

BOOK REVIEW

Commercial Forest Plantations on Saline Lands

M. LAMBERT and J. TURNER

CSIRO Publishing, P.O. Box 1139, Collingwood 3066, Victoria, Australia; 2000, 216 p, hardcover, A\$99.00, ISBN 0643063978

Establishment of trees in degraded environments can produce both commercial and environmental benefits when appropriately planned. Fast growing plantations can benefit the environment by lowering water tables, and reducing the spread of salinity. This book is timely, particularly in Australia, because there is now widespread community, media and political acknowledgement of the magnitude of the land and river salinization problem. Increasingly, it is being recognized that the solution to environmental problems of this scale will depend on integrating both scientific and land management skills.

The book aims to provide a synthesis of fundamental scientific information and of practical field evaluation. The first part of the book (Chapters 1 and 2) describes basic concepts of soil salinization and of plant physiology, both of which have been covered elsewhere at a more specialized and expert level. The second part (Chapters 3 to 5) deals with species selection for salt tolerance, product quality, and marketing, which have also been covered more comprehensively in other publications. It is in the remaining part (Chapters 6 to 10) that deals with the more practical aspects — environmental benefits on a plantation scale — that the value of the book lies.

The environmental benefits in relation to ground water utilization are covered in Chapter 6. Data are presented to show that ground water levels can be significantly reduced by tree plantations, although a large proportion of land needs to be reforested to cause water levels to fall. Specific examples and ample references are given. Three case studies from catchments in Victoria and Western Australia are presented to provide an understanding of interacting biological, site and management factors. The effect of nutrient and salt removal in

the biomass is discussed, and the authors point out that the small amount of salt taken up by the biomass is low in terms of the total quantities contained in the soil — that is, trees cannot be used to reduce the amount of salt in the landscape.

Applications of effluent irrigation are presented in Chapter 7. Irrigation with effluent is an effective way to utilize town and farm waste water, and seven case studies are presented to show that it can enhance forest productivity, even though the effluent may be slightly saline.

Plantation management in saline environments is the subject of Chapter 8. Plantation management of saline and waterlogged sites requires a greater degree of planning and performance monitoring than on traditional sites. All aspects of management are briefly covered: site selection, soil preparation, competition management systems, irrigation, pruning and protection. Methods of assessment and monitoring of plantation health and environmental values are presented in Chapter 9. The final chapter considers the potential of forests on salinized land as carbon sinks and their possible value as a source of income to landowners from the sale of carbon emission rights.

The book is attractively presented, with a wealth of data to illustrate the text, and is fully referenced. Almost every page carries a table or diagram. Overall this is a useful reference for an important and developing subject, and should be of interest to research scientists, forestry advisers, and postgraduate students, as well as providing a guide to the scientific literature on reforestation and salinity.

Rana Munns, Division of Forestry and Forest Products, CSIRO, GPO 1600, Canberra, ACT 2601, Australia

BOOK REVIEW

Atlas of Structure of Gymnosperms

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This publication contains more than 800 graphs, drawings, photomicrographs, scanning electron micrographs and transmission electron micrographs illustrating the structure of gymnosperms. All material for the atlas was drawn from the extensive long-term collections and the published research papers of the Institute of Botany of the Chinese Academy of Sciences in Beijing. The atlas is arranged in chapters according to organ and tissue, following the classification system of Cheng and Fu (1978). Chapter topics include the shoot apex (shoot or

stem tip), leaf or needle, secondary xylem (wood), secondary phloem, root, pollen, female and male reproductive organs and the seed. The final chapter of the atlas contains an extensive list of publications on the structure of gymnosperms contributed by Chinese researchers (most of which are in Chinese, although there is also a large number in English). The book has an extensive index, and the illustrations, especially the scanning electron micrographs, are of top quality. The editors of this atlas attempted to cover comparative characteristics from

various gymnosperm taxa, and to provide a framework for the classification of different developmental stages. Photographs and illustrations have captions in Chinese and English, and species are identified by Latin binomials. The atlas is both a valuable reference work for researchers and a useful source of

illustrative material for teachers and students.

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