



Editorial

Species diversity – stuck on the horns of a dilemma

This issue of the Journal is dedicated to species diversity; the philosophy being that one or two items might get lost in the crowd and draw no response, whilst an orchestrated feast on the topic is bound to cause some indigestion. We might even get something thrown back at us (pun **definitely** not intended), which would be welcome.

The objective is not to push a particular line, but to explore our options and try to develop a greater understanding of the issues. To modify Shakespeare: *"It is not that we love radiata less, but that we love diversity more"*.

Is Diversity Desirable?

The first issue, of course, is whether diversity is desirable at all, or is it a red herring promoted by romantics? Many have argued that in radiata pine we have a species that: is easy to manage; is not site specific; produces a general purpose timber with a wide number of end uses providing its own diversity (of a quality that is now becoming appreciated by the market); provides a high return on a relatively short rotation of 30 years; has established markets and an expanding timber resource supply of sufficient scale and consistency (in quantity and quality) to warrant more market development and resource expansion, and, finally, is now of a sufficient scale to economically justify such risk reduction programmes as spraying for *Dothistroma*.

Given these arguments, one could be justified for taking a business as usual approach, rotating 'strategic' plans looking a few years into the murky future and continuing the pattern that has served us so well in the past.

However, most arguments for diversity stem from the very fact that the future is murky and that our future success is linked to our customers' wants, needs and willingness to pay, and to our success at evading a species specific biological threat.

The customer and biosecurity are not the only considerations. Increasingly **society** is applying its own influence through the Resource Management Act, with increasing pressure on landscaping and recreation values, and particularly the

spectre of future concern relating to timber preservation and anti-sapstain chemicals. Any number of future scenarios could eventuate, and those that wish to reduce risk in the event of an uncertain and changing society and marketplace are wise to consider a balance of options.

The third argument for species diversity relates to a more sophisticated approach to choice of species to suit site parameters. Establishment of alternative species on this basis has always occurred to some extent, and the failure of much first rotation radiata planted at or beyond its climatic and edaphic limits has increased the awareness. It would be fair to say that the greater autonomy available to the managers of much of the ex-State forest will assist this rationalisation.

The Risk Paradox

'Risk' is arguably the key word in the debate about species diversity, coupled with the obviously large number of 'what if' questions you can think of. But there remains a paradox. Most will acknow-

"Doing nothing involves risk, but taking a new initiative may involve greater risks."

ledge that there is some exposure to ecological, marketing and biological risk and uncertainty for a forest grower concentrating on one species. It is similar to the portfolio theory principle that suggests a balanced assortment of stocks is preferable to just one. A more diverse resource will reduce some risks, but there remain considerable risks in establishing a new alternative species resource, particularly if you're the first; 'opening the batting' so to speak. Herein lies the paradox; doing nothing involves risk, but taking a new initiative may involve greater risks.

Whether growers prefer inaction over action depends on their perception of the relative risks, and how far their vision extends. The risks of action are more immediate.

The other paradox is that, in the past, other species' risks have proven higher

than that for radiata. Notable examples include *Dothistroma* and its effects on Corsican and Ponderosa pine, poplar's susceptibility to rust and the biological and utilisation problems of eucalypts.

Establishing an Integrated Network

The risks involved in establishing a new resource base are real. Particularly as it does not just involve establishing a new resource, but also a new market, and potentially a new secondary industry altogether. A prerequisite for that is a regionally concentrated, continuous supply of a new material of sufficient quantity and quality to make a network worthwhile. Without the markets and the industry, you are faced with the perpetual problems of alternative species: inconsistent, ad hoc, on-off supplies of variable quantity and quality. The undeveloped market generally results in the offering of a lower price. Therefore, the market signals to the grower are negative, so the resource base doesn't expand, and may actually contract. This is the classic chicken and egg dilemma: you must have a market to justify the growing of a sizeable resource, but you often can't develop a market until the sizeable resource eventuates.

The answer to that may lie with the international marketplace. Bill Libby mentions the established market for redwood in California (page 4), and there is an excellent Douglas fir market both domestically and internationally. Substitutes for tropical hardwoods should find a ready buyer, and the reports about the small one-off supplies of cypress to the North Asian market have generally been very favourable, suggesting the relatively easy establishment of a marketing network should sufficient cypress timber eventuate.

But that scale required in an international market to ensure continuity is far greater than that required for a domestic processing market. An annual volume of 25,000 tonnes produced in a region might establish a small domestic industry, but any fledging industry is at risk of having a year's resource supply wiped out by a single log export shipload. Given this, it seems logical that any volumes of alter-

native species need to be large if new local processing initiatives are to survive. The current "cottage industry" scale means that prices paid are insufficient to encourage any expansion of the resource.

There was once real potential for the development of a continuous, sustainable, high value export industry from our indigenous forests. Now we can only regret the unenlightened policy decisions in the distant past, when the Crown negotiated very long-term contracts providing unsustainable timber volumes at an extremely low price to exclusive domestic customers, that robbed us of these opportunities. Some have said that the passing of the Forest Amendment Act 1993 is a policy decision made in a similarly unenlightened vein (see H.P. Heath comment, NZ Forestry, November 1992). It remains to be seen whether 'planted' native timber can compete as an option alongside more promising exotic alternatives, particularly with neither access to an export market price nor the continuity that management of a significant existing native resource might have provided.

Payback Period

There are other key issues. Most alternatives involve longer rotation lengths, more demanding silviculture, the build up of expertise (as distinct from 'information', which is available as pointed out in the commentary by Mike Wilcox (page 9)), considerable commitment, and the courage necessary for daring to be different in a conservative industry.

The payback periods are the major hurdle. New entrants into the forest industry must either buy their way into an existing cashflow with debt capital, or develop a resource from scratch and service the investment requirements from other income

sources. Either way, capital is limiting and decision criteria such as IRR become more relevant (though many forest economists discourage the use of IRR in any set of circumstances). Under these circumstances, radiata pine is a highly preferable species, particularly because of its short rotation and established silvicultural expertise and markets. The 'gamble' of alternative species is really the preserve of those without the major cashflow constraints of first rotation foresters. Only when a forest comes on-stream and produces large positive cashflows can a forester afford to extend his planning horizon out to the truly 'strategic'.

Another prerequisite is a more sophisticated approach to decision making. The Resource Management Act and other issues point to the growing relevance of biological decision criteria to modify those answers derived from financial criteria. There is also a need to reappraise the application of appropriate discount rates to suit the total **economics** of a forest estate as distinct from the narrower **financial** aspects of a single crop or compartment.

Is It Attainable?

It is perhaps worth reflecting on the experience of radiata pine and Douglas fir when they were initially established by the State Forest Service early this century. At the same time, they faced much the same dilemma. The risk that the State took in establishing the plantations resulted in private industry having the confidence to follow suit. The whole gamble confirmed its promise when the timber came on-stream in the 1950s. This was largely the reason the combined State and private industries

had the confidence for the second wave of expansion in the 1960s. An industry had been born. It is not at all fashionable to suggest that a Government strategic initiative might have come up trumps once in a while, but this is one such example.

The 1981 Special Purpose Species policy, requiring the NZ Forest Service to plant ten per cent of its establishment programme in a selected group of species outside Douglas fir and radiata pine, followed in this strategic tradition. The potential of this policy can only be speculated upon, but it is not impossible for a similar initiative to yet be taken up by a group of forest growers in a region. Dunedin City Council owned City Forest Ltd have implemented just such an initiative with their practice (in place since the late 1970s) of establishing between 30 and 40 hectares of macrocarpa (*Cupressus macrocarpa*) every second year. There is a commitment to tend and the hope that other private growers can gain confidence by the existence of such a new resource 'backbone' to take the plunge themselves.

My personal belief is that, in the absence of any hope of a Government initiative, it is the foreign owners who could provide the key.

They have the market contacts, the resources and, in some cases, the innovative attitude. Given time, the rapidly expanding farm forestry estate should reinforce any commitment by the major growers.

There is already evidence that the overseas companies are making their mark. Eucalypt and Douglas fir plantings in Otago and Southland are testimony to that. Long may it continue.

Chris Perley

Redwood – an addition to exotic forestry?

W.J. Libby¹

Reasons for additional species

First, let me be clear that *Pinus radiata* is a successful and proven species on a remarkable range of sites in New Zealand. In fact, radiata pine is my reason for being in New Zealand this year. Its great biological success, and now its spectacular commercial success, have been major factors in first creating and now intensifying commitment to plantation forestry here. This heightened commitment has led to plans for planting even more radiata pines, and to some concern about doing so.

The first and perhaps main reason for considering other species is the concern about having too many eggs in one basket.

Burdon (1982) summarised and discussed the arguments for and against a monoculture of radiata pine, and concluded that there is cause for vigilance, but hardly for panic.

A second reason is that, as well as radiata pine grows here, there are some climates and some soils in which and on which it does not do well in New Zealand. Other species might grow better in such locations (Burdon 1975).

A third reason is that, even on some good radiata pine sites, there may be other species that are economically, biologically or aesthetically better. I now suggest that coast redwood (*Sequoia sempervirens*) is such a candidate. I do so with full knowledge that a substantial majority of New Zealand foresters hold the opinion that redwood has been tried, and that it has failed as a plantation species here.



Coastal redwoods in their natural habitat at Prairie Creek State Park in Northern California. (Photo: D.J. Mead)

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