

Book reviews

Restoring Tree Cover in the Murray-Darling Basin

Sadanandan Nambiar, Robin Cromer, and Alan Brown, Editors
CSIRO Forestry and Forest Products, Canberra, 2000, pp 60 ISBN 0643 063196

The Murray-Darling Basin (MDB) is a vast complex area covering over 100 million ha in south eastern Australia. Soils in the MDB are commonly deficient in nutrients essential for plant growth, and often are hard setting with poor infiltration characteristics. In many areas tree clearing and excessive irrigation have caused water tables to rise resulting in increasing salinity. While it is believed that large-scale targeted reforestation of parts of the landscape through farm forestry can deliver both economic and environmental benefits, the requisite knowledge to attain these benefits in the MDB is lacking.

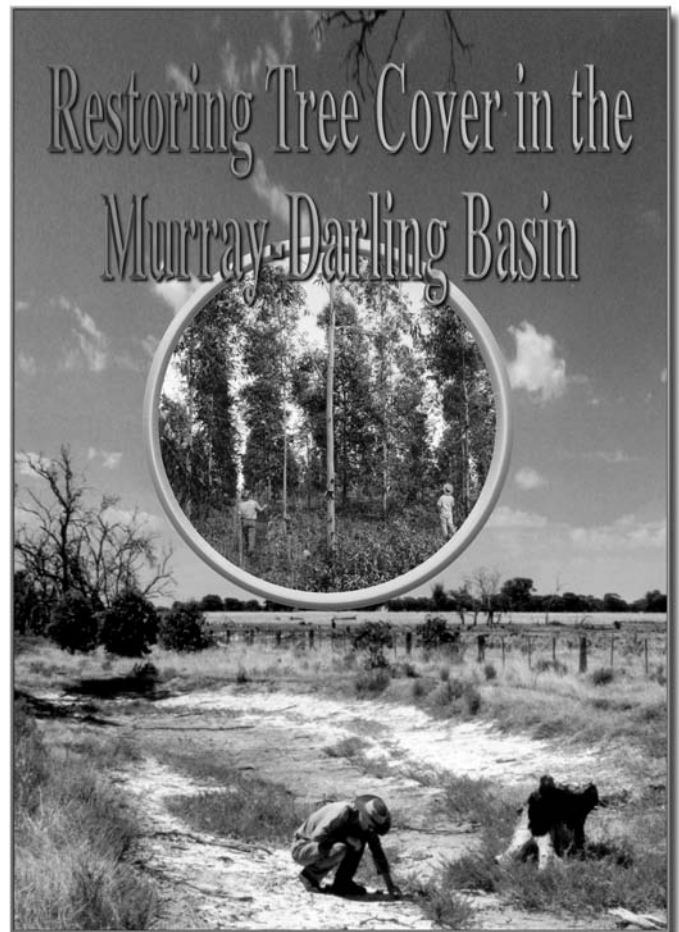
The object of this report is to present a brief initial account of research in progress by CSIRO in collaboration with local growers and farm forestry groups. The research has focused on, but is not confined to, low rainfall areas in the MDB where dryland salinity is a major problem and commercial forestry is a new venture for potential growers. The report contains chapters on the climatic and edaphic variability in the MDB (Chapter 2); the identification and selection of promising species for specific sites and the potential for genetic improvement within these species (Chapters 2,4,5); the management of trees to maximise the use of the available water through judicious placement of the trees in the landscape (Chapters 3,5); and the ability of trees to increase their growth and productivity by utilising ground water in irrigated and higher rainfall sites (Chapters 5,6). Threats to plantations from pests and diseases are considered to be particularly important in native hardwood plantations but a range of options which can form the basis for integrated pest management is available (Chapter 7).

The enthusiasm with which land owners will embrace farm forestry will depend to a large degree on the return they can expect on their investment. Assessments have shown that good yields of high-quality solid wood products and high quality pulpwood can be obtained from irrigated plantations and some plantations on medium to low rainfall sites (Chapters 8,9). However difficulties in processing and marketing may be encountered due to differences in wood quality between species and the conditions under which the trees were grown (Chapter 8), and to long haulage distances from main ports (Chapter 9). A more theoretical analysis based on projected growth rates and log prices for sawn wood of *Eucalyptus grandis* grown under irrigation indicated a low probability of such a venture being profitable unless additional returns can be derived from the provision of environmental services (Chapter 10).

Thus, in the light of current knowledge, caution must be exercised in advocating investment in farm forestry for conventional commercial purposes especially in the drier regions. As the editors point out (Chapter 11) further information on the productivity of trees, their management, their impact on the hydrological cycle and the prospects for their

commercial products is urgent. It is recognised also that the environmental benefits resulting from reforestation may be quite central issues which should be included in any analysis of projects to reverse the severe land degradation in the MDB.

E.P.Bachelard



How much wood has your woodlot got?

By J Piers Maclaren

Forest Research Bulletin No. 217

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Interest in the measurement and valuation of farm woodlots and small forest stands is gaining. Part of this interest is fuelled by the much publicised possibility of credit for the carbon sequestered in planted trees. Other interest is generated from an appreciation of the traditional values of well-managed trees. This book may be a welcome resource, particularly in New Zealand, to assist the non-technically trained in understanding and undertaking an inventory and valuation of their tree resource. It is well presented and full of interesting examples, photographs, graphs and tables.

The title of the book suggests that it would be appropriate for an individual farmer or woodlot owner, while the colloquial nature of the title also suggests this is not a technical manual. Indeed, these suggestions are borne out. The language is appropriate for this sort of audience and Piers has kept mathematical equations and symbols to a minimum. Where symbols or statistical terms are presented, relevant and "recipe" like examples and instructions explain their use. There is also a comprehensive glossary to explain the small amount of technical language needed.

This book deals with the full range of topics that are important in the valuation of a woodlot. It begins with a discussion on the need to value, and why an owner may want to make his or her own value estimate. It moves on to the problems and practical aspects of determining area, sampling, plot size and type, stocking, diameter, basal area, height, and tree age. Sections on recording the measurements made in the field, converting measurement to volume estimates and determining the quality of the volume follow logically. The work concludes with a description of a full inventory, including processing by commercial FRI software products and the determination of value from volume and quality information.

Each chapter starts with a brief discussion of what aspect of the stand is being measured and why it is needed. The chapter dealing with the measurement of area includes a very good treatment of the pitfalls and problems involved in the accurate definition and determination of woodlot area. Generally, this discussion is followed by recipe-like instructions on how the aspect under consideration could be measured or calculated. A range of methods is generally suggested, some of which may be appropriate for small or relatively large woodlots. Particular problems for the small woodlot owner, for example the increased proportion of edge-affected trees, are dealt with in a practical manner.

Three case studies, which cover a range of situations from 4.4 ha to 50 ha of 5- to 25- year old plantations, are introduced in the second chapter. Each chapter thereafter is well supplied with worked examples from these case studies. More than one example is regularly provided to help clarify the use of mathematical equations and the slightly more difficult statistical concepts.

However, in an effort to be comprehensive, the book covers details and methods of measurement that are likely to be only of interest to a consultant or larger farm forestry collaborative. These include discussions about sonic- and laser- based instruments and digital data capture devices (costing \$2000 - \$5,000), and computer software systems which have an annual licence fee of up to \$6,000. The discussions also deal with concepts that may not be directly relevant to a woodlot owner measuring a forest, but which are never-the-less valuable in understanding and comparing estimates from different sources. For example, varieties of stand height definitions - Predominant Mean Height, Mean Top Height, and Mean Crop height - are discussed and correlated, but there is little practical use of these different heights.

The book is published by the Forest Research Institute of New Zealand and shows its New Zealand and FRI focus in a number of ways. For example, the New Zealand emphasis is demonstrated by breast height defined as 1.4 m, with no mention that in Australia, 1.3 m is the standard height. Example location-specific coefficients in equations are all from regions in New Zealand, and an Appendix of contact addresses excludes suppliers and the Regional Farm Forestry Networks based in Australia.

The FRI focus is demonstrated by the detail on commercial computer software and training courses available from FRI. These commercial services are available in Australia and other countries outside New Zealand, and the potential users of these packages would benefit from the detailed and clear explanations. The chapter on MARVL (Method for the Assessment of Recoverable Volume by Log Types), for example, has very useful descriptions of the way trees are 'cruised', the data entered into the program, how the outputs can be used. A similar chapter on STANDPAK outlines its uses, inputs and outputs, while other FRI software is mentioned throughout the book. A note (on page 81) explains that the purpose of this detail is "to alert woodlot owners to employ consultants who are equipped with the full tools of their trade." Unfortunately no mention is made of software that is available from other parties outside New Zealand and FRI, for example, the Farm Forestry Toolbox developed for Private Forestry Tasmania.

In my view, this book would be extremely valuable for woodlot owners in New Zealand. It would be slightly less useful to owners outside New Zealand and the standards and many of the statistics would not be directly relevant. However all readers could benefit from the simple and practical discussions on the underlying concepts and methods involved in woodlot measurement and valuation.

Cris Brack