

**ATLAS OF
AUSTRALIAN RESOURCES
Third Series**

Volume 3

AGRICULTURE



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PREFACE

This volume presents Australian agriculture in the late 1970s from a geographic viewpoint. Most emphasis is placed on where the major crops are grown and the main types of livestock grazed, both in relation to each other and to climate, soils and landforms. This is in keeping with the underlying theme of the Atlas, which is concerned, as the title implies, with the spatial distribution of resources and their use.

Most of the maps have been derived to some degree from the 1:5 million scale map of land use in Volume 1, *Soils and Land Use*. Readers wanting a regional treatment of agricultural land use should find that volume of particular interest.

Agriculture in Australia lends itself well to presentation in maps because of its extent and the availability of uniform statistical information about many of its facets.

The volume might properly be dedicated to the farming community: underlying nearly all maps are statistics for shires (or their equivalents) aggregated by the Australian Bureau of Statistics from annual agricultural census forms returned by farmers.

Other sources of data were the many published maps and reports bearing on the nature and location of farming activities. Landsat imagery also proved to be useful. What a contrast there is between statistics derived from agricultural census returns and images taken from a satellite 900 kilometres above the earth, with each image providing a record of the land surface over an area of 34 000 square kilometres! With so much information available, it takes self-discipline to achieve a synopsis appropriate for a national atlas, especially one for a country with an area of 7.7 million square kilometres.

Many of the 21 maps in this volume deal with individual

items, such as wheat, or with several related items. But an understanding of Australian agriculture also calls for synthesis. Therefore, in dealing with grazing density, the author has used livestock units to equate beef and dairy cattle with sheep. Other examples of synthesis will be found in the maps of farm types and agricultural productivity, both of which are based on small-area statistics not previously available.

The nine maps at 1:10 million scale have also been published separately in National Mapping's *Australia Small Scale Thematic Map Series*.

In the previous edition of the Atlas comparable material for the late 1960s was presented in five large map-sheets and in five separate commentaries—'Croplands', 'Crop Production', 'Livestock', 'Sheep and Wool', and 'Grasslands'. Comparison of the present volume with these maps and those of the first edition, produced in the 1950s, not only highlights major changes in Australian agriculture over the last three decades but also indicates advances in geographic knowledge, cartography and printing.

The volume was planned and produced by National Mapping staff. On page 24 the author, Frank Bullen, acknowledges the valuable contributions made by those outside National Mapping—mainly staff members of CSIRO, the Bureau of Agricultural Economics and the Australian Bureau of Statistics.

Colleagues within National Mapping's Geographic Branch assisted the author in the preparation of map data and commentary material. Laurance Hazlewood supervised the geographic work and Murray de Plater, assisted in turn by Phil Woodward, Graham Leahy and Ruth Dodd, was responsible for cartographic production.

Trevor Plumb

Editor

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VOLUMES PUBLISHED

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2. Population
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VOLUMES IN PREPARATION

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GENERAL INTRODUCTION

Settled agriculture, never practised by the Aboriginal inhabitants, was introduced to Australia by Europeans in the late 18th century. After early setbacks, due largely to the unfamiliar environment, agriculture has consistently provided almost all the food consumed domestically and, until the early 1970s, the bulk of export income.

Agricultural production has greatly increased in this century, and particularly since the Second World War, through large increases in improved pasture, cropping, fertiliser usage and irrigation, aided by scientific and technical advances. However, due to even greater increases in other sectors of the national economy, agriculture's contribution to the gross domestic product has declined from nearly 20% in the early 1950s to about 5%. Nevertheless agricultural products still form a large proportion of Australia's exports, amounting to about 40% by value in recent years.

Australia's 180 000 farms cover 500 million hectares, or about two-thirds of the land surface, and produced commodities worth \$A11 000 million in 1979-80.

Livestock have always formed the basis of Australian agriculture and still do, despite recent large increases in cropping. By far the largest proportion of agricultural land is used for grazing and, even where cropping is important, more than 80% of the land is grazed except in some of the small areas of intensive cropping.

The geography of Australian agriculture strongly reflects *effective rainfall*, which is the amount of rain available for plant growth after run-off and evaporative loss. Australia has universally hot summers and mild winters; temperatures low enough to stop plant growth only occur in relatively small upland areas of the south-east and Tasmania. Evaporative losses are accordingly high in summer and winter rain is more effective for plant growth and agricultural productivity. Even in the northern half of the continent, which receives much more rain in summer than in winter, the most productive areas are those which receive significant winter rain, as on the Pacific coast and hinterland of Queensland.

Australian agricultural land (Figure 1) can be broadly divided into three zones:

- The pastoral zone of the semi-arid inland and monsoonal north, where livestock graze on native pastures at low stocking rates and crops are virtually absent.
- The wheat belts of the sub-humid south and east, which contain most of the cropland. Even so, more than 80% is grazing land, much of which is sown pasture grown in rotation with crops. Stocking rates are, accordingly, much higher than in the pastoral zone.
- The high-rainfall livestock zones of the humid south and east, coastward from the wheat belts, where grazing predominates but which also contain relatively small areas of intensive cropping. The livestock are grazed mainly on permanent sown pasture, particularly in the south, and the average stocking rate is the highest of all three zones.

Most of the agriculturally unused land in the interior is desert, while nearer the coast it is mostly forested mountain and hill country.

The pastures, the resource upon which the grazing livestock depend, are described in the first topic of this volume. The spatial distribution and productivity of the main types of livestock and of the major crops are mapped and described in the following two topics. The final topic deals with the economic units of agricultural production—the farms—and with the economic productivity of farm land.

Nearly all the maps in this volume are based on data collected by the Australian Bureau of Statistics at the annual agricultural census of 31 March 1976. If available, figures for 1980 have been added in the text and tables. The 1976 figures were the most recent statistics when map compilation began and they refer to a year in which agricultural production was not abnormally affected by the weather. Much of Australia received above-average rainfall in the years immediately preceding 1975-76 but since then prolonged droughts have affected large areas.

