Australian agroforestry and farm forestry

Agroforestry and Farm Forestry. Productive trees for shelter and land protection in North-East Victoria. By Russell Washusen and Rowan Reid. Published by the Benalla Landcare Farm Forestry Group, PO Box 58, Benalla, 3672.

At last! A farm-forestry book written by Australians for Australians. For too long, our neighbours from the West Island seem to have been relying on New Zealand references. This is clearly unsatisfactory, because there are major differences between the two countries. In the region under discussion (North-East Victoria), the rainfall is lower than is common in New Zealand; preferred species include eucalypts, wattles, Grevillea and Casuarina; salinity is a major problem; State or State corporations "clearly set the price [of both native and plantation timbers] through the royalty system"; and the topography is very gentle. There are hilarious photographs in the book showing "very steep slopes" that we would describe as rolling foothills, and "gentle slopes" that we would describe as completely flat!

Nevertheless, there are some issues in the book that are of mutual concern. These include biodiversity, soil acidification (through the use of clovers and fertilisers), various forms of soil erosion, sedimentation of waterways, and the debate over the complementarity of farming and forestry systems. We have enough in common to justify maintaining contact. Many New Zealanders will be interested in sales figures for ash eucalypts and blackwoods. Stumpage prices for the best-quality logs of these species are given as $A65/m³ and $A110/m³ respectively.

We are fortunate that in New Zealand we do not have the problem of soil salinity. In Australia they use trees to reduce the quantity of rain that penetrates the soil, dissolves salt, and brings it to the surface. It is rather ironic that in a climate even drier than Nelson or Canterbury, Australians consider that the extraction of water by trees is a benefit rather than a drawback. In my ignorance, however, I question the prevailing wisdom of planting trees only on the "Break of Slope" - this is the term Australians use for the toe-slope, where the groundwater flows to the surface from beneath a hill. The idea is to intercept this salt-laden water before it can reach the fertile valley floor. Planting the whole hill in trees is considered uneco-
nomic, but I find it hard to accept that a narrow belt of trees on the toe-slope would extract sufficient groundwater to be effective. The book contains no references, so I can't follow up on this.

The absence of references is indeed quite frustrating, because there is no way of determining if the information presented is genuine or is merely sloppy research. For example, we read in the section on shelter-belts that: "Research suggests that the increased animal production from sheltered paddocks in experiments is largely due to increased pasture production rather than the direct effect of stock shelter". Is that so? New Zealand experiments indicate the opposite, at least for studies in the North Island. Increased pasture production near NZ shelter-belts has mostly been the consequence of fertility transfer - the process by which stock remove nutrients from the centre of paddocks and deposit them in dung and urine adjacent to the shelter. Martin Hawke of AgResearch has taken soil samples at varying distances from shelterbelts and grown pasture on them in neutral conditions. He has discovered a difference which explains most of the observed "shelter benefit". He has also taken neutral blocks of soil and placed them in the ground at different spacings from shelter. Any direct benefit as a result of reduction in windspeed is small and probably overshadowed by the loss of pasture from the fenced-off area.

BOOK REVIEW

With regards to the silviculture of radiata pine, New Zealand and Australia seem to be separated by a time-warp of 20-30 years. This is well illustrated by the trite and muddle-headed sections on regime choice, and the photograph showing antiquated pruning tools. The authors appear not to have understood some of the basic principles behind thinning, pruning and stocking. For example, we are told that stocking should be decided on the basis of a "target" tree diameter and a spacing (20 times the tree diameter) that we are informed will allow tree growth in reaching that target. This is primitive stuff! Similarly, the statement on page 96 that "Even in pruned stands a final stocking rate of about 200 trees per hectare for pine (about 6.5 m between trees) [sic] is preferred to provide for branch shading in the second log". Dealing with rotation age, we learn that: "Due to the low density of the wood in the young growth rings [of radiata pine], trees should be over 16 years when sold for sawlogs". So, 16 is the age of consent over there?

The authors' unsophisticated approach to forestry calculations is seen on pages 181 and 183. Whereas, in New Zealand we would use complex computer programmes incorporating such elements as work-study regression equations, taper and volume functions, diameter distributions, yield equations, sawing studies, etc., the authors assume that if it takes one minute to prune a tree, you can prune 60 trees in an hour. What of walk time or down time? They judge site quality on a tree's annual diameter growth, and assume that there is a linear relationship, so that if a young tree grows 1 cm a year, it will be 60 cm (below bark) at age 60. Volumes are then calculated using high-school geometry, and these are multiplied by some unsourced price data to give the stumpage value of a standing tree to the nearest cent! Omitting growing costs, the stumpage value of individual trees is then discounted at 4% (why 4%?) to give a Net Present Value.

In spite of the above paragraphs, it would be wrong to judge this book on its technical merit and detail. The book was written for Australian farmers with only a rudimentary knowledge of forestry, and it serves its purpose reasonably well. Despite being 188 pages long, it is highly readable - as I have come to expect from the second author - and it took me only a couple of hours to absorb. It is interspersed with single-page case studies from individual farm foresters, which is an excellent idea and which could be copied here. The book is lavishly illustrated with black-and-white photographs, but unfortunately the reproduction is very poor and many are extremely blurred. The most useful sections from my perspective were those describing the environmental role of trees on farms, and those describing the common plantation species.

In summary, this is a 'lightweight' book of little relevance to most New Zealand farm foresters, but may be a quite useful text for its intended readership - our time-wrapped neighbours on their "steep" hills with their regulated economy.

Piers Maclaren