

BOOK REVIEWS

Rangeland Plant Physiology edited by Ronald E. Sosebee

Society for Range Management, Denver, Colorado (1977). pp. 270, Price US\$12.00.

At first glance one may dismiss this book as being irrelevant to the management of Australian rangelands. For example it contains details of such things as structure of plant growth regulators and of the construction of the thermocouple psychrometer for measuring plant water potential. However, amongst the basic plant physiology there are some useful concepts developed that have relevance to the management of rangelands anywhere.

The book is the fourth in a Range Science series published by the U.S.A. Society for Range Management. Preceding volumes deal with hydrology, entomology and reference areas. To understand why these were written it is necessary to appreciate what the term Range Science means in the U.S.A. The official definition is "the organised body of knowledge upon which the practice of range management is based". Much of the research conducted in Range Science Departments of Universities is concerned with the structure and functioning of rangeland plant communities and individual plant species. Although these studies are ecologically based results may have little or no immediate relevance to management. This book is aimed at reviewing "selected topics of plant physiology with specific reference to rangeland resources".

No doubt the editor and authors contributing to this volume faced an initial dilemma in deciding how much they should include on the fundamentals of plant physiology for the uninitiated reader. This issue apparently was not resolved for some chapters read like parts of an introductory plant physiology text. In the preface it is stated that "the subjects in this booklet are not intended to provide an all exclusive treatise on plant physiology". Although this limitation is admitted the final product is a mixture of approaches. Such are the problems of writing a book by a committee.

The committee have selected topics for review and have covered the major physiological processes such as photosynthesis, translocation, storage, water relations, germination and growth regulators. However, there are several subjects which are scantily covered that deserved more emphasis. These include the flowering process and mineral uptake and plant senescence.

In spite of these limitations there are some very excellent chapters in the book that would be recommended reading for those interested in ecophysiology of range plants. The final chapter on developmental morphology and management implications (Dahl and Hyder) is excellent and there is also good treatment of the role of carbohydrate reserves in plant growth (Trlica) and the process of germination (McDonough). The chapter on mineral cycling in rangeland ecosystems (Charley) seems out of place in a volume on plant physiology but the topic is well reviewed, clearly written and justifies reading, particularly since it contains some previously unpublished data on *Atriplex vesicaria* communities in southern Australia.

The U.S.A. literature is well reviewed but there are notable omissions of some important studies conducted in Australia and South Africa. However, the immense literature reviewed makes it a useful reference for anyone commencing research on ecophysiology of range plants.

One of the major deficiencies of this book is that much of what is written lacks ecological perspective. The reader needs to sieve through what is written and decide what is relevant to the ecology and management of rangelands. This limitation could have been largely overcome by an integrating chapter.

This specialised volume will be of interest to those researching or teaching the biology of key plant species in rangelands. It would be of little value to pastoralists or technicians unless they have a tertiary education in biology.

Ken C. Hodgkinson