

*Livestock Management in the Arid Zone*. Victor Squires (1981). Inkata Press Pty. Ltd. Melbourne. 271pp. A\$35.

The book was written as “a practical guide for students, as well as a reference manual for pastoralists, graziers, livestock operators, land administrators, extension workers and researchers”. No volume can expect to reach all these audiences well but thankfully the actual content is especially oriented to the student.

Throughout the book the author has combined detailed results with generalities (both in the text and in figures) which although unusual are generally effective in transfer of the message. No doubt students will be interested in the types of experiments and data which are being collected in the arid zone. The author has wisely drawn heavily on some of the classical texts and has listed these for further reading.

The writing style is refreshingly simple but the occasional statement of the obvious e.g. “the level of nutrition can affect reproduction in sheep” spoil the overall readability. Another fact which caused me some concern was the repetition in some chapters which resulted from the structuring of the text.

Because of the breadth of topics covered in the book the detail of individual topics is variable. The chapters on water requirements and diet selection of both cattle and sheep are the most thoroughly discussed. I would have liked the author to have discussed at greater length the effect of man and his animals (both domestic and non-domestic) on the arid zone environment. The topic was touched on many times but the author missed the opportunity to give us the benefit of his undoubted wisdom in a more concentrated form; another volume perhaps!

The book will serve a useful purpose to students in particular, in that it brings together many topics relating to cattle and sheep management in the arid zone. The many excellent photographs and figures serve a useful purpose and compliment the text.

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“*A Manual of Australian Agriculture*”, 4th (revised) Edition. Ed. by R. L. Reid. for Australian Institute of Agricultural Science. Published by William Heinemann Australia Pty Ltd, Melbourne, 1981. ISBN 0 85561 047 6. pp 850. (Available from AIAS, 191 Royal Parade, Parkville, Victoria, 3052 or Mr. E. S. Wallis, Publications Officer, AIAS Office, Department of Agriculture, University of Queensland, St. Lucia, 4067. Price \$49.50—discount to AIAS members).

Agriculture probably embraces more skills or disciplines than any other field of endeavour. It not only involves scientific and economic specialists concerned with research and basic concepts but also the application of these latter by “the man on the land”. And in agriculture this general practitioner probably has a more intimate knowledge of the basic concepts than in any other vocation. To produce a text that provides a reference to basic concepts and scientific, and economic information and recipes for their practical application is a mammoth task. This has been done in *A Manual of Australian Agriculture* with great success.

The Manual was first published in 1961. This 4th edition is completely revised, enlarged and brought up to date. Its 37 chapters are from over 100 authors, all experts in their respective fields. At the end of each chapter is a bibliography of “Further Reading”, providing about 350 references.

An interesting feature of the 4th edition is the increased coverage of the business side of agriculture. Also some attention is given to energy conservation and general resource (or environmental) conservation.

Then as a preliminary to the main section on crops the basic factors involved—soils, water, nutrients and fertilizing—are treated in some detail.

In agricultural texts it is usual to consider climatology as a factor controlling crop production. Here the only specific reference to climate is an Appendix of seven maps of Australia showing the average maximum and minimum temperatures for January and

July and average rainfall at three levels of reliability. A map on the inside of the front and back covers shows seasonal rainfall in Australia.

Soil Conservation (rather than soil erosion) is the subject of one chapter. It conforms with the trend towards conservation of resources, with emphasis on prevention of erosion through planning and management rather than on the rehabilitation of eroded areas.

In thirteen chapters devoted to crops some 30 grain crops are discussed. In general, information is provided on botanical status, cultural requirements, the main cultivars, marketing and statistical data on productivity and markets. Other crops considered are the major oil crops (including cotton and soybeans), fruit crops (some 35 in all), vegetables, agro-industrial crops, including sugar cane, cassava, kenaf, nursery and floriculture crops and trees, which are dealt with in a chapter on Farm Tree Planting. Here a reference to a predominant height for *Pinus radiata* of 420 m must surely be an error.

Under Pastures, information is provided on species for specific situations together with details of some 60 grass and 60 legume species and on the numerous cultivars of many of them. The inclusion of many tropical and sub-tropical species reflects the increased development of sown pastures in northern Australia. In a section covering 10 miscellaneous species a number of natives is included.

The principles of hay and silage making and recent developments in this field are covered under Fodder Conservation.

A chapter on Seeds deals largely with legislation to control seed quality, and the management of seed during and after harvest to ensure satisfactory storage. Machinery for harvesting seed for pasture species is not discussed. In view of the specialized nature of pasture seed harvesting and of recent developments in this field some consideration of this would have been of value.

A short chapter on Wine reflects the recent growth of this industry in Australia. It covers the cultivars used for wine, wine making methods, nomenclature, packaging and legislation together with some general statistics although these latter fail to record that the Stanthorpe area is now the main wine producing area in Queensland.

Plant pest and disease control measures are brought together in tabular form in three chapters. This is preferable, for easy reference, to discussing these in the chapters dealing with specific crops and it is a pity that the format was not followed consistently. For example diseases of the floriculture crops are not included in the Plant Pests and Diseases chapter but are listed with the individual crops—and without control measures being given. Information on control includes a comprehensive list of 280 pesticides with their uses and a classification on the NHMRC Poison Schedule. A Herbicide Index summarises information on 79 weed killers. Altogether a very valuable reference to plant protection.

Information on Livestock covers the different breeds of sheep, dairy and beef cattle, goats, horses, pigs and poultry. For each class of stock reproduction, flock or herd management, nutrition and the production appropriate to each is discussed. Deer are featured for the first time as are also a number of new breeds of livestock either introduced to or developed in Australia, such as the Australian Milking Zebu and the Braford, Brangus and Belmont Red beef cattle. Feeding for production and maintenance during drought (in sheep particularly) and the various feed-stuffs and their uses are covered in detail.

The types of infectious and non-infectious diseases and their occurrence in different classes of livestock is discussed. Emphasis is placed on prevention through good management.

Under Livestock Breeding the principles of genetics and selection, mating and artificial breeding are considered. Information on heritability of various characters in each class of livestock and the measurement of characters of economic importance, together with the practicability and accuracy of their measurement on Merino sheep makes this chapter of great value to the livestock breeder.

There are five chapters dealing with livestock products—Wool, Hides and Skins,

Meat, Dairy Products and Eggs. Wool as a textile fibre and its characteristics of importance in processing are examined together with recent developments such as objective measurement in the classing of wool, and sale by sample.

The quality of hides and skins received by the leather tanning and fur dressing trades can be improved considerably and information is given on how this may be done by care of animals and attention to preparation, preservation and transport of hides.

Meat is considered mainly from the viewpoint of grading, classification, appraisal and preservation. Processing and carcase by-products are dealt with and statistics on production, consumption and export presented.

Farm Power and Machinery deal mainly, of course, with engineering matters but frequent reference is made to the economics of the use of power and the need to conserve resources. A long chapter deals with tractors, their performance efficiency and the matching of implements to them. Tillage, planting and harvesting equipment, including a number of recent developments are discussed. Details of spray equipment for pest and weed control, irrigation installations, electricity and electric motors provide a very valuable reference for farmers and their advisers. The chapter is well illustrated with photographs, graphs and line drawings. These are high class except for the line drawings of the twin-rotor combine harvester. These are virtually the only production blemish in the book.

Under Irrigation the general principles involved, farm storage, irrigation methods, the irrigation requirements of various crops, drainage, water distribution in channels and pipelines and water flow measurements are all discussed in considerable detail.

Farm Fencing and Rabbits—control objective and methods—are the subjects of two short chapters.

Government regulations to protect Australia's rural industries against introduced diseases and pests and to ensure quality control of exports are covered in a chapter on Agricultural Quarantine and Export Inspection. A further chapter deals with Agricultural Statistics, chiefly what are available and their reliability. Training in agriculture at the secondary and tertiary levels is discussed in a short chapter on Agricultural Education in Australia.

Two new topics introduced in the edition provide valuable information on the business aspects of the rural industries. Farm Purchase and Valuation sets out criteria for farm purchase and budgeting for farm purchase and discusses valuation based on sale of comparable properties and that based on capitalization. The other topic is Finance, Insurance and Taxation, the latter dealing with general income tax as well as that of primary producers. It also deals with estate planning and partnership structures where both assets and income may be shared by a number of people.

The final chapter is on Mensuration. This would probably be most used for its tables of conversions from imperial units to metric and *vice versa* of the major weights and measures but it also gives miscellaneous formulae and data covering a diverse range of matters relevant to agriculture.

This book is a superb reference and the few minor criticisms made in this review do not detract from this. Its high standard is due to the quality of the information it contains and its comprehensive coverage of the many aspects of agriculture. The only omission is perhaps a reference to turf culture. This is based on agricultural principles and has expanded greatly in recent years. The Manual fulfills the objective claimed on the dust cover to meet "... the needs of a wide range of readers, students, consultants, stock and station agents, farmers, graziers, scientists, economists and those involved in agricultural service industries". Furthermore it is well produced and easily read—a credit to the editor and the publishers.

R. ROE