

John Halkett and E.V. Sale: 'The World of the Kauri' 1986, which contains an excellent list of works for further reading.

Tawa is a valuable timber tree formerly exploited during forest clearance (and often used for firewood or pulpwood) or by felling only a few of the best trees in a forest. What was known of its ecology and other aspects was summarised by a biological floral account in 1982.<sup>2</sup> The section on tawa in this handbook appears to be based on one of several published papers on its growth and ecology.

The chapter entitled 'Planted Forest Management' despite an explanatory footnote, might be better termed 'Management of indigenous plantations', though there are brief references to different aspects of planting, including supplementary planting or interplanting, within this chapter and elsewhere in the Handbook (planting of kauri), planting for conservation, p35 38). Most importantly the sustainable forest management prescriptions listed in Appendix 3 provide for planting of nursery-raised seedlings to replace harvested trees of podocarps and some other species where there is not enough advance growth. This indicates cluster planting in gaps created by logging or in natural canopy gaps. As even healthy forests of some types do not regenerate continuously (cf p113), this supplementary planting may be required and it deserves further attention.

Wildings directly moved to a planting site are not usually a substitute for nursery-raised seedlings but transplanted when small to the nursery may eventually provide good planting stock. Large-scale raising of rimu in nursery beds for planting out of bare-rooted seedlings of podocarps and has been done successfully at the nursery of the Forest Research Institute, Rotorua.

There is a short chapter on more recent legislation applicable to indigenous forest. The longer chapters on Options for Harvesting, Sustainable Forest Management Plans and Permits and some of the Appendices reproduce in full the text of the Ministry of Forestry's previous publication (June 1997) on 'Indigenous Forestry Sustainable Management. A guide to plans and permits' (38 pages). This material and a new chapter on Forestry Inventory and Monitoring comprise a valuable part of the Handbook.

The nine appendices include information on timber properties of indigenous trees, sustainable forest management prescriptions, examples of how to complete control forms, forest sampling and tree volume functions.

Although this handbook is not a scientific publication, an adequate sourcing of

information would add to its authority. At least the main sources could be given after chapter and some section headings, or in footnotes, and more specific references in the text to published items could have numbers matching authors and titles in the list of references at the end of the book some of which require correction.

In view of the fact that heavy exploitation and clearance was the fate of many indigenous forests in New Zealand until the 1970's and that the legal constraints for managing private indigenous forests were promulgated only in 1993, the production of this handbook is a commendable enterprise, resulting in a useful introductory guide. Some shortcomings will, no doubt, be remedied in future editions.

With some of the background work on the ecology of indigenous forest trees and limited management of indigenous forests summarised in this book, the manager of privately-owned forest intent at implementing sustainable forest management and faced with few easily accessible recent examples, should be encouraged by the guidelines and practical advice offered.

**Tony Beveridge**

**Agroforestry for Soil Management by Anthony Young (2nd edition). CAB International in association with the Centre for Research in Agroforestry. 1997. 320p. Price 25 pounds sterling. ISBN 0 85199 189 0**

Firstly, a warning for students of New Zealand plantation monoculture paradigm, don't be surprised when you read this book and find mention of sheep grazing on grass under radiata pine. However, for those who know of the author and his previous work you will soon realise that this second edition encompasses a considerable quantity of recently published work (nearly 700 recent references) and is a timely advancement on the first edition "Agroforestry for Soil Conservation," which was published in 1989. The subtle change of title disguises a major shift in philosophy away from the concept of conservation to active management of soil resources by applying agroforestry principles and practices.

To this end the book is targeted at three groups of readers, students, researchers, and those engaged in developing agroforestry in the field and providing technical advice, especially in developing countries. Not only are references provided for various examples of agroforestry systems, but there are references describing processes that occur in the systems.

In Chapter One twelve specific hypotheses are proposed to cover research into the principal aspects of agroforestry in soil management. These hypotheses are then

addressed in the next seven chapters covering issues such as the effects of trees on soils (Chapter 2), soil and water conservation (Chapter 3), soil water management (Chapter 4), soil organic matter and physical properties (Chapter 5), nutrient cycling and nutrient-use efficiency (Chapter 6), the role of roots (Chapter 7), and agroforestry systems for soil management (Chapter 8). Chapter 9 provides a good introduction to modelling soils in agroforestry systems and provides specific examples using the CEN-TURY model and SCUAF (soil changes under agroforestry). Chapter 10 sets out an agenda for research into soils in agroforestry systems and discusses appropriate experimental designs and research methods necessary to detect what may be subtle changes in soil properties. There is also discussion of the difficulty of examining single factors in complex systems, such as agroforestry systems in which all but one variable must be controlled. Chapter 11 covers the issue of agroforestry and land use planning and the role of agroforestry in the environment. To that end it is argued that agroforestry should be well integrated in land evaluation and land use planning because agroforestry has the potential to contribute to the control of land degradation through reduced nutrient loss, erosion, desertification and forest clearance. As a land use it also has the potential to contribute to global issues such as reducing increases in atmospheric CO<sub>2</sub> levels. In conclusion, the final chapter readdresses the initial twelve hypotheses and summarises both experimental and field experiences relating to the hypotheses.

The understanding gained from the examples and research presented in this edition may provide some valuable lessons for managers of other ecosystems, especially those wishing to actively manage our soils and understand the impacts of management practices on the soil resource. In forestry circles there is certainly considerable debate on such subjects as the effects of trees on soils, on soil and water conservation, soil water management, soil organic matter and physical properties, nutrient cycling and nutrient-use efficiency, as well as the various roles of roots.

**Peter Clinton**

The book contains good quality black and white photos and clear diagrams and tables. Author and subject indices are conveniently included. This second edition is certainly one that any postgraduate student in agroforestry will want to read in preparation for any essay on contemporary soil-related issues in agroforestry. It is definitely a must for academic libraries that cover biological land production.

<sup>2</sup> Knowles, B. and Beveridge, A.E.; 1982 *Biological Flora of New Zealand* 9. Tawa. *NZ Journal of Botany* 20:37-54.