CROPS

INTRODUCTION

In 1975–76 cash crops were grown on an area of 13.7 million hectares—a total which excludes the million hectares of fodder crops mapped and described above in the 'Pastures' topic. By 1979–80 the area of cash crops had reached a record of 16.8 million hectares (see Figure 19). A wide variety of temperate and tropical crops are grown but the bulk of the area, 80–90% in recent years, is sown to the winter cereals—wheat, barley and oats—of which wheat occupies by far the largest area. The crop area has more than doubled since 1950, largely due to increases in cereal cropping.

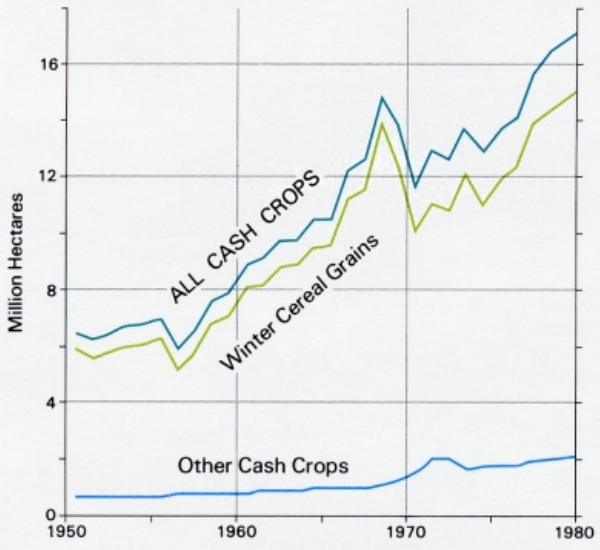

Figure 19. Crop Areas, Australia 1951–80

Based on statistics from various publications of the Australian Bureau of Statistics. Excludes lucerne and crops mostly grown to feed livestock on the same farms (hay, green feed and other fodder crops, which totalled 1.2 million hectares in 1979–80).

Cropping can be broadly classed as either intensive or extensive (see the 'Croplands' map). Intensive cropping is carried out on small blocks of good and expensive land; irrigation is common and costs of production per hectare are high. By contrast, extensive cropping is carried out on large blocks of cheaper land; irrigation is rare and costs of production per hectare are low.

The wheat belts are the main areas of extensive cropping and lie in zones where the average rainfall during the winter growing season is between 150 and 500 mm. The drier inland edges are generally determined by the arid limit for wheat growth and the wetter edges by the prevalence of humidity-related crop diseases, such as rust, and the greater profitability of livestock grazed on perennial sown pastures.

Intensive cropping occurs in scattered and mostly small irrigation areas close to the arid edge of the eastern wheat belt (notably fruit, grapes, rice and cotton) and also in small, widely scattered areas with favourable soils and climate in wetter upland and coastal areas in the south-east and south-west (notably fruit and vegetables). Intensively grown tropical crops, predominantly sugar cane but also bananas and pineapples, are grown along the frost-free coasts of Queensland and northern New South Wales.

PHOTOGRAPH ABOVE: Ripening wheat—Australia's premier crop—in northern New South Wales.

This photograph and Figures 21 and 22 by F. T. Bullen; Figures 20 and 23–25 by Australian Information Service.

Fertiliser Use

Much of Australia's extensive cropping is in areas of poor soils and even some of the best soils are deficient in phosphorus and nitrogen. Deficiencies in soil fertility have been largely overcome by the use of artificial fertilisers and the rotation of crops with nitrogen-fixing legume pastures.

About three-quarters of Australia's croplands are fertilised annually (see map overleaf). Most cropped land, with the exception of the cracking clay soils of Queensland and northern New South Wales, is phosphorus-deficient, so superphosphate makes up about two-thirds of the total amount of fertiliser applied annually to crops. While nitrogen deficiencies in the wetter parts of the wheat belts are largely counteracted by the rotation of crops with nitrogen-fixing pastures of subterranean clover, nitrogenous fertilisers are now applied where such pastures are hard or impossible to establish (such as on the northern plains of New South Wales, in Queensland and at the drier margins of the Western Australian wheat belt). This has been the main factor in the recent large increase in nitrogenous fertiliser usage, which more than doubled between 1972 and 1979. Wheat is now the largest single recipient of nitrogenous fertiliser, which was previously mainly applied to intensive crops such as sugar cane and cotton.

Irrigated Cropping

About 600 000 ha of crops were irrigated in 1975–76, which was only about 3% of the total crop area. Comprehensive irrigation data have not been collected since 1975–76. Most of the irrigation areas are fed by the Murray–Darling river system and the largest concentrations of irrigated cropping are in the Murray and Murrumbidgee irrigation areas of southern New South Wales (see map overleaf). Here rice, which occupies the largest area, has increased from 75 000 ha in 1975–76 to 116 000 ha in 1979–80. Orchard fruit, grapes and vegetables cover over 10 000 ha in the Murrumbidgee Irrigation Area centred on Griffith. Irrigation areas lower down the Murray are devoted almost entirely to orchard fruit and grapes. Cotton is the main crop in smaller and newer irrigation areas in central and northern New South Wales and at St George and Emerald in Queensland.

About a fifth of all sugar cane is irrigated (about 74 000 ha in 1975–76). Of this, 33 000 ha were in the Burdekin delta where, despite suitability in all other respects, the rainfall is insufficient for cane growth so that the whole crop has to be irrigated. Supplementary irrigation of cane occurs near Mackay and Bundaberg.

About 150 000 ha of cereals other than rice are irrigated, mainly in southern New South Wales, where irrigated wheat forms part of the rice rotation system, and to a lesser extent in northern New South Wales and south-eastern Queensland, where irrigated sorghum, wheat and oats are grown. In the Ord irrigation area in northern Western Australia small areas of irrigated sorghum and rice were grown in 1975–76. Here irrigated cotton was grown from 1963 until 1974, when rising costs of pest control and the removal of a government cotton bounty made it uneconomic.

More than half the area of vegetables grown is irrigated (about 65 000 ha in 1975–76). This includes inland areas entirely dependent on irrigation and wetter, more coastal areas where irrigation supplements rainfall, particularly in drier seasons.

Other crops that are especially dependent on irrigation are soybeans in northern New South Wales and south-eastern Queensland; and tobacco in the Ovens and King Valleys of north-eastern Victoria, near Texas and Inglewood in southern Queensland, and at Mareeba on the Atherton Tableland in northern Queensland.

WHEAT

Wheat, the most important single crop in Australia, has in recent years been grown on about 10 million hectares, or over 60% of the national crop area, and has contributed about 40% of the total value of all cash crops. The map shows the distribution of the 8.5 million hectares harvested in 1975–76 and the average yield for the three-year period 1973–74 to 1975–76.

Wheat is generally sown between April and June for harvest in October or November in the north and December or January in the south. It is therefore heavily dependent on winter rainfall and is grown where the April to October rainfall is usually between 150 and 500 mm.

The area of wheat increased sharply during the 1960s from about 5 million hectares in 1959–60 to nearly 11 million hectares in 1968–69. Production quotas were introduced in the following year and a temporary decline in area resulted. Quotas were suspended in 1975–76 and the wheat area rose to exceed 11 million hectares in 1979–80.

The greatest increase has occurred in Western Australia (see Table 7), where wheat farming has expanded greatly to reach the arid limit in many places. A less marked expansion has occurred in the eastern States, notably into the drier areas of northern New South Wales and northward in Queensland.

Wheat yields are strongly dependent on winter rainfall, although the relationship is non-linear—too much rain can also depress yields. However, today little wheat is grown in areas where the rainfall is above the optimum for maximum yields, for the reasons given above, so that most wheat is grown in areas where there is a direct positive relationship between winter rainfall and yield. The highest yields are obtained in the wetter areas of the wheat belts with better soils, for example the Liverpool Plains around Gunnedah in New South Wales and the Darling Downs around Dalby in Queensland. Yields tend to be lowest along the dry margins of the wheat belts except where wheat is irrigated in the Murrumbidgee Irrigation Area around Griffith, New South Wales.

In general, yields have progressively increased since the turn of the century as a result of plant breeding, fertiliser use and rotation with nitrogen-fixing pastures. However, the expansion of wheat cropping into low-yielding drier areas has lessened the increase of State average figures, notably in Western Australia (Table 7). Widespread severe droughts such as the most recent one in 1980–81 have also had marked, although temporary, effects on wheat yields. Table 7 shows the effect of recent severe droughts on yields in the 1978–79 period compared with the higher yields of the more drought-free 1974–77 period.

Most of the grain is of average quality, termed Australian Standard White. Premium quality 'hard' wheats, producing high-protein grain of good baking quality, are grown mainly in Queensland, northern New South Wales and South Australia. 'Soft' wheat with the low protein content needed for biscuit making is mostly produced in the south, notably in Victoria.

Table 7. Wheat for Grain—Area and Yield

State	*Area ('000 hectares)*				*Average Annual Yield (tonnes per hectare)*			
	1950–51	*1965–66*	*1975–76*	*1979–80*	*1949–52*	*1964–67*	*1974–77*	*1978–80*
Queensland	226	386	576	733	*1.13*	*1.59*	*1.90*	*1.41*
New South Wales	1 347	1 852	2 774	3 415	*1.10*	*1.51*	*1.92*	*1.55*
Victoria	1 107	1 244	1 073	1 457	*1.30*	*1.49*	*2.24*	*1.64*
South Australia	748	1 111	958	1 424	*1.09*	*1.17*	*1.63*	*1.15*
Western Australia	1 289	2 489	3 171	4 121	*0.94*	*1.02*	*1.04*	*1.15*
AUSTRALIA (*a*)	4 720	7 088	8 555	11 153	*1.10*	*1.31*	*1.60*	*1.36*

(*a*) Includes the Australian Capital Territory and Tasmania (no production recorded for the Northern Territory).

Sources: Australian Bureau of Statistics—*Rural Industries 1969–70*, Bulletin No. 8; and *Wheat: Australia: 1979–80.*