	7,842	13,097	459,864
North Eastern	7,468	13,552	163,397
East Gippsland	3,955	6,642	92,591
Central Gippsland	33,088	19,289	292,924
East Central	10,251	4,784	53,024
Total	110,263	118,319	2,533,513

*Oilseeds*

Demand for high protein meals for livestock feed, together with a general world-wide trend to increased consumption of vegetable oils, has been reflected in Australia, where domestic oilseed prices rose in sympathy with prices on world markets and reached record levels during 1973-74. Aggregate oilseed production expanded rapidly between 1968-69 and 1971-72 in response to both increased oilseed prices and the introduction of wheat quotas. However, larger wheat quotas and higher prices for wheat and coarse grains, together with agronomic problems, resulted in an immediate decline in the production of rapeseed and safflower. The area sown to sunflower and safflower has increased rapidly between 1974-75 and 1976-77 due to abnormal sowing conditions for the more traditional cereal crops and attractive prices for these oilseeds.

## VICTORIA—SELECTED OILSEED PRODUCTION

Season	Area	Production	Average yield per hectare
	hectares	tonnes	tonnes
LINSEED			
1971-72	3,694	3,388	0.92
1972-73	5,843	5,471	0.94
1973-74	4,336	4,668	1.08
1974-75	4,924	3,812	0.77
1975-76	4,513	3,056	0.68
RAPESEED			
1971-72	14,881	12,610	0.85
1972-73	13,674	8,016	0.59
1973-74	5,967	3,498	0.59
1974-75	3,707	2,288	0.62
1975-76	4,681	2,907	0.62
SAFFLOWER			
1971-72	1,272	722	0.57
1972-73	556	328	0.59
1973-74	971	520	0.54
1974-75	2,813	1,269	0.45
1975-76	3,952	1,701	0.43
SUNFLOWER			
1971-72	2,141	2,384	1.11
1972-73	2,129	2,046	0.96
1973-74	3,325	2,526	0.76
1974-75	7,973	4,766	0.60
1975-76	7,815	5,725	0.73

*Grain legumes*

Interest in the production of cheap sources of protein for both human and livestock consumption is world-wide. The legumes, including soybeans, field peas, and lupins comprise a major group of high protein grains. Of these, field peas have been grown on a limited scale over much of the wheat belt since early settlement, and recent research by the Department of Agriculture and experience by growers has shown that lupins have some potential.

The average area sown to field peas in the decade 1966-67 to 1975-76 was about 5,000 hectares, with more than 60 per cent of this area and 55 per cent of the total production being in western and central Victoria. There was, however, renewed interest in field pea production in the Loddon-Campaspe Division in 1976. This was brought about by the increased awareness by farmers of the necessity of maintaining soil fertility and also the attractive prices being offered for field peas.

Lupins with 25 to 30 per cent protein are more readily acceptable than peas as a substitute for soybean meal in rations for poultry and pigs. A potential market also exists in the production of meat substitute for human consumption.

The lupin industry has expanded considerably in Victoria. Since 1973, the area sown to lupins has risen from about 100 hectares to about 3,000 hectares in 1976. Average yields are about 1.25 tonnes per hectare.

**Further reference, 1977**

### Intensive crops

#### Fruit

##### Introduction

When the members of the Henty family established the first settlement in Victoria at Portland in 1834, they were probably the first to plant apple trees in this State. The first vineyard, which was planted around 1837, was at Yering, near Lilydale, and the first orchard was started at Hawthorn on the banks of the Yarra River in about 1848. A variety of tree fruits, berries, and grapes carted to the Melbourne market provided the main source of income of many early settlers in the hills to the north, north-east, and east of Melbourne.

In the second half of the last century, fruit and vine growing gradually extended into the western, central, north-eastern, and Gippsland areas of the State. The foundation of Mildura, in 1887, and the establishment of irrigation facilities there, marked the beginning of the development of one of the major horticultural districts in Victoria. With the extension of irrigation facilities in the Goulburn Valley and Murray Valley areas, a flourishing canning-fruit industry was developed after the first World War. Similarly to tree fruits, vine acreage increased steadily until the 1870s when Phylloxera devastated vineyards at Geelong, Bendigo, and Rutherglen. However, within a few years, new vineyards had been established in the Sunraysia district. After the First World War, the planting of dried vine fruit varieties extended along the Murray River to Robinvale and Swan Hill.

In Victoria in 1975-76 the area planted with fruit, nuts, and berries was almost 21,000 hectares and the area of vineyards was just over 21,000 hectares. This total of over 40,000 hectares is hardly more than 2 per cent of the total area under crops in Victoria; yet fruit and vine growing make an important contribution to the economy of the State.

##### Tree fruit

(1) *Distribution.* In Victoria, the main fruit growing areas are in the Goulburn Valley-Murray Valley irrigation area, the Mallee, the Eastern Metropolitan area, the Mornington Peninsula, West Gippsland, Bacchus Marsh, and the North-Eastern area.

Almost all the canning fruit is grown in the Goulburn Valley-Murray Valley irrigation area which also produces large quantities of dessert pears and Granny Smith apples. Dessert apples and stone fruit are the main crops in the southern areas, while early stone fruit is grown in the Northern Mallee around Swan Hill. The main concentration of citrus fruit production is in the Northern Mallee division with additional groves in the north-east. Lemons are also produced in the Eastern Metropolitan area.

VICTORIA—NUMBER OF ORCHARD FRUIT TREES  
(EXCLUDING CITRUS) BY STATISTICAL DIVISION AT 31 MARCH 1976

Statistical division	Pears	Apples	Peaches	Apricots	Cherries	Plums	Olives	Nectarines	Other
Melbourne	39,356	512,976	74,121	6,983	118,309	31,277	n.p.	14,648	2,755
Barwon	730	5,740	1,270	1,078	n.p.	315	..	94	100
South Western	755	19,230	n.p.	n.p.	n.p.	n.p.	..	n.p.	n.p.
Central Highlands	2,517	44,005	4,193	1,519	1,216	420	n.p.	3,018	33
Wimmera	1,781	2,863	4,543	1,440	..	452	47,137	60	738
Northern Mallee	555	9,263	9,992	65,180	610	50,090	43,391	20,285	10,388
Loddon-Campaspe	27,257	89,482	4,052	274	2,770	1,648	..	n.p.	336
Goulburn	1,129,737	261,275	712,816	145,307	7,775	30,651	984	6,115	8,340
North Eastern	992	61,465	2,090	n.p.	9,746	280	1,680	278	70
East Gippsland	n.p.	6,144	n.p.	n.p.	..	n.p.	..	..	..
Central Gippsland	n.p.	21,450	n.p.	..	n.p.	..	..	n.p.	..
East Central	8,242	133,050	7,445	n.p.	3,774	3,903	n.p.	3,288	127
Total	1,212,103	1,166,943	821,795	222,536	144,793	119,093	93,706	47,839	22,895

**VICTORIA—NUMBER OF CITRUS TREES BY STATISTICAL  
DIVISION AT 31 MARCH 1976**

Statistical division	Oranges	Lemons and limes	Grapefruit	Mandarins
Melbourne	1,868	30,760	49	n.p.
Barwon	n.p.	220	..	..
South Western	..	..	..	..
Central Highlands	..	546	n.p.	..
Wimmera	n.p.	n.p.	n.p.	n.p.
Northern Mallee	587,214	65,574	63,584	55,425
Loddon-Campaspe	..	132	..	..
Goulburn	59,687	19,909	6,119	1,636
North Eastern	18,842	7,104	175	n.p.
East Gippsland	..	185	n.p.	..
Central Gippsland	..	n.p.	..	..
East Central	..	5,974	..	..
<b>Total</b>	<b>669,042</b>	<b>131,600</b>	<b>70,262</b>	<b>57,061</b>

(2) *Size of production.* Since the early 1950s many of the old lower producing or marginal orchards have been pulled out, and new orchards with a small number of higher yielding and more popular varieties of fruit trees have been planted on more suitable soils. These factors, as well as greatly improved technology, have increased production potential. During the 1950s and 1960s there were only slight changes in the area of most types of fruit trees, yet production showed an increasing trend, particularly with canning fruits and dessert pears; here the Victorian production greatly exceeded local demand and increasing amounts were exported. This situation changed during the early 1970s. Following the wet winter in 1973, about 300,000 canning peach trees died, causing a significant drop in production. At about the same time, residential and industrial developments in the eastern metropolitan and Mornington Peninsula areas greatly reduced the area planted to apples. These changes coincided with the deterioration of overseas market prospects for Victorian fruit and many growers are now forced to limit production or leave the industry. In the citrus industry, the same economic pressures have not operated as keenly as in other fruit industries because of an eight-fold increase in the demand for orange juice on the local market over the last twenty years, and recent restrictions on the importation of low-cost citrus juice from overseas.

**VICTORIA—TREE FRUIT PRODUCTION  
(bushels)**

Type of fruit	Year ended 31 March				
	1972	1973	1974	1975	1976
Pears	7,145,265	7,211,184	6,207,635	5,867,060	4,835,401
Apples	3,628,886	5,081,703	3,220,272	4,252,863	2,709,368
Peaches	2,924,656	3,258,556	1,682,768	1,883,419	1,568,681
Apricots	618,389	589,567	427,560	411,057	349,012
Cherries	189,150	199,318	169,631	160,930	144,195
Plums	142,488	160,859	104,925	114,674	136,257
Olives	37,589	40,296	43,669	44,087	32,039
Nectarines	42,618	61,198	55,486	36,158	53,688
Prunes	15,149	13,251	10,150	10,154	6,359
Quinces	13,474	11,008	10,230	7,531	6,233
Figs	2,599	2,058	702	1,265	817
Oranges—					
Valencias	980,518	1,290,147	970,592	1,173,649	1,132,173
Navels	679,874	727,507	611,239	670,296	669,282
Other	17,094	20,680	27,273	26,611	17,019
Lemons and limes	229,415	265,119	248,839	260,265	246,441
Grapefruit	149,831	152,588	146,644	152,878	160,078
Mandarins	118,415	119,887	116,186	126,860	110,580

(3) *Marketing.* Most of the fruit grown in Victoria for the fresh fruit market is sold locally in Melbourne, as well as in Sydney and Brisbane. While in Melbourne up to half of the total crop sold as fresh fruit may be sold direct to supermarkets or at the orchard gate, the price established at the Melbourne Wholesale Fruit and Vegetable Market still provides the basis for all Victorian sales.

The Fruit and Vegetable Act and Regulations outline standards of produce and the size and marking of containers. Produce presented in accordance with this Act and within the provisions of the Health Act may be sold in Victoria. There are also restrictions on the introduction of fruit and certain vegetables from interstate to prevent the spread of pests and diseases and, in particular, fruit fly, into the main fruit growing areas of the State.

The development of cool storage techniques towards the end of the last century made possible the exporting of dessert apples and pears from Australia to Britain, during the off-season in the northern hemisphere. Since then, cool storage methods have improved constantly and with the general acceptance of controlled atmosphere storage by Victorian apple growers during the late 1960s, apples and pears can now be sold right through the year in Victoria.

While efficient cool storage techniques have extended the local market, they have also had an adverse effect on the northern hemisphere export market where the availability of locally grown fruit from cool stores has eroded the seasonal advantage of fruit from the southern hemisphere. This has been one of several factors causing the decline in the prospects of Victorian fruit on traditional markets. Other important factors have been the phasing out of preferential treatment for our produce following Britain's entry into the E.E.C., disadvantages because of changes in the currency exchange rate, and greatly increased labour and freight charges in Australia. Alternative market outlets for Victorian pome fruit are being developed in the U.S.A., South East Asia, and the Middle East.

In order to help the apple and pear industry to overcome marketing problems, the Commonwealth Government established the Apple and Pear Corporation in 1974. The Corporation has taken over the export control role of the former Apple and Pear Board and also has powers to trade in its own right and to promote the use of both fresh and processed apples and pears.

The establishment of the Citrus Marketing Board in Victoria in 1973 has enabled all citrus fruits to be marketed in an orderly manner. Sales of citrus fruit on export markets (mainly to New Zealand) have not been very significant and most of the crop is sold on the domestic market, either as fresh fruit or juice.

(4) *Financial assistance.* In 1971, the Commonwealth Government set up an Apple and Pear Stabilization Scheme to help pome fruit growers by lessening the effect of price fluctuations for different varieties on overseas markets. In 1972, the Commonwealth Government introduced the Fruit Growing Reconstruction Scheme to help growers who wanted to reconstruct or reduce their orchard area, or to leave the industry.

In recent years citrus processors have been importing quantities of juice concentrate to overcome periods when the demand exceeds local availability of fresh fruit. The price of the imported juice was significantly lower than the local product, and in order to prevent excessive imports the Government has imposed a duty on citrus juice imported in excess of a certain maximum volume.

#### *Small fruit*

(1) *Distribution.* Climatic requirements have restricted the commercial production of strawberries, and cane and bramble fruits in particular, to the cooler southern regions of Victoria, and most of the fruit is grown in the hills of the Eastern Metropolitan and Mornington Peninsula areas which are relatively close

to the Melbourne market. During the last few years, fruit growers in other parts of the State interested in diversification have considered strawberry production for local demand. With cane and bramble berries, the development of mechanised harvesting requires production on flat sites, and several plantations have now been established in river valleys north of the Dividing Range.

(2) *Size of production.* In the 1950s, practically all strawberry planting material available in Victoria was heavily infected with virus diseases and, as a result, the industry almost ceased. The successful Runner Certification Scheme conducted by the Department of Agriculture revitalised the industry between 1960 and 1970 and total production increased tenfold. More recently there has been increasing demand for cane and bramble berries from the processors. As the use of mechanical harvesters replaces expensive hand picking, there will be a potential for the development of a viable cane and bramble berry industry in the State.

VICTORIA—SMALL FRUIT PRODUCTION  
(kilograms)

Type of fruit	Year ended 31 March—				
	1972	1973	1974	1975	1976
Strawberries	1,400,924	1,351,925	1,333,615	1,138,339	910,069
Youngberries	248,626	261,881	222,448	202,072	125,762
Raspberries	152,559	136,013	160,106	114,385	91,167
Gooseberries	36,222	48,163	26,816	14,494	13,669
Loganberries	12,599	11,259	9,425	5,417	2,189
Other berries	35,308	23,520	14,671	13,494	17,696
Passionfruit	34,993	16,224	16,100	25,169	11,968

(3) *Marketing.* Berry fruits are mainly sold on the fresh fruit market or sent to processors. Recently, several growers have introduced the "pick your own" system of sales where the general public is invited to pick the fruit for themselves. This method greatly reduces harvesting and marketing costs, and growers with land on routes near holiday resorts, in particular, achieve a good public response and increased net returns.

Increased use of berry fruits in health foods (yoghurt) and cakes and tarts, will produce a larger outlet for these fruits in the future.

#### Nuts

(1) *Distribution.* In Victoria a wide range of nuts can be grown such as almonds, walnuts, chestnuts, hazelnuts, macadamia nuts, pecans, and others. In the past, only a few of these trees have been grown in commercial plantings. In most cases they have been planted as windbreaks around orchards and vineyards (almonds) or in groups in the farm orchard.

Almonds were mainly planted in the northern areas; walnuts and chestnuts in situations with deep soil in the north-east, the Dandenongs, and Gippsland; and hazelnuts on shallower soils in the hills.

Since the early 1970s, many orchardists and farmers who wanted to diversify, have shown interest in planting nuts. Although it has been difficult to obtain young trees with proven capacity, several new plantations have been established in suitable localities. In the Northern Mallee Division, two large almond groves of about 150 to 300 hectares have been established. These groves are just starting to come into production.

(2) *Size of production.* The production of almonds decreased from 50,000 kilograms in 1960–61 to 13,500 kilograms in 1975–76. Once the newly established almond groves start bearing, almond production will increase again. There has not been much change in the quantity of other nuts produced. Because of the long establishment period for most of them, recent plantings have had little effect on production at this stage.

**VICTORIA—NUTS PRODUCTION**  
(kilograms)

Type of fruit	Year ended 31 March—				
	1972	1973	1974	1975	1976
Walnuts	71,538	46,435	72,898	70,800	66,345
Chestnuts	19,605	14,053	17,015	13,234	20,028
Almonds	15,230	3,661	3,734	15,475	13,548
Filberts	528	662	355	73	586

(3) *Marketing.* Almonds and other nuts are keenly sought after by wholesalers who pre-pack the shelled or salted product for retail sale, and by confectioners who use nuts as ingredients for their products. To satisfy local demand, almonds and other nuts are being imported regularly. Thus there is an opportunity to increase local production as long as the price of local nuts can be kept at or below the level of the imported product.

*Grapes*

(1) *Distribution.* In Victoria most vine grapes are grown under irrigation in the Northern Mallee Division, and in the Goulburn Valley and Murray Valley areas. Wine grape varieties are also being grown in the traditional non-irrigated areas in the north-east (Rutherglen) and in the west (Great Western) of the State. With the increasing interest in wine grapes over recent years, many vineyards of varying sizes have been established in other suitable areas throughout the State. In order to cope with increased areas more efficiently, the use of mechanised equipment has become the standard method of harvesting in many vineyards.

(2) *Wine.* During the 1960s and 1970s, the demand for grapes for winemaking increased quite significantly, and as a result many new areas were planted both by established vine growers and by many others without previous experience. Further, to satisfy winery demand, large quantities of sultanas and grapes of other varieties suitable for drying and winemaking have been diverted to wineries. Between 1960 and 1975, the intake of grapes by wineries has increased from 11,000 tonnes to 54,000 tonnes.

Until recently, wineries were able to absorb the greatly increased volume of grapes produced in Victoria, New South Wales, and South Australia. It was only during the 1977 harvest that there were signs of over-production in red varieties. Until now there has been no need to consider the markets outside Australia; however, there is a potential for exporting Australian wines, and this may have to be exploited in the future.

(3) *Dried fruits.* The production of sultanas and other drying varieties has remained fairly steady at around 45,000–60,000 tonnes (dry weight). Only about one quarter of the Victorian crop is marketed locally and the rest has to be exported. Thus growers' returns depend largely on prices established at world markets according to supply and demand. Recent massive increases in production of dried vine fruit, especially in Greece and Turkey, have increased the world supply markedly. This fact and the other factors listed above with reference to the export of fresh and canned tree fruits have had a detrimental effect on the export market. Currently the diversion of sultanas to wineries provides a useful alternative outlet, but, in the long run, restriction of the production of drying varieties may be necessary.

(4) *Table grapes.* There has been a gradual increase in table grape production. With increasing demand for table grapes on the main Melbourne and Sydney markets between 1960 and 1975, production has increased from 6,000 tonnes to 9,000 tonnes. Since the 1960s several attempts have also been made to export table grapes to Singapore and Hong Kong. Improved handling and storing techniques will allow greater quantities of table grapes to be sent to local and export markets.

### VICTORIA—VITICULTURE : NUMBER OF GROWERS, AREA, AND PRODUCTION

Season	Number of growers	Area		Production for		
		Bearing	Non-bearing	Wine making	Drying (a)	Table and other use
		hectares	hectares	tonnes	tonnes	tonnes
1971-72	2,463	18,988	1,804	36,738	332,102	12,016
1972-73	2,485	20,036	1,582	33,192	185,021	9,592
1973-74	2,405	20,000	1,597	44,425	156,246	5,725
1974-75	2,338	20,541	1,807	53,021	220,560	8,682
1975-76	2,246	19,625	1,652	60,869	218,528	8,199

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

#### Further reference, 1977

#### Vegetables

Victoria is the leading State for vegetable production in Australia, closely followed by Queensland and New South Wales. The principal crops grown in Victoria are potatoes, tomatoes, carrots, cauliflowers, cabbages, peas, and onions.

### VICTORIA—VEGETABLES FOR HUMAN CONSUMPTION

Main type	Area sown		Production	
	1974-75 (a)	1975-76 (a)	1974-75 (a)	1975-76 (a)
	hectares	hectares	tonnes	tonnes
Potatoes	13,010	10,940	282,547	244,467
Onions	685	754	17,547	15,011
Carrots	965	911	34,067	25,989
Parsnips	171	179	4,398	4,698
Beetroot	46	57	1,021	1,135
Tomatoes	2,384	2,406	66,394	66,490
French beans	1,502	1,352	7,392	8,294
Green peas—				
Sold in pod	220	346	608	525
Processing	5,544	4,813	(b) 10,063	(b) 6,687
Cabbage and brussel sprouts	984	943	27,965	25,037
Cauliflowers	858	959	30,949	28,835
Lettuce	617	796	9,868	14,852
Pumpkins	910	874	11,274	10,928

(a) See footnote to table on page 351.

(b) Shelled weight.

#### Tobacco

The Victorian tobacco crop usually accounts for more than one third of the total Australian production. While the crop is predominantly of the flue-cured or Virginia type, a significant and increasing area of burley, a light air-cured tobacco, has been grown in Victoria in recent years. Suitable growing conditions are found in the north-east Victorian river valleys, and the industry is concentrated along the Ovens, Kiewa, and King rivers and their tributaries, with small outlying areas in northern Victoria.

### VICTORIA—TOBACCO PRODUCTION

Season	Area	Production	Average yield per hectare
	hectares	tonnes	tonnes
		(dry)	(dry)
1971-72	3,844	5,765	1.50
1972-73	4,068	5,769	1.42
1973-74	3,940	5,634	1.43
1974-75	3,926	6,086	1.55
1975-76	3,755	5,683	1.51



*Hops*

Because of their good quality and the acceptability of Victorian hops on world markets, the area given over to hops in the State has increased in recent years. Hops require a good rainfall, evenly distributed throughout the growing season, deep well-drained soils, and protection from wind. In Victoria, the industry is confined to alluvial soils in the valleys of the Ovens and King rivers, where the availability of liberal supplies of good quality irrigation water is essential to supplement the natural summer rainfall.

## VICTORIA—HOPS PRODUCTION

Season	Area	Production	Average yield per hectare
	hectares	tonnes	tonnes
1971-72	395	683	1.73
1972-73	453	662	1.46
1973-74	508	915	1.80
1974-75	478	831	1.74
1975-76	469	746	1.59

*Plant nurseries*

In Victoria, in 1974-75, the total area of nurseries was about 950 hectares, including about 340 hectares of glass, plastic film, and bushhouses; the total value of sales of nursery products exceeded \$16.5m.

A census of commercial Victorian nursery establishments covering the 1974-75 season resulted in the following information :

## VICTORIA—NURSERIES (a), 1974-75 (b)

Item	Amount
Number of nurseries	373
Sales of nursery products (\$'000)—	
Seeds and bulbs	1,458
Seedlings	2,849
Cut flowers (including orchids)	3,758
Cultivated turf	167
Fruit trees and vines	642
Rose bushes	937
Other shrubs and trees	6,792
Total nursery sales	16,603

(a) For the purpose of the census, a nursery was defined as a location commercially engaged in growing or raising nursery products from seeds, bulbs, cuttings, etc., or significantly "growing-on" any of these items.  
(b) Year ended 30 June.

Further reference, 1977

**Livestock and livestock products***Introduction*

The first significant development in Victoria, or as it was then known, the Port Phillip District, was the pastoral industry. Millions of hectares of lightly timbered land lay before the newcomers, and the quickest way to wealth was evidently by the division of the land into runs and the depasturing of sheep and cattle. Settlers and stock came at first from Tasmania and eventually from New South Wales.

According to early statistical records there were 26,000 sheep, 100 cattle, and 57 horses in the District on 25 May 1836. On 1 January 1841, as a result of five years of livestock importation and breeding, there were 782,283 sheep, 50,837 cattle, and 2,372 horses. By 1 January 1851 the livestock population had increased to 6,032,782 sheep, 378,806 cattle, 21,219 horses, and 9,260 pigs.

The following table shows the numbers of livestock in Victoria at decennial intervals from 1861 to 1971, and the numbers of livestock on rural holdings for each of the five years 1972 to 1976. As from 1957, no allowance has been made for the small number of livestock not on rural holdings.

VICTORIA—SELECTED LIVESTOCK : NUMBERS (a)  
(‘000)

Year	Cattle (b)		Sheep	Pigs
	Dairy	Beef		
1861 at 31 March	..	722	..	5,781
1871 at 31 March	..	721	..	10,762
1881 at 31 March	..	1,286	..	10,360
1891 at 31 March	..	1,783	..	12,693
1901 at 31 March	..	1,602	..	10,842
1911 at 1 March	..	1,548	..	12,883
1921 at 1 March	..	1,575	..	12,171
1931 at 1 March	..	1,430	..	16,478
1941 at 1 March	..	1,922	..	20,412
1951 at 31 March	1,489	..	727	20,012
1961 at 31 March	1,717	..	1,147	26,620
1971 at 31 March	1,974	..	3,086	33,761
1972 at 31 March	1,927	..	3,508	29,496
1973 at 31 March	1,957	..	3,488	24,105
1974 at 31 March	1,933	..	3,906	35,787
1975 at 31 March	1,939	..	4,235	26,411
1976 at 31 March	1,871	..	3,996	25,395

(a) A table showing livestock numbers for each year from 1837 to 1971 is published in the *Victorian Year Book* 1973, pages 1090-1.

(b) Separate figures for beef and dairy cattle are not available for the years before 1943.

The following table shows details of the stock slaughtered in Victoria during each of the five years 1971-72 to 1975-76 :

VICTORIA—LIVESTOCK SLAUGHTERED  
(‘000)

Particulars	Year ended 30 June				
	1972	1973	1974	1975	1976
Sheep	11,954	7,856	3,134	4,147	5,677
Lambs	8,129	6,673	5,258	5,685	5,696
Cattle	1,516	1,895	1,696	1,814	2,253
Calves	558	665	564	684	1,044
Pigs	1,051	1,210	1,081	969	882

### Sheep

#### Historical development

Sheep were introduced by Victoria's first permanent European settlers, who came seeking new grazing lands from which to exploit booming markets for fine wool in the 1830s and 1840s. Edward Henty brought Saxon merinos from Tasmania when establishing the Portland settlement in November 1834, and a few months later William Furlonge introduced similar sheep to the Port Phillip area. Others quickly followed, and flocks were walked overland from New South Wales, or shipped from Tasmania, soon spreading into the best grazing lands. By late 1836, flock numbers had reached some 40,000 ; by 1844, 1.6 million ; and by 1851, 6 million. Then, from 1852 to 1856, sheep numbers fell 30 per cent during the turmoil of the gold rush era.

Since then, numbers have increased considerably, with occasional periods of dramatic falls. Major falls in numbers have been associated with the long depression of the 1890s, the droughts of 1902, 1914, 1944-45, and 1967-68, and, to a lesser extent, the devastating fires of 1939 and 1944. The most recent of this series has been the unsteady downturn since 1971, as numbers fell from their

record peak of 33.8 million, rallied after the brief commodity boom of 1973, only to fall again as the drought of 1976 and the devastating Western District fires of February 1977 took their toll.

At the opposite extreme, there have been several periods of rapid expansion. These were associated with the development of fencing, better stock control, and secure land tenure since the 1860s; pasture development ("sub and super") in the 1920s; and the post-war era of pasture development, grazing intensification, and "soldier settlement" of the 1950s and 1960s.

#### *Distribution*

Sheep are widely distributed throughout Victorian grazing areas, with the heaviest concentration in the South Western, Wimmera, and Central Highlands Divisions.

#### VICTORIA—SHEEP AND LAMBS IN EACH STATISTICAL DIVISION AT 31 MARCH 1976 (’000)

Statistical division	Rams	Ewes	Wethers	Lambs	Total
Melbourne	4	125	95	51	275
Barwon	20	760	320	311	1,411
South Western	87	3,378	1,662	1,572	6,699
Central Highlands	40	1,796	1,380	781	3,997
Wimmera	48	2,070	1,211	855	4,184
Northern Mallee	16	760	176	290	1,242
Loddon-Campaspe	36	1,576	962	639	3,213
Goulburn	32	1,322	569	459	2,382
North Eastern	8	308	118	115	549
East Gippsland	8	387	192	184	771
Central Gippsland	9	339	97	159	604
East Central	1	46	2	18	67
Total	309	12,867	6,784	5,434	25,394

In 1976, these sheep were run on 23,875 properties, with flocks ranging in size from less than 100 to more than 20,000 head. Just over half of the flocks contained less than 600 sheep, but these accounted for only 11 per cent of the State's sheep. On the other hand, just over half of the sheep were run in the 14 per cent of flocks having more than 2,000 sheep.

#### *Main sheep breeds*

Victorian sheep can be divided broadly into "wool" and "meat" breeds. The distinction is necessarily an arbitrary one, since wool is an important source of income from ewes kept for prime lamb production, while mutton is produced mainly from surplus or aged sheep from woolgrowing flocks.

The Merino is the most numerous breed in Victoria (48 per cent in 1974), although less dominant than in Australia as a whole (73 per cent). Other wool breeds include the part-merino breeds: Corriedale (10 per cent), and Polwarth (3 per cent). Comeback sheep (crossbreds, but predominantly Merino) are another important group (7 per cent) and some breeders are endeavouring to stabilise or "fix" this breed type. Other crossbred sheep make up 25 per cent of the total numbers, reflecting the importance of the prime lamb industry.

British (and British-derived) meat breeds are used principally as sires in crossbreeding programmes. In 1974, they accounted for only 6 per cent of total sheep numbers but 43 per cent of total ram numbers.

#### **Further reference, 1977**

##### *Lambing*

Lambing performance of Victorian sheep varies considerably from year to year, according to seasonal and climatic changes, but with little, if any, longer term change.

In 1970-71, record matings (14.8 million ewes) combined with a year of high lambing performance (86 per cent) to produce a record 12.7 million lambs. Since then, both matings and lambing percentages have been lower. In the year ended 31 March 1976, 10.4 million ewes were mated to produce 8.4 million lambs (81 per cent).

## VICTORIA—LAMBING

Season	Ewes mated	Lambs marked	Proportion of lambs marked to ewes mated
	'000	'000	per cent
1971-72	13,774	11,583	84
1972-73	11,381	9,452	83
1973-74	9,885	8,182	83
1974-75	10,622	8,823	83
1975-76	10,376	8,359	81

*Wool production*

In 1975-76, Victorian flocks produced 138 million kilograms of greasy wool—18 per cent of Australian and 5.4 per cent of world production.

A production peak of 201 million kilograms was reached in 1970-71 (7.3 per cent of world production), while the value of the wool clip peaked at \$354m in the short-lived boom of 1972-73. Since 1970-71, wool production has declined in line with the fall in sheep numbers outlined earlier.

However, at the beginning of 1977 there appeared to be improved prospects for the wool industry, once the ravages of the drought of 1976 and fires of 20 February 1977 were made good. Market demand for wool had improved; the floor price and flexible reserve price controls introduced by the Australian Wool Corporation had markedly stabilised the auction market; and marketing problems had reduced the attractiveness of beef as an alternative enterprise.

**Australian Wool Corporation, 1977**

## VICTORIA—SHEEP SHORN AND WOOL CLIPPED

Season	Shorn		Wool clipped (including crutchings)		Average	
	Sheep	Lambs	Sheep	Lambs	Per sheep	Per lamb
	'000	'000	'000 kg	'000 kg	kg	kg
1971-72	31,316	7,502	141,434	10,247	4.52	1.37
1972-73	27,455	6,390	121,220	7,855	4.42	1.23
1973-74	24,564	5,982	120,957	8,256	4.92	1.38
1974-75	26,385	6,591	128,614	9,887	4.87	1.50
1975-76	23,271	5,839	102,798	8,020	4.42	1.37

## VICTORIA—SHEEP AND LAMBS SHORN, SEASON 1975-76

Statistical division	Shorn		Wool clipped (including crutchings)		Average	
	Sheep	Lambs	Sheep	Lambs	Per sheep	Per lamb
	'000	'000	'000 kg	'000 kg	kg	kg
Melbourne	225	56	962	75	4.28	1.34
Barwon	1,315	335	5,293	443	4.03	1.32
South Western	6,121	1,660	26,768	2,349	4.37	1.42
Central Highlands	3,764	686	15,756	931	4.19	1.36
Wimmera	3,941	976	18,342	1,337	4.65	1.37
Northern Mallee	1,040	326	4,960	489	4.77	1.50
Loddon Campaspe	2,951	719	13,902	944	4.71	1.31
Goulburn	2,191	540	9,345	713	4.27	1.32
Northern Eastern	499	129	2,085	172	4.18	1.33
East Gippsland	684	167	2,979	213	4.36	1.28
Central Gippsland	487	223	2,180	324	4.48	1.45
East Central	53	21	227	31	4.28	1.48
Total	23,271	5,838	102,799	8,021	4.42	1.37

## VICTORIA—TOTAL WOOL PRODUCTION

Season	Clip	Stripped from and exported on skins, etc. (greasy)	Total quantity (greasy)
	'000 kg	'000 kg	'000 kg
1971-72	151,633	45,831	197,464
1972-73	129,987	43,248	173,235
1973-74	129,212	26,143	155,355
1974-75	138,501	27,043	165,544
1975-76	110,818	27,152	137,970

*Mutton and lamb production*

Victoria is the main mutton producing State, and shares the lead in lamb production with New South Wales. However, Victorian figures include livestock brought from other States for slaughter, especially from southern New South Wales.

Mutton is largely a by-product of the wool industry, so production patterns are governed by trends in that industry. Peak production (247 thousand tonnes), was reached in 1971-72 as woolgrowing flocks were being reduced. In 1975-76, only 108 thousand tonnes were produced, of which 72 per cent was exported, mainly for manufacturing purposes. Markets for table mutton and for live sheep for slaughter are being developed in the Middle East.

Prime lamb producers are found in most parts of the State, although early to mid-season producers are mainly distributed in a broad belt across northern Victoria, including some irrigated areas in the Murray and Goulburn valleys. Mid to late season producers are concentrated mainly in the South Western, Central Highlands, Central Gippsland and parts of the North Eastern Divisions of the State. In 1975-76, 97,000 tonnes of lamb were produced in Victoria as against 133,000 tonnes in 1971-72.

Only 10 per cent of lamb is normally exported. However, in 1976-77 there were encouraging export markets being developed in the Middle East, especially in Iran.

*Beef cattle*

Cattle were introduced into southern Australia by the early settlers. These first cattle were poor stock from Africa intended to meet the needs of draught, milk and meat, and were quickly replaced by herds of beef cattle imported from Britain.

In its early years, the beef cattle industry faced many natural hazards including drought, disease, and pests. More recently, changing economic conditions and patterns of land-use have been most important in determining the size and distribution of the beef cattle population. For example, refrigeration, pasture improvement, the relative prices received for other primary products, and the export markets for beef, have all been important factors.

In the early 1970s, high prices for beef meat, and marketing difficulties in sheep, dairy, and wheat industries, encouraged farmers to build up breeding herds. As a result, beef cattle numbers in Victoria rose from 1.5 million to 3.5 million from 1968 to 1972. There was no increase in the number of beef cattle from 1972 to 1973, reflecting the drought conditions prevailing in many areas during the summer of 1972-73; however, a further increase to 4.0 million occurred in 1974 because producers, who were retaining animals for slaughter at older ages when high prices were being paid for bullocks suitable for export, withheld these animals from sale when prices dropped. With the continuation of low prices during 1975, there was a further increase in beef cattle numbers to 4.2 million; however, the dry conditions during early 1976 resulted in a drop in numbers to 4.0 million head in 1976.

The Victorian environment is very favourable for beef production with cattle able to graze pasture throughout the year. The following table shows the numbers and types of beef cattle in each Statistical Division at 31 March 1976:

VICTORIA—DISTRIBUTION OF BEEF CATTLE AT 31 MARCH 1976  
(’000)

Statistical division	Bulls for service		Cows and heifers	Calves under 1 year	Other	Total
	1 year and over	Under 1 year				
Melbourne	5	2	101	50	34	192
Barwon	4	1	104	50	34	193
South Western	20	4	456	209	139	828
Central Highlands	5	1	128	71	43	248
Wimmera	4	1	96	64	24	189
Northern Mallee	3	1	66	46	22	138
Loddon-Campaspe	7	2	173	107	63	352
Goulburn	12	3	293	168	115	591
North Eastern	8	2	209	114	83	416
East Gippsland	6	1	158	87	44	296
Central Gippsland	10	2	215	117	112	456
East Central	2	1	50	25	20	98
Total	86	21	2,049	1,108	733	3,997

In the early 1970s beef production increased rapidly and, in 1972–73, beef and veal production peaked at 416,000 tonnes. Production declined in the following year but rose to 400,000 tonnes in 1974–75. In 1974–75 about 40 per cent of Victorian beef production was exported, and the main markets were U.S.A., Canada, and Japan, with a number of new markets being developed in Asia and the Middle East.

The low prices for beef on the domestic market saw the estimated apparent consumption of beef and veal increase from about 40 kg per head per annum during the early 1970s to 63 kg per head per annum in 1974–75.

Attention is drawn to the historical table of livestock numbers on page 381, and the table on livestock slaughterings on page 381.

#### Australian Meat Board, 1977

#### *Dairy cattle*

##### *Historical development*

Before the 1870s, dairy production was largely a small sideline on farms in Victoria. It developed as a sole farm activity after the passing of the Land Act of 1862, which allowed selectors to take up holdings of up to 320 acres.

The introduction of the cream separator in 1886 led to the rapid establishment of small butter factories, most of which were farmers' co-operatives. Farmers brought their milk to these factories, or to associated "creameries", or separating stations. Later, when separators became smaller and cheaper, they were installed on the farms.

##### *Distribution*

Climate induced the industry to concentrate in the two areas most favoured by a good spread of rainfall, namely, the East Central and Central Gippsland, and South Western Divisions.

The Government opened up further dairying areas by establishing irrigated settlements on the northern plains, by sub-dividing former grazing properties into dairy farms, and by developing former problem country in parts of Gippsland and south-west Victoria. A specialist type of dairy farming developed to supply milk to Melbourne, Ballarat, Bendigo, and Geelong.

**VICTORIA—DISTRIBUTION OF DAIRY CATTLE AT 31 MARCH 1976**  
(<sup>'000</sup>)

Statistical division	Bulls for service		Cows and heifers for milk and cream			House cows and heifers	Total
	1 year and over	Under 1 year	Cows in milk and dry	Heifers			
				1 year and over	Under 1 year		
Melbourne	1	..	47	13	9	1	71
Barwon	2	1	81	20	16	1	121
South Western	6	2	239	54	45	3	349
Central Highlands	1	..	16	5	4	2	28
Wimmera	..	..	6	2	2	3	13
Northern Mallee	1	..	30	7	7	1	46
Loddon-Campaspe	2	1	100	25	22	2	152
Goulburn	6	2	246	61	53	3	371
North Eastern	1	1	56	14	13	2	87
East Gippsland	1	..	64	16	14	1	96
Central Gippsland	8	2	322	71	61	1	465
East Central	1	..	51	11	9	..	72
Total	30	9	1,258	299	255	20	1,871

The size of the dairying industry in any area is shown by the number of cows milked. In general, the trend has been to milk more cows, but on fewer farms. In 1975-76, a total of about 14,000 Victorian dairy farmers milked 1.25 million cows, with the average number of milking cows per farm being 90.

*Recent developments*

Capital values of dairy farms have risen from the \$640 paid by an original settler (over 20 years) for a 320 acre selection, to some \$100,000 for the modern fully equipped and stocked dairy farm. Where some farmers in the early 1930s eked out a living by milking 10 to 15 cows, their successors who have invested heavily, have to milk 90 or more to meet all their costs and gain a livelihood.

This increase in capital investment is largely a reflection of advances in dairying farming technology. These have been marked by progress in the mechanisation of milking, the introduction of refrigeration and tanker collection of milk from farms, and the improvement of systems of cleaning and sterilising equipment and of disposing of dairy shed wastes. Such advances have contributed towards expansion of dairy enterprises which one, two, or three men can operate. Improvements in pasture production and grazing management, and increased mechanisation in growing and harvesting fodder have made it possible to carry more stock on farms.

Contract labour is used by dairy farmers mainly to meet peak labour demands such as hay making. Usually the contractor owns most of the equipment.

**VICTORIA—MILK PRODUCTION AND UTILISATION**  
(<sup>'000</sup> litres)

Purpose for which used	Year ended 30 June—				
	1972	1973	1974	1975	1976
Butter	2,710,098	2,652,225	2,652,686	2,435,763	2,186,791
Cheese	351,664	447,588	433,675	420,693	489,095
Processed milk products	428,897	358,993	342,568	415,585	410,504
Other purposes	482,462	485,793	487,599	472,591	431,373
Total milk produced	3,973,121	3,944,599	3,916,528	3,744,632	3,517,764

*Marketing*

The marketing function for manufactured products has been divided between the Australian Dairy Corporation and individual companies within the industry, while the Victorian Milk Board has been responsible until recently for marketing liquid milk.

In 1974, the Victorian Government set up a Board to inquire into, and make recommendations, concerning the Victorian dairy industry. The Government agreed to the recommendation that a Dairy Industry Authority be established. The Authority commenced operations on 1 July 1977. It replaced the Milk Board. The objective is to streamline decision-making within the industry and allow greater emphasis to be placed on rationalising the industry and on marketing dairy products, including liquid milk.

**Further reference, 1977**

*Pigs*

Although Victoria is only a moderate pig producing State, a larger tonnage of pigmeat is slaughtered here than in any other State. Large-scale intensive pig production was pioneered in Victoria and there are now several big, modern, intensive units in the State.

The pig industry was developed largely in conjunction with the dairy industry. Pigs were used to salvage separated milk, buttermilk and whey, the by-products of butter, cheese, and casein manufacture, and those foods provided the greater part of their diet. In the 1950s and 1960s, more milk was used for human food and less was available for pigs. Pig production then became less dependent on milk but more on grain feeding, vegetable proteins, and animal by-products such as meat and bone meal, blood meal, and fish meal. With this change in the major source of food for pigs, the structure of the pig industry changed to fewer but larger pig herds.

The following table shows the numbers and types of pigs, and the number of pig keepers in each Statistical Division at 31 March 1976:

**VICTORIA—PIGS AND PIG KEEPERS AT 31 MARCH 1976**

Statistical division	Boars	Breeding sows	All other	Total pigs	Pig keepers
Melbourne	307	3,940	29,935	34,182	147
Barwon	166	2,070	11,288	13,524	105
South Western	262	2,340	12,418	15,020	280
Central Highlands	220	2,624	21,404	24,248	178
Wimmera	769	5,767	36,065	42,601	766
Northern Mallee	486	3,947	21,368	25,801	415
Loddon-Campaspe	1,105	14,317	89,476	104,898	598
Goulburn	930	10,728	62,587	74,245	466
North Eastern	358	3,614	24,898	28,870	257
East Gippsland	83	1,064	4,330	5,477	102
Central Gippsland	287	3,231	17,506	21,024	206
East Central	45	442	2,457	2,944	29
Total Victoria	5,018	54,084	333,732	392,834	3,549

The historical table on page 381 and the table of livestock slaughterings on page 381 contain further information about the pig industry.

**Further reference, 1977**

*Poultry*

The trend in the Victorian egg industry has been towards large specialised farms, for example, egg producers, hatcheries, and pullet growers, all of which use modern poultry housing, equipment, and labour saving machinery.

The greater proportion of Victoria's estimated 3.5 million adult female fowls are now contained within the commercial egg industry. There are,



however, small household flocks in suburban and country areas. The main areas of commercial production are centred on the outskirts of the Melbourne metropolitan area and in the Bendigo district, with large centres around Ballarat and Geelong, and substantial populations in the Wimmera, Goulburn Valley, and north-east.

Farms consisting of one man or one family usually manage 5,000 to 10,000 layers. There are, however, many larger farms employing labour with up to 30,000 layers, and a few much bigger establishments.

Housing is planned on the intensive principle, with deep litter pens or multiple bird cage units. Most of the new housing is based on the laying cage system. A proportion of layers are kept in fully enclosed, windowless houses in a fully controlled environment. Artificial lighting is used on almost all commercial egg farms to stimulate egg production.

Feeding is based on grains (wheat, oats, and barley) and their by-products (bran and pollard), with meatmeal used as the major protein supplement. A wide range of commercial, ready-mixed poultry rations are available.

Laying stock consists mainly of a specially produced cross between the White Leghorn and Australorp breeds. The average State egg production is estimated at approximately 216 eggs per bird per year. Commercial stock of the local breeding farms and hatcheries is tested for profitability using the Department of Agriculture's Random Sample Laying Test at Burnley.

Chicks are hatched continuously throughout the year, with an emphasis on the June to November period. Hatcheries are large and use modern incubators of from 5,000 to 90,000 egg capacity. Most commercial egg-type chicks are sexed when a day old by machine or hand methods, and the cockerels discarded. The main power source used in the brooding of chicks is electricity, but gas brooders and hot water brooders fired by oil burners are also used.

The marketing of eggs is controlled by the Victorian Egg Board. Flocks with over twenty adult female fowls come within the Board's jurisdiction. Victoria produces a surplus of eggs which is exported through the Australian Egg Board.

Advisory and research services to the egg industry are provided by the Department of Agriculture and by commercial firms concerned with the sale of feed, chickens, drugs, and equipment.

#### VICTORIA—HEN EGGS SET AND CHICKENS HATCHED (’000)

Period ( <i>a</i> )	Hen eggs set ( <i>b</i> )	Chicks hatched ( <i>c</i> ) intended to be raised for—				Total hatched
		Meat production	Egg production	Breeding		
				Pullets	Cockerels	
MEAT STRAINS						
1971-72	35,097	26,951	( <i>d</i> )	n.a.	n.a.	( <i>e</i> ) 26,951
1972-73	36,487	27,746	( <i>d</i> )	n.a.	n.a.	( <i>e</i> ) 27,746
1973-74	41,902	32,089	( <i>d</i> )	n.a.	n.a.	( <i>e</i> ) 32,089
1974-75	34,772	27,306	( <i>d</i> )	n.a.	n.a.	( <i>e</i> ) 27,306
1975-76	40,738	33,215	( <i>d</i> )	n.a.	n.a.	( <i>e</i> ) 33,215
EGG STRAINS ( <i>f</i> )						
1971-72	14,251	431	4,861	153	21	5,466
1972-73	14,354	489	4,874	146	14	5,525
1973-74	17,657	351	6,027	176	28	6,583
1974-75	14,924	315	5,005	196	39	5,555
1975-76	11,480	196	4,012	145	36	4,389

(a) Year ended 30 June.

(b) Includes eggs which failed to hatch.

(c) Excludes chicks destroyed.

(d) Not applicable.

(e) Incomplete.

(f) Egg strain chicks reported as "unsexed" have been allocated half to chicks for meat production and half to chicks for egg production. The number so reported was 99,462 in 1971-72; 81,875 in 1972-73; 79,199 in 1973-74; and 98,054 in 1974-75; and 60,397 in 1975-76.

**Egg marketing, 1974**

*Broilers*

The raising of chicks for meat on a large scale has emerged in Victoria since the mid-1950s. Chickens are most efficient in converting poultry feeds, grain, and protein supplements to meat, and are also multiplied cheaply and rapidly through scientific breeding and modern artificial incubation methods.

It now takes approximately 2.1 kilograms of poultry feed to produce 1 kilogram of poultry meat, and a 2 kilogram chicken is grown in ten weeks. This efficient conversion and rapid growth has been achieved by extensive breeding programmes, by the use of "high energy" poultry feeds, highly supplemented with vitamins, minerals, growth promoters, and disease control drugs, and by the development of enclosed, factory-like broiler houses with controlled temperature, humidity, ventilation, and light all of which are conducive to fast growth. Broiler houses are fully enclosed; each house grows a "crop" of about 20,000 to 50,000 broilers about four to five times a year. A one man or one family farm raises approximately 130,000 to 220,000 birds a year. Growers are usually contracted to supply large broiler organisations which hatch and supply the specially bred meat chickens and receive broilers back for processing and distribution.

The organisation of the broiling industry as a continuous, production-line, factory-type operation has been a major factor in the significant reduction in the price of poultry meat to consumers. Breeders, hatcheries, contract growers, poultry processors, and distributors have all been co-ordinated to ensure efficient and continuous production. Seasonal effects are no longer a consideration and prices do not fluctuate. As a result, poultry meat, once a luxury, is now cheap and a normal part of the diet.

The main broiler production centres are located near the processing works and the main centres of consumption on the Mornington Peninsula, in areas south-east of Melbourne, and in the Geelong area. Most of Victoria's production is consumed locally; very little is exported, but considerable numbers of interstate broilers are imported.

The Broiler Chicken Industry Act requires all commercial broiler growing to be under an agreement or contract approved by the Negotiation Committee of grower and processor representatives set up under the Act. The Committee negotiates and sets growing fees and conditions for the industry.

The following statistics have been compiled from statistical returns submitted by all known Victorian hatchers and all poultry slaughterers slaughtering more than 1,000 birds annually.

**VICTORIA—POULTRY SLAUGHTERED  
FOR HUMAN CONSUMPTION  
(<sup>'000</sup>)**

Period (a)	Chickens (i.e., broilers, fryers, or roasters)	Hens and stags	Ducks and drakes			
1971-72	23,347	2,140	322			
1972-73	23,101	1,919	219			
1973-74	27,256	1,752	124			
1974-75	26,324	2,044	104			
1975-76	29,233	1,646	84			
DRESSED WEIGHT OF POULTRY SLAUGHTERED (b) (c) ('000kg)						
Period (a)	Fresh	Frozen	Fresh	Frozen	Fresh	Frozen
1971-72	19,788	10,337	2,519	967	367	123
1972-73	20,297	8,025	2,519	525	269	58
1973-74	24,661	9,672	2,317	437	185	n.a.
1974-75	25,636	7,504	2,175	1,021	144	n.a.
1975-76	28,362	7,970	1,714	896	123	n.a.

(a) Year ended 30 June.

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

(c) Fresh: sold immediately after slaughter or chilled for sale soon after. Frozen: frozen hard for storage of indefinite duration.

**Further reference, 1977**

*Bees*

The origin of beekeeping in Australia is not precisely known, but it seems that the first European black bees were landed in Sydney in 1822, and four colonies of Italian bees were introduced in 1862. From this beginning, apiculture spread rapidly with the settlement of the continent.

The development of the motor car gave the industry its first big boost into the category of a full time occupation by enabling beekeepers to move their apiaries from place to place, following the flowering of the different honey producing species. Mobile processing plants were developed and the industry became completely migratory.

The greater part of Victoria is used at some time or other for honey production. The River Red Gum areas of the northern rivers and the far west produce a top quality honey. The box-ironbark belt of central Victoria is extensively used, and clover in the irrigation areas, South Gippsland, and the south-west of the State frequently gives a crop of honey. Stringybarks of the north-east foothills and the central and western areas produce a dark strong flavoured honey, while the alpine country of the north-east and Gippsland sometimes yields honey from snow gums and alpine ash. The East Gippsland area has a wide variety of useful honey-producing flora and the Mallee country is becoming increasingly popular with beekeepers, despite some difficulties.

The bulk of Victorian honey is sold to large processors who clarify it by straining or filtration and pack it into consumer containers, or into 200 litre drums for export. Most beekeepers also have a small local trade in their own areas, filling customers' containers.

About half the annual Australian production is exported, chiefly to the United Kingdom. In recent years the United States has become a significant buyer, while smaller quantities are sold to West Germany, the Middle East, and eastern countries including Japan. Export of honey from Australia is controlled by the Australian Honey Board.

**VICTORIA—BEE HIVES, HONEY, AND BEESWAX**

Season ended 31 May	Beekeepers	Hives	Production	
			Honey	Beeswax
	number	number	tonnes	tonnes
1972	1,321	105,709	2,170	24
1973	1,342	104,235	3,769	50
1974	1,160	98,539	3,161	47
1975 (a)	r 468	r 87,972	r 2,788	r 35
1976 (a)	492	91,203	3,476	61

(a) Not comparable with figures for previous years. Information from beekeepers with 40 or more registered hives, instead of 5 or more as previously.

**Further reference, 1977***Goats*

The first goats to reach Victoria, which were mainly milking types, came and spread with the earliest settlers. The Angora goat (mohair producer), which was first introduced into Victoria in 1856, did not establish itself as readily as the dairy goat, and has remained until recently largely a curiosity and hobby enterprise.

The Saanen is the oldest established and most numerous breed of dairy goat in Victoria. Other dairy goat breeds are the Toggenburg, British Alpine, and Anglo-Nubian.

In 1975-76, Victoria had approximately 6,200 of the 42,800 goats in Australia, a very small number compared to the estimated world goat population of 385 million. The dairy goats in Victoria are concentrated in

the northern irrigation areas and around Melbourne, while Angoras are found around Melbourne and scattered throughout the State.

Commercial sized dairy goat herds are milked by machines and managed along similar lines to dairy herds. Pasture, hay and concentrates are the main feeds for dairy goats, whilst, depending on availability, shrubs, herbage and rank growth supplement their diet. The few large Angora herds are run along similar lines to sheep.

Victorian goat's milk production has risen considerably in recent years with approximately 469,000 litres being canned in 1975-76. Mohair production is increasing, but is still small at an estimated Australian level of 20,000 kilograms in 1976. In 1975-76 approximately 370,000 kilograms of feral goat meat was exported from Victoria.

The major processor of goat's milk is situated at Tongala, and cans and sells milk through the National Health Scheme to children who are allergic to cow's milk. Mohair is exported to mills in Bradford, Britain, and high prices in 1976 indicated a strong demand for it.

## SERVICES TO AGRICULTURE

### Introduction

There are many organisations, both government, e.g. the Department of Agriculture, and private, e.g., pesticide contractors, engaged in providing services to the agricultural industries. One possible categorisation of these services is by function, and this section sets out the various regulatory, research, educational, marketing and financial services to agriculture together with the bodies responsible for providing these services. The types of services listed here do not provide an exhaustive list of services to agriculture, and it is proposed to expand on the range of services discussed in future editions of the *Victorian Year Book*.

### Regulatory

As farming is essentially based on the land, it is subject to the various regulations on land-use which apply in Victoria, as well as to regulations on farming activities. A number of government authorities exercise regulatory powers in such fields as planning, water supply, forestry, and environmental protection, while the Department of Agriculture is the major body regulating farming activities.

In this section, more detail is given about the activities of the Department of Crown Lands and Survey in issuing leases and licences for land occupation, the Vermin and Noxious Weeds Destruction Board in controlling vermin and noxious weeds, and the Department of Agriculture's role in regulating farm activities. Further reference to other organisations engaged in the regulation of land utilisation can be found elsewhere in this *Year Book*.

#### *Department of Crown Lands and Survey*

The present legislation dealing with Crown land in Victoria is the successor of some of the earliest legislation enacted for the then infant colony of New South Wales. The legislation, which is mostly contained in the *Land Act* 1958, enables Crown land to be licensed, leased or sold, or to be reserved from occupation or sale for a wide variety of public purposes.

The main types of licences fall broadly into three categories: those which simply entitle a licensee to enter Crown land, usually for a short term and for a particular purpose; those which allow a licensee to occupy Crown land from year to year for a particular purpose; and those of a similar type to the latter, but with the added benefit that a Crown grant in fee simple may eventually issue.

Of the first type of licence, the most usual are those granted for the removal of material, such as gravel, sand, etc., and are issued upon payment of a fee and an amount of royalty per cubic measure of material taken.

The second category of licence covers a very wide range of purposes. Included are: the grazing of stock; the occupation of unused roads and rivers or lake frontages; the production of eucalyptus oil; the operation of bee farms and ranges; the construction of jetties and slipways; the operation of market gardens; provision of car parks; and general industrial purposes. These licences require the payment of annual rentals and are granted subject to conditions appropriate to the purposes for which they are issued, including in some cases, limitation on the area to be licenced or on the number of stock to be grazed, and restrictions as to use or development.

The third form of licence mainly refers to those granted for purposes that require the establishment of improvements, often of a substantial nature. These licences may be for houses, factories, shops, warehouses, or other industrial purposes. They are also subject to a variety of appropriate conditions and call for the payment of annual rental, which is credited over a period of years towards the purchase of the licensed land.

Leases of Crown land are now granted either for terms ranging up to 50 years without the right of purchase, or for generally shorter terms with the right of purchase, upon the payment by instalments of the purchase money and the fulfilment of pre-determined conditions. These may demand residence on or close to the leased land, or the development of the land to a certain stage. The usual form of this latter type is known as an Improvement Purchase Lease.

Leases are granted without the right of purchase for the purposes of grazing stock; for many different sorts of amusement and recreation facilities, such as golf courses, bowling greens, rifle and pistol ranges, and car-racing tracks; for commercial and industrial purposes; for providing tourist accommodation and facilities; and for ski-lodges and ski-tows.

Leases with the right of purchase are granted for the commercial growth of trees, for general farming purposes, for residence in certain limited circumstances, and for industrial purposes outside the metropolitan area.

#### *Vermin and Noxious Weeds Destruction Board*

The operational activities of the Vermin and Noxious Weeds Destruction Board are described in pages 365 to 366 of this *Year Book*. The Board's regulatory powers are contained in the *Vermin and Noxious Weeds Act 1958*, which provides a number of ways for the Board to enforce vermin and weed control throughout the State. Each landholder, whether he be resident on his property or an absentee landholder, is responsible under the Act for keeping his property free from all declared noxious weeds and vermin. He can do this work either by using his own equipment and labour, by private contract, or by utilising the services of the Land Inspector who can enter the property at the land holder's request, do the work and bill the owner.

If the landholder fails to comply with the Act and does no work on vermin and weed control, the Board can authorise the Inspector to forcibly enter that property, do the work, and bill the landholder. Failure to pay can result in a charge being made against the title of the land, which prevents the land being sold until the debt is paid. This provision safeguards farmers on each side of the offending landholder from weeds and vermin entering their properties which may be well maintained.

Under Section 26 of the *Vermin and Noxious Weeds Act 1958*, the Board can provide extended loans against the titles of the land which can be repaid

over a number of years at a low rate of interest. The Board will also hire equipment to landholders who wish to do their own work but have no equipment.

The Board can also arrange contract entry work and will organise group control programmes for farmers, especially where control of rabbits is concerned.

The Board is constantly seeking to assist the rural community in the fight against weeds and vermin, and one of the most recent developments has been the introduction of the weedicide supply scheme. It enables landholders to purchase weedicide for use on noxious weeds only at little more than cost price. The scheme is intended to complement the Board's equipment hire service and to enable landholders to carry out their weed control at a minimum cost.

Other ways in which the Board has helped the landholder in the past have been the introduction of myxomatosis for the control of rabbits; the biological control of skeleton weed; and the recent approval of \$360,000 over the next four years for research into biological control of weeds, which initially will be undertaken in Europe and completed in Australia. This work will be carried out at the Keith Turnbull Research Institute at Frankston which was established by the Lands Department in 1968. It conducts extensive research into weed control, weedicide screening, and vermin control, which is then passed on to the inspectors and the farming community by the extension group from the Institute, and by regionally-based extension and research officers. The Institute also organises in-service training for field staff to allow them to maintain expert and up to date advice to landholders.

To ensure that the requirements and attitudes of the farming community are communicated to the Board, a Central Advisory Committee has been established containing representatives of different farming organisations. These persons are appointed by the Minister of Lands and are able to participate in the formulation of policy on vermin and noxious weed control. District Advisory Committees in each land Inspector's district perform a similar function at a local level. The Board also co-operates with pest control authorities in New South Wales and South Australia so that the control of weeds and vermin which affect all three States can be co-ordinated. The authorities meet formally every two years to discuss current problems and trends.

Modern pest control is becoming increasingly linked to the preservation of the environment and to the adequate management of fauna, flora, and soils, as well as to the more traditional areas of agriculture and forestry. The closest possible liaison, planning, and collaboration between groups and organisations is needed to ensure that natural resources and farmlands are adequately protected against vermin and noxious weeds.

#### *Department of Agriculture*

The Department of Agriculture is responsible for the administration of appropriate legislation within Victoria including the registration and inspection of dairy farms and dairies, and factories producing butter, cheese, and other dairy produce, to ensure proper standards of hygiene and equipment; the registration of manufacturers of margarine and the limitation of the quantity of table margarine which may be made by each manufacturer; the registration and control of farm produce merchants and commission agents; the inspection, packing, and grading of fruit and vegetables; the inspection of orchards and insistence on proper methods for preventing and controlling plant diseases and insect pests, including measures to be taken against outbreaks of fruit fly; the registration of fertilisers, pesticides, stock foods, stock medicines, and sheep branding fluids; the licensing of abattoirs, pet food manufacturers, and meat

transport vehicles; the inspection of meat; the prevention, control, and eradication of stock diseases; the assessment and payment of compensation to owners of cattle, swine, and bees condemned because of infections with prescribed diseases; the elimination of bulls not of a reasonable standard in respect of type, conformation, and breeding; the control and regulation of the artificial breeding of stock; the control of processing of poultry intended for sale; the inspection and testing of seeds for sale to ensure compliance with prescribed standard of purity and germination; the conduct of seed certification schemes; the control of the spraying of agricultural chemicals from aircraft; the control of rain-making operations; and the control of agricultural colleges.

In addition, the Department undertakes on behalf of the Commonwealth Government the inspection of fruit and grain for export, and the inspection and quarantining of imported animals and plants to prevent the introduction of diseases.

### **Research**

Farming consists of a variety of processes which culminate in the production of various agricultural products. Research is undertaken into all phases of farm production ranging from research into the various farm processes, which aims to improve productivity, to research into agricultural products in either their raw or processed form.

A number of organisations, such as government departments, universities, and marketing boards, are involved in agricultural research. For example, the CSIRO undertakes a wide range of process and product research projects in the agricultural field, while the Bureau of Agricultural Economics conducts various economic research studies, and the Australian Bureau of Statistics is prominent in the field of statistical information.

Research work is a very important function of the Department of Agriculture. Fundamental and applied research activities, mainly in conjunction with Victoria's primary industries, are conducted at a number of research institutes and laboratories and on many private properties throughout the State.

The Department of Agriculture's research institutes and stations are:

#### *Animal Research Institute, Werribee*

This Institute, established in 1976, comprises what were previously the State Research Farm (1912) and the S.S. Cameron Laboratories (1960). It is situated at Werribee, 23 km west of Melbourne. Research is done on reproduction, nutrition, growth, breeding, and management of dairy cattle, beef cattle, sheep, goats, pigs, and poultry. Plant breeding, irrigation research and fodder conservation research are also undertaken.

#### *Pastoral Research Institute, Hamilton*

This Institute, established in 1959 as the Pastoral Research Station was renamed in 1976. It is 300 km south-west of Melbourne. Research is done on reproduction, nutrition and breeding, and management of beef cattle and sheep; and on pasture maintenance and production.

#### *Rutherglen Research Station, Rutherglen*

The Station was established in 1912, 290 km north-east of Melbourne. It carries out research on reproduction, nutrition, and management of cattle and sheep; and on cereal cropping, weed control, and alternative crops.

#### *Ellinbank Dairy Research Station, Warragul*

The Station was established in 1951, at Warragul, 90 km east of Melbourne. It carries out research on dairy cow reproduction, nutrition, management and lactation; calf growth and development; and on pasture productivity.

***Irrigation Research Station, Kyabram***

The Station was established in 1959, 200 km north of Melbourne. Research is carried out on irrigated pastures and crops, salinity; and dairy cow nutrition, disease, and management.

***Veterinary Research Institute, Parkville***

This Institute was established as part of the Faculty of Veterinary Science at the University of Melbourne in 1906. In the late 1920s when the Faculty was discontinued, the Institute reverted mainly to a diagnostic laboratory, attached to the University of Melbourne. It was transferred to the Department of Agriculture in 1973.

***Regional Veterinary Laboratory, Hamilton***

This Laboratory was established in 1971 at Hamilton, some 300 km south-west of Melbourne. It is engaged in diagnosis, research, and extension services, particularly in relation to the campaign to eradicate bovine brucellosis from Victoria.

***Regional Veterinary Laboratory, Bendigo***

This Laboratory was established in 1974 at Bendigo, about 150 km north of Melbourne. It is engaged in diagnosis, research, and extension services, particularly in relation to the campaign to eradicate bovine brucellosis from Victoria.

***Regional Veterinary Laboratory, Benalla***

This Laboratory was established in 1976 at Benalla, about 200 km north-east of Melbourne. It is engaged in diagnosis, research and extension services, particularly in relation to the campaign to eradicate bovine brucellosis from Victoria.

***Regional Veterinary Laboratory, Bairnsdale***

This Laboratory was established in 1976 at Bairnsdale, 300 km east of Melbourne. It is engaged in diagnosis, research, and extension services, particularly in relation to the campaign to eradicate bovine brucellosis from Victoria.

***Horticultural Research Institute, Knoxville***

This Institute was established in 1950 as a Horticultural Research Station, and renamed in 1976. It is located 27 km east of Melbourne. Work has been concentrated on fruit tree physiology as a background to developmental and applied research in temperate fruit tree agronomy, supplementary irrigation methods, and cool storage and post-harvest handling of fruit. Current developments will encompass new fruit crops, ornamentals, and nursery operations, while continuing its expert work on pome, stone, and berry fruits.

***Irrigation Research Institute, Tatura***

This Institute was purchased for a Horticultural Research Station in 1929 and the first trees were planted in 1937. It became a research institute in 1976, and is located 180 km north of Melbourne. The main research has been aimed at increasing productivity of canning fruits by breeding new varieties, or by using plant physiological factors such as light interception, and chemical growth regulators, or by evaluating practices such as pruning, closer planting, and trellis training. New developments include studies to increase the productivity of row crops and forage crops.

***Plant Research Institute, Burnley Gardens***

This Institute was established as the Biology Branch in 1929 and renamed in 1965 as the Victorian Plant Research Institute, and in 1976 as the Plant Research Institute. It is located about 7 km east of Melbourne. It conducts research into the control of insect pests and plant diseases, and provides a diagnostic and advisory service to increase the efficiency of agricultural production while minimising hazards to the community. Services include a plant quarantine



service run by the Chief Quarantine Officer (Plants) for the Commonwealth Department of Health. Other projects include the production of pathogen-tested elite planting material for fruits and ornamentals.

*Victorian Wheat Research Institute, Horsham*

This Institute was established in 1967 as a joint undertaking between wheatgrowers and the Department of Agriculture. It is located in the Wimmera, about 340 km north-west of Melbourne. Research includes plant breeding, plant pathology, soil and cereal chemistry, and plant nutrition. Investigations have begun into alternate sources of phosphate for the time when existing materials used for making superphosphate are no longer available. The Institute also carries out agronomic research into crop rotation and weed control. The commercial sowing of sunflowers in the Wimmera arose from research conducted at this Institute.

*Mallee Research Station, Walpeup*

This Station, established in 1932, is located 510 km north-west of Melbourne. The major functions include the selection and testing of superior varieties of field crops and pasture; studies with new crops and management of crop land; and investigations with sheep and cattle, as they fit in best with Mallee farming practices.

*Cereal Experimental Centre, Longerenong Agricultural College*

This Centre was established in 1912 at Longerenong Agricultural College, about 330 km north-west of Melbourne. The major disciplines are agronomy, plant physiology, plant nutrition, weed science, and agrostology (the study of grasses).

*Vegetable Research Station, Frankston*

The Station was established in 1962, and research work began in 1967. This is located 45 km south-east of Melbourne. The wide range of applied research projects includes investigations into plant nutrition, pest disease and weed control, irrigation, and vegetable varieties.

*Potato Research Station, Healesville*

The Station was established in 1944 and the first experiments began in 1946. It is located 80 km east of Melbourne. Initial research work was on the cultural aspects of potato growing, and the breeding and introduction of new varieties. Recent emphasis has been on the production of pathogen-tested seed potatoes, potato quality and storage, and variety evaluation.

*Tobacco Research Station, Myrtleford*

This Station was established in 1950, and is located 310 km north-east of Melbourne. The wide range of investigations includes the evaluation of varieties, crop nutrition, pest, disease and weed control, breeding new varieties, labour saving methods in the tobacco industry, and, recently, a hop research programme.

*Gilbert Chandler Institute of Dairy Technology*

This Institute was established in 1939 at Werribee, 23 km west of Melbourne. It conducts research into dairy chemistry, chemical engineering, microbiology, and process technology.

*Turf Research Institute, Frankston*

This Institute was established in 1973, and is situated about 30 km south-east of Melbourne. It carries out research and extension work on recreational turf such as lawn bowling greens and golf courses.

*Agricultural Engineering Centre, Werribee*

This Centre was established in 1976, 23 km west of Melbourne. It carries out research and development into engineering as it affects agriculture, the testing of tractors, their fittings, and other machinery in relation to safety and standards,

liaison with agricultural machinery firms, and extension in the field of agricultural engineering.

### **Educational**

Agricultural information is disseminated to farmers through both formal education courses and a variety of information services such as the extension services of the Department of Agriculture and the media, particularly the Australian Broadcasting Commission and the rural press. A number of these sources of information are discussed below.

#### *Courses*

##### *Department of Agriculture : Agricultural Colleges*

The Department of Agriculture administers five colleges through its Division of Agricultural Education: Dookie Agricultural College (est. 1886) in the north-east of the State; Longerenong Agricultural College (1889) in the Wimmera; Burnley Horticultural College (1891) on a bend of the Yarra River in the Melbourne metropolitan area; and the newer colleges—Glenormiston Agricultural College (1971) and the McMillan Rural Studies Centre (1977) which are situated in the Western District and Gippsland respectively. The colleges are financed chiefly from Victorian Government funds.

The objectives of the colleges are to improve the skills, competence, and knowledge of people involved or interested in any aspect of agriculture and horticulture, by the provision of a flexible range of educational opportunities which are primarily concerned with post-secondary and recurrent education matched to State and regional needs.

While the colleges provide a total system of agricultural education in conjunction with the Extension Services Division of the Department of Agriculture, each has its own characteristics which reflect the needs of the community in its region. For example, since 1976 Dookie and Longerenong Agricultural Colleges have both offered three-year courses leading to a Diploma in Agriculture. These share common ground in that each emphasises farm management, but they are different and oriented towards the agricultural activities in their regions. Glenormiston Agricultural College offers a two-year course leading to the Diploma in Farm Management, and Burnley Horticultural College provides a three-year course for the Diploma of Horticultural Science. These four colleges are also heavily involved in providing short courses, seminars, field days, and part-time certificate courses for farmers and people involved in the horticultural industries.

The McMillan Rural Studies Centre, which opened in 1977, is unique in that it has no campus at this stage. Regional Education Officers at four centres—Bairnsdale, Leongatha, Maffra, and Warragul—provide educational programmes in response to district needs, using existing facilities. A principal, with support staff, is located at Warragul providing the co-ordinating centre for such on-going courses as are seen to be required by the region.

All of these activities are supported by the resources of the Department of Agriculture and take advantage of the personal contacts made by its extension officers with farmers, as well as the continuing contact maintained with agricultural industries.

##### *University of Melbourne-Faculty of Agriculture and Forestry*

The Faculty of Agriculture was established in 1905 by statute of the Council of the University, and the first Professor of Agriculture, Dr Thomas Cherry, was appointed in 1911. However, it was not until 1921, following the passing of the *Agricultural Education Act 1920*, that provision was made for a building to house the school and for the appointment of permanent staff. In 1973, the Department of Forestry, then a Department of the Faculty of Science,

was amalgamated with the Faculty of Agriculture, and the Faculty of Agriculture and Forestry was established.

The purpose of the four year Bachelor of Agricultural Science course is to give students a sound basic training in scientific principles as applied to agriculture. The first year is devoted to science subjects, and is followed by a year in residence at the University Field Station at Mount Derrimut, Deer Park, where students are introduced to the variety of farm operations involved in a mixed farming enterprise, while taking lectures and practical classes in various sciences applied to agriculture. They return to the University campus for more advanced training in economics and the soil, plant, and animal sciences in the third and fourth years of the course. In the final year the students have a restricted choice of subjects, which ensures that all students receive a general training in all aspects of agricultural science, while allowing a measure of specialisation.

Since the establishment of the Faculty of Agriculture, more than 1,000 graduates have entered the profession, the number of graduates averaging about 55 each year. There are some 50 students working for higher degrees (Ph. D. and M. Agr. Sc.) either at the University or at Mount Derrimut, and about ten postgraduate students attending the course for the Diploma in Agricultural Extension.

The purpose of the Bachelor of Forest Science course is parallel with that of the B.Agr.Sc. course, i.e., it provides a basic training in scientific principles as applied to forestry. Nine students were expected to graduate at the end of 1977 (the first graduates in this new course), but this number was expected to increase to 22 in 1978 and remain at that level thereafter. Thirteen students are currently studying for the M.For.Sc. degree and six for the Ph.D. in Forestry.

*University of Melbourne—Department of Civil Engineering—Agricultural Engineering Section*

The University of Melbourne also offers training in the more physical aspects of agriculture, leading to a degree in Agricultural Engineering. This course is the only one of its type at an Australian university, and is closely linked with complementary postgraduate and research programmes. Some of the specific field tasks handled are the interactions between soil, crops, and machinery in regard to function, safety, and economics; the control of natural and irrigation waters to achieve maximum production; the estimation of water resources and disposal of wastes; work study and organisation of farming systems; processing of farm products, such as refrigeration and drying; and mechanical handling and transport of a wide range of materials such as fruit, grain, and wool. The course is of four years duration and leads to a B.E.(Agr.).

*La Trobe University—School of Agriculture*

La Trobe University, which admitted its first students in March 1967, opened its School of Agriculture a year later. The emphasis of the course is on the sciences relevant to an understanding of the rural environment, covering the relation between the soil, the plant, the animal, and the environment. Substantial emphasis is also given to the study of the economic and social aspects of agriculture and farm management. The four year course leads to a B.Agr.Sc. (pass or honours degree).

Some twelve hectares of the University campus are presently used by the School of Agriculture for field work involving crops, pastures, and livestock, enabling students to have day to day contact with agricultural experimentation as well as with the more applied aspects of crop and animal husbandry. At least twelve weeks practical experience on approved farms supplements these facilities on the campus.

*Marcus Oldham Farm Management College*

Founded privately near Geelong in 1961, the Marcus Oldham Farm

Management College specialises in farm management education for the sheep, cattle, and cropping industries. Students with previous practical experience attend the College for three years, during which time they complete a 'sandwich' course of an eight month academic period, a twelve month practical period on an approved property, and then a final eight month academic period. Thus while there are only 70 students in residence at one time, the College is dealing with about 105 students each year. About 35 students complete the course every year.

The College farm is used as a teaching laboratory rather than a training area for manual work. It covers 190 hectares in a 533 mm annual rainfall area, and is commercially self-supporting from the income received from Merino sheep and Hereford cattle. Course work consists of lectures, demonstrations, and field trips, which provide the subject of extensive written reports on the farm, its management, financing, and budgeting. There are four broad subject groups in the lecture programme: plant and environmental sciences, animal science, farm management and economics, and agricultural engineering.

The entry requirements are a minimum age of 19 years, at least one year of practical experience since leaving school, and the completion of a full secondary course; a Higher School Certificate pass is not necessary. Preference is usually given to older students with more practical experience.

#### *Apprenticeships*

(1) *General farming and fruit growing.* Apprenticeships in general farming and fruit growing were offered for the first time in Australia in 1975. Courses were established in six technical schools by the Technical Schools Division of the Education Department, with active co-operation from farm industry organisations and the Department of Agriculture. The general farming courses incorporate instruction to cater for individual needs in such areas as grazing, dairying, and cropping. Also, advanced basic vocational and technician programmes have been developed for post-apprenticeship training together with middle level programmes designed to meet the needs of owner-operators of small farms.

(2) *Horticultural trade training.* Historically Australia relied on Britain for a steady stream of skilled gardeners to supply its gardening needs. From the 1930s, however, these tradesmen ceased to be attracted to the country so that by the 1950s there was a critical shortage of skilled gardeners. Following representations from the parks industry in the early 1960s, the Apprenticeship in Gardening was proclaimed in 1966 for municipal councils in the metropolitan area. Schooling commenced in 1968, and an evening course was established to train people already in the trade. In 1971, the proclamation was broadened to include all municipal councils, golf courses, racing clubs, and cemetery trusts in Victoria. Then in 1975 the horticultural trades were proclaimed as four separate trades: gardening, turf management, landscape gardening, and nurseryman, and training programmes were developed by the Education Department.

The number of apprentices between 1968 and 1975 grew at a rate of 25 per cent per year, so that there are now more than 450 apprentices in the trade as well as about 200 adult students.

#### *Information services*

##### *Agricultural extension services*

Advancing technology and increasing competition on world markets have intensified the need for farmers to be advised quickly about new developments so that they have the requisite knowledge on which to base the many decisions they have to take as consequence of rapid change. Extension services to provide advice and training in these matters are conducted by several government

departments and by commercial firms such as the manufacturers of agricultural chemicals, farm machinery, and stock foods and medicines. Some farmers employ professional consultants on a personal basis.

In Victoria, the major extension service is provided by the Department of Agriculture, which, in addition to its research and regulatory staffs, has a large group of extension workers throughout the State. Whereas the main emphasis of this service for many years was on the answering of farmers' questions and the dissemination of research results and other information, it is now devoting increasing attention to educational programmes which help to train farmers to make decisions according to their individual circumstances. Consequently, special emphasis is given to farm economics and financial management.

The Department's extension services are co-ordinated throughout Victoria by a regionalised Extension Services Division, administered locally by regional centres located at Ballarat, Bendigo, Benalla, and Warragul. There are 17 district offices in Victoria, each of which is under the leadership of a Senior District Officer who co-ordinates the activities of a group of extension specialists, according to the needs of his region, e.g., agronomy, dairy husbandry, sheep and wool, beef, or horticulture. A growing team of agricultural economists is serving at regional and district centres. Close relationships are maintained with the Department's research stations and other experimental centres, agricultural colleges, regulatory staff, the rural community, commercial firms that serve agriculture, and associated government departments.

The regional service occasionally has to divert its immediate activity to special campaigns such as the alleviation of drought or the consequences of other crises such as floods and bushfires. Sometimes it is necessary for extension specialists to visit individual farms and to use other person-to-person methods such as office consultations, telephone discussions, and correspondence. However, to make the most efficient use of available resources and to serve as many farmers as possible, extension officers do much of their work with groups of primary producers and use media outlets such as publications, radio, television, and films.

More than 200 discussion groups of dairy farmers meet regularly in farm homes to exchange ideas on developments in their industry. Department of Agriculture specialists often visit these groups to provide information about the subject under discussion.

More formal group activities occur at regular field days on research stations, experimental plot sites, and other places of interest such as the winning farm in a soil conservation competition. Whereas field days on major research stations attract up to 800 visitors, smaller farm talks involving up to 20 farmers provide effective informal discussions about current methods and problems.

Occasionally groups within an area combine to hold schools for farmers or to tour together to other similar areas in Victoria, other States, and sometimes New Zealand. Subsequent discussions are helpful in assessing the potential local application of ideas which have been seen elsewhere. More formal schools for farmers are held in local halls, woolsheds, and Education Department classrooms. Emphasis is being given to financial management in courses which continue, one night a week, for several weeks. Between classes, farmers apply what they have learned to their individual circumstances and raise points for discussion at the next session. Meetings and conferences also provide opportunities for farmers to receive new information and discuss problems. Exhibits at agricultural shows are often focal points of discussion.

Both person-to-person activities and group work are complemented by articles in newspapers and magazines, the *Journal of Agriculture*, industry digests for dairy farmers, fruit growers, and apiarists, a wide range of books

and pamphlets, farm radio and television programmes, and films. Farmers often become aware of new developments through the media before seeking further advice to help them to decide on the adoption of new ideas. The Department of Agriculture's Media Services Branch in Melbourne has the printing facilities, studios, and other resources for providing this complementary information to, and through, extension workers in the field. In addition to its direct services, the Department of Agriculture provides much information which reaches farmers through other departments and commercial organisations, including consultants.

#### *Media services*

Victorian primary producers, and other people who are interested in agriculture, have access to information from both government and commercial sources. In fact much information from government advisers reaches farmers through commercial newspapers and radio and television stations. In addition, many commercial organisations supply information direct to farmers, including market news and details of chemicals, such as insecticides and fungicides.

The main government agencies are the Commonwealth Scientific and Industrial Research Organisation, Department of Agriculture, and the Australian Broadcasting Commission. Other agencies such as the State Rivers and Water Supply Commission, Soil Conservation Authority, and the Department of Crown Lands and Survey also provide considerable information. The CSIRO's main Publications are *Rural Research* and *Ecos* which provide up-to-date interpretations of the Organisation's findings and background information on matters such as those affecting the environment.

The Department of Agriculture has a wide range of publications, as has been described in the previous section. The Department also has a wide-reaching radio service, and provides films and other information for television stations. Its weekly television session *On the Land* has been transmitted from STV-8 Mildura for more than ten years.

The Australian Broadcasting Commission's radio and television programmes are a major source of information for primary producers. They also provide a very important link between the rural and urban communities. Commercial stations also provide rural news and information programmes.

The ABC's regional radio stations at Horsham (3WV) and Sale (3GI) provide special sources of rural information and its State-wide *Country Hour* has a large audience. In recent years, the ABC has produced a daily public affairs rural television programme, and has screened many educational documentaries. The advent of colour television has added to the value of this medium for farmers in such matters as the identification of pests and symptoms of diseases.

All the media noted above are especially valuable as disseminators of information during campaigns on such subjects as droughts and locust plagues; they also help to draw the community's attention to the achievements and problems of the State's primary industries.

### **Marketing**

#### *Introduction*

The marketing of agricultural produce poses a number of problems peculiar to the rural sector. For example, farmers face wide fluctuations in seasonal conditions which may alter both the quantity and quality of goods produced. This, in turn, affects the stability of both prices and incomes. Since the farmer is often far removed from the consumers of his product, there is little flow back of information except price, and this is often too delayed to be effective for farmers' forward planning.

The wide fluctuations in supply, demand, and prices which occur on world markets have drastic repercussions for Australian farmers. Marketing of products

overseas presents further problems for farmers since, acting as individuals, they lack the necessary resources to provide the kind of services which overseas customers expect. Apart from the difficulty of contacting buyers and arranging sales, the individual farmer lacks market power in price negotiation. Generally, Australian farmers cannot provide the quantity which the overseas buyer wants, nor storage and delivery facilities or credit.

To overcome these marketing problems, organisations have been established with the aim of co-ordinating marketing arrangements for specific products. In some markets, such as that for fresh vegetables, institutionally provided marketing services are minimal; in others, such as wheat, the farmer is divested, through legislation, of all responsibility for marketing. The following is a brief review of the principal marketing systems in Victoria.

#### *Public auction*

Public auction, where the product is sold to the highest bidder, is a common method of selling both in Australia and overseas. It requires the provision of selling centres and a known timetable of operation. In Victoria, cattle, sheep, and pigs are sold in this way. The most important saleyards are at Newmarket (Melbourne), and smaller markets exist in the major country centres.

Some 80 per cent of Australia's wool clip is also sold by auction. The auctioning of wool differs from other commodities in that the price is regulated by the selling and buying operations of the Australian Wool Corporation, on the basis of minimum prices.

#### *Price bargaining*

The sale of fresh fruit and vegetables is achieved at the wholesale level by systematic bargaining between buyer and seller. On a more organised basis, the marketing of tomatoes for processing and of broiler chickens is done through contractual agreements for which there is legislation to provide for price negotiation. In the case of many oilseed crops (e.g., sunflower, safflower, and rapeseed), marketing is by contract but on a price determined mainly by the processor.

#### *Marketing controlled by legislation*

Apart from the legislation which provides for price agreements between growers and processors to be negotiated, there are other areas in agricultural marketing which are covered by legislation in Victoria. The Marketing of Primary Products Act enables growers to seek the establishment of a statutory marketing board to control the marketing of a particular commodity.

At present there are four Boards in Victoria which have been established under the Marketing of Primary Products Act. These control the marketing of eggs, citrus, tobacco, and chicory. There are also a number of boards and authorities constituted under separate legislation. The Victorian Dairy Industry Authority was established during 1977 and is responsible for ensuring a sufficient supply of milk, at a satisfactory standard, for all markets in Victoria. The Authority replaces the Victorian Milk Board and the Victorian Dairy Products Board. The Victorian Grain Elevators Board handles the storage of wheat and barley within Victoria. The Victorian Dried Fruits Board plays a regulatory role in the marketing of dried fruits, the most important segment being dried vine fruits. Victoria is also involved in the operation of the Australian Barley Board through complementary legislation with South Australia. Victoria, with all other States, is a party to the Australian Wheat Board which is set up under complementary State and Commonwealth legislation, to control the marketing of the Australian wheat crop on both the domestic and export markets.

Many commodities such as honey, wine, meat, apples and pears, canned fruits, dried fruits, and eggs are covered by Commonwealth legislation in that marketing boards have been constituted to regulate exports.

**Further references, 1977**

## **Financial services**

### *Introduction*

Australia's national policy for permanent land settlement has been based on the family unit farm. Financially this has seldom been easy because even in the early days settlers found it difficult to earn enough to maintain themselves while they were clearing and developing their blocks. The conditions of purchase were made very easy, but considerable aggregation of holdings took place because settlers failed. Later, some of these large estates were re-purchased, subdivided, and the smaller farms made available to settlers under closer settlement schemes.

After each world war these schemes were expanded to enable ex-servicemen to acquire farms under generous terms of settlement. In addition, money was advanced to returned servicemen to enable them to buy their own "single unit" farms. Soldier settlers were also granted loans for the purchase of stock, plant, and equipment.

The Australian farmer is dependent for a large proportion of his earnings on the export market. Commodities over recent years have shown wide fluctuations of prices and the reliance by the Australian farmer on fluctuating and often rapidly declining income on the one hand and the burden of fixed or increasing costs on the other make him particularly vulnerable financially. Recent financial measures have been aimed at schemes which help the individual farmer adjust to the changing situation. Various schemes have been established, such as the Rural Reconstruction Scheme, and this trend will increase in the future.

### *Rural Finance and Settlement Commission*

The Rural Finance and Settlement Commission was established by legislation in late 1961 to merge the former Soldier Settlement Commission and the Rural Finance Corporation. In the first instance, the new Commission carried out the functions of the former organisations in two separate branches until further legislation was passed in 1963 which completed the merger and co-ordinated the functions of the two branches in providing finance for country industry and land settlement development.

### *Rural Finance Act*

The Rural Finance Act, which is administered by the Commission, embraces two distinct functions. First, under part III of the Act, the Commission may grant loans "to any person or body establishing or carrying on any country industry", primary or secondary. These loans are, subject to the Act, made on such terms as are determined by the Commission. However, interest on the loans is required to be at a rate as low as practicable having regard to the rate at which the Commission borrows money and the costs of administration. Loans are made to primary industry for farm purchase, farm development, refinance, payment of probate, and seasonal advances. Loans to secondary industry have resulted in the establishment of a number of successful country industries over the years.

The other function administered by the Commission under the Rural Finance Act is to act as agent for the Treasurer of Victoria in administering money provided from the Public Account for any special purpose, subject to such directions as the Treasurer may give or impose. Under these agency provisions, the Commission administers relief lending to the rural community in times of adversity, such as bushfire, drought, flood, etc. The agency provisions are also the means whereby special loans outside the scope of the Commission's ordinary lending are made available to particular industries. Major Commonwealth-State Government schemes such as the Rural Reconstruction Scheme, the Marginal Dairy Farms Reconstruction Scheme, the Fruitgrowing Reconstruction Scheme,



the Dairy Adjustment Programme, and the Beef Industry Carry-on Scheme, have also been administered in Victoria by the Commission under an agency direction from the Treasurer pursuant to section 35 of the Rural Finance Act.

VICTORIA—LOANS BY RURAL FINANCE AND SETTLEMENT COMMISSION  
(\$'000)

Particulars	Year ended 30 June				
	1972	1973	1974	1975	1976
Primary industry—					
Ordinary lending	2,519	2,347	2,488	2,806	3,139
Agency lending—					
General	240	1,229	946	1,220	1,057
Rural reconstruction—debt reconstruction and rehabilitation	9,271	9,178	2,033	443	1,902
Rural reconstruction—farm build-up	2,259	5,909	5,469	6,624	4,278
Dairy adjustment	221	75	96	4,636	10,645
Fruit growing	..	90	343	131	146
Beef industry	..	..	..	24	2,177
Secondary industry—					
Ordinary lending	865	1,301	3,068	2,484	426
Agency lending	230	1,415	959	679	3,401
Land settlement	1,240	..	8	59	692
Total lending	16,845	21,544	15,410	19,107	27,863
Loans outstanding at 30 June—					
Ordinary lending	30,924	29,223	29,356	31,447	31,283
Agency lending—					
General	8,774	9,824	8,740	9,278	12,221
Rural reconstruction	11,499	25,312	29,128	33,891	37,137
Dairy adjustment	220	291	355	4,808	14,757
Fruit growing	..	90	433	564	710
Beef industry	..	..	..	24	2,168
Land settlement	16,468	15,927	14,661	14,031	13,908
Soldier settlement	37,920	33,995	30,128	28,315	26,538
Total loans outstanding	105,805	114,662	112,801	122,359	138,722

*Rural reconstruction scheme*

Following the economic problems experienced by the farming community in 1969 and 1970, with greatly depressed prices and rising costs, a scheme for rural reconstruction was introduced in 1971, after conferences between the Commonwealth and the State Governments.

Initially, the Commonwealth Government agreed to provide \$100m to the States for the purposes of the scheme, to be expended over four financial years. This expenditure was later agreed to be concentrated into two financial years to 30 June 1973; subsequently it was decided to continue the scheme for a further three financial years beyond that date. Total funds allocated to Victoria to 30 June 1976 were \$46.87m. In addition, Victoria had available an amount of \$4.5m from funds received as repayments of the farmers' debts adjustment scheme of the 1930s. A further allocation of \$10m (of which Victoria's share was \$2.1m) extended the scheme to 31 December 1976, pending the introduction of the Rural Adjustment Scheme as recommended by the Industries Assistance Commission.

The Rural Reconstruction Scheme provided for three main forms of assistance:

(1) *Debt reconstruction.* The purpose of this was to assist a farmer who, although having sound prospects of long-term commercial viability, had used all his cash and credit resources and could not meet his financial commitments.

(2) *Farm build-up.* The object of this was to supplement the normal processes under which uneconomic properties were amalgamated with adjoining holdings or were subdivided and the subdivided portions added to adjoining holdings. It also aimed at assisting the farmer in a sound financial position, whose property was too small to be economic, to purchase additional land to build up his property to at least an economic size.

(3) *Retraining and rehabilitation.* This aimed at providing assistance, where necessary, for those who were obliged to leave the industry, in re-training for some other occupation. Loans up to \$3,000 could also be made available to alleviate personal hardship.

Initially, expenditure under the scheme was concentrated on debt reconstruction, with only a small interest being shown in farm build-up. As confidence in the rural sector increased, however, particularly because of the higher prices being obtained for products, including wool, the emphasis shifted from debt reconstruction to farm build-up. Loans made for debt reconstruction purposes carry an interest rate of 4 per cent, and loans for the purpose of farm build-up carry an interest rate of 6.25 per cent.

To 30 June 1976, 3362 applications were received for debt reconstruction loans, of which 911 were approved, while 1777 applications were received for farm build-up loans, of which 939 were approved. Expenditure to 30 June 1976 totalled \$22.8m for debt reconstruction and \$24.5m for farm build-up.

#### *Dairy adjustment programme*

This scheme superseded the Marginal Dairy Farms Reconstruction Scheme introduced in 1970, which created little interest among dairy farmers in Victoria. The new scheme was wider in definition and included new categories. The main elements were:

- (1) To provide interest-free loans to dairy farmers who supplied cream or water-cooled bulk milk to enable them to meet the cost of conversion after 21 August 1974 to bulk refrigerated milk supply;
- (2) to provide finance to assist in the purchase of uneconomic dairy farms for amalgamation with an existing farm; or, in special circumstances, to dispose of the dairy farm to persons prepared and able to use the farm for forestry purposes;
- (3) to assist an uneconomic dairy farmer to purchase additional land to bring his property to a viable unit;
- (4) to provide finance for improvement of dairy properties to bring them to a suitable standard; and
- (5) to provide relocation assistance of up to \$3,000 for dairy farmers leaving the industry and their farm.

Funds under this scheme were exhausted by August 1975 with a total commitment of \$16.2m. In April 1976 the Commonwealth Government allocated an additional \$2m to the programme for amalgamation and development, and for carry-on loans to a maximum of \$4,000 for dairy farmers affected by the decline in prices for manufactured milk products, who needed finance to carry on and were unable to obtain it from normal sources at reasonable terms. These carry-on loans were a new form of assistance funded on a dollar for dollar basis between the Commonwealth and the States.

At 30 June 1976 the Commission had received 2,170 applications for carry-on loans of which 815 were approved for a total of \$2.6m and 896 were pending, while 637 applications were received for farm purchase and development of which 333 were approved for a total of \$7m. Bulk vat approvals totalled \$9.4m.

#### *Fruit growing reconstruction scheme*

During 1971 and 1972, growers in the canning fruit and export apple and pear industries continued to experience financial difficulties brought about by

restriction of market outlets. The industry, in general, was experiencing high levels of stocks. Against this background, proposals were put forward by the industry for the curtailment of production by means of a tree removal scheme. The Commonwealth Government, after consultation with the States, offered to finance a scheme within the context of the rural reconstruction measures, with the emphasis on relief being given to the individual grower. Legislation was passed in 1972 to establish the scheme. A total of \$4.3m was made available to the States under the scheme to pay compensation to growers for the removal of trees. Half the amount available was to be applied to canning-peach and pear trees and the other half to fresh apples and pears. State authorities were to administer the scheme so that the average rate of assistance did not exceed \$350 per acre for canning peaches and canning-pears and \$200 per acre (later amended to \$250 per acre) for fresh apples and fresh pears. Compensation in respect of trees was to be assessed after having given due regard to age, yield, and condition of the trees, and market access availability.

Eligibility for admission to the scheme was divided into two categories:

- (1) Clear fell for the grower in severe financial difficulties who intended to clear fell his orchard, leave the industry, and convert his land to other use; and
- (2) partial fell for the grower who did not have adequate resources to withstand the short-term effect on his economic viability of removing surplus trees without assistance.

This scheme was to terminate on 31 December 1975, but following a report by the Industries Assistance Commission was extended for a further 12 months to 31 December 1976.

To 30 June 1976, 414 applications had been received, of which nineteen were later withdrawn and 95 rejected. At that date 94 applications were pending and offers had been made in 206 cases, of which 118 had accepted, involving compensation totalling \$789,748.

#### *Beef industry carry-on scheme*

Following the depressed prices for beef caused by loss of export markets during 1974, many beef producers experienced financial hardship, and the Victorian Government provided a special fund of \$2m to assist beef producers who could not be assisted under any other rural assistance scheme. On 28 April 1975, agreement was reached on a joint Commonwealth-State Government scheme to provide carry-on finance to beef producers where the State assistance was matched by a similar allocation of Commonwealth Government funds, the total sum available in Victoria being \$4m. Those eligible are specialist beef producers who still have a sound asset structure and would be viable on the resumption of a market recovery to a long-term trend, but who lack the finance needed to carry on in the period of low market return. The maximum loan available to any individual is \$10,000. The Commission had made 315 loans totalling \$2,387,815 to 30 June 1976.

#### *Soldier settlement and land settlement*

The Commission administers the Soldier Settlement Act and the *Land Settlement Act* 1959. Allocation of soldier settlement ceased some years ago. In total, 6,171 ex-servicemen were assisted, either to obtain farms of their own choosing or to have allocated a farm under the various general settlement projects. At 30 June 1976, 4,036 of these farmers had completely repaid their liabilities to the Commission.

Under the Land Settlement Act, the Commission has developed land on five projects: at Heytesbury near Cobden, Yanakie on Wilsons Promontory, East Goulburn Irrigation Area near Shepparton, the Rochester Irrigation Area, and Palpara in the south-west of Victoria. The Yanakie and East Goulburn Irrigation Area Schemes were completed and all farms allocated to settlers by the mid-1960s.

When the Victorian Government decided in 1970 to refrain for the time being from making further land available for dairying, 573 farms had been allotted under the Land Settlement Act (381 dairy farms under rainfall conditions, 113 irrigation dairy farms, and 79 soft fruit orchard holdings) on all projects.

In 1973, the Victorian Government decided to release further farms, and at 30 June 1976 the remaining 29 farms at Rochester had been allocated as well as 25 more farms at Heytesbury. In 1976, however, because of further difficulties in the dairying industry, it was once again decided that, for the time being, no further farms would be allocated.

*Other sources of finance*

There are a number of other sources of finance available to the rural sector, ranging from various bank facilities to specialised sources such as pastoral finance companies. For example, the Rural Credits Department of the Reserve Bank advances payments to growers of produce, such as wheat and barley, pending its sale; the Commonwealth Development Bank provides rural loans for farm improvement purposes; and the Farm Development Loan Fund of the Trading Banks and the State Savings Bank provide all-purpose loans to the rural sector. The pastoral finance companies provide a variety of credit facilities to farmers to cover all aspects of farm activity.

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- 7306.2 Potatoes
- 7309.2 Viticulture
- 7501.2 Value of primary commodities produced (excluding mining)

### **Central Office**

- 7203.0 Livestock statistics
- 7206.0 Meat statistics
- 7209.0 Dairying and dairy products
- 7212.0 Wool statistics
- 7214.0 Beekeeping
- 7302.0 Crop statistics
- 7303.0 Fruit statistics
- 7307.0 Wheat statistics