

of land that contains a 25-year-old pine plantation (20 ha).

Option A: The farmer sells 10,000 m³ of wood for \$500,000 and puts this in a bank at 7% interest. After 10 years, the investment would be worth \$983,575 (2008 dollars).

Option B: The farmer accepts a "delayed-harvest" contract from a sawmill. The sawmill provides an annual payment to the farmer of \$20,000/year for 10 years. In 2008, the farmer sells 35-year-old wood to the sawmill for \$70/m³ (a predetermined contract price). If the stand produced 14,000 m³, the farmer would get a cheque for \$980,000 at harvest. At a 7% interest, the 10 annual payments of \$20,000/year would be worth \$295,672 for a total of \$1,275,672 (2008 dollars).

Option C: The farmer turns down all offers and lets the stand age for another decade. In 2008, the farmer sells the 35-year-old wood to the highest bidder. If the stand contains 14,000 m³ and if the wood sold for \$100/m³, the farmer MIGHT receive \$1,400,000 (2008 dollars).

Most will agree that money in the bank has less risk than guessing about future wood prices. Therefore a farmer that is risk adverse might choose Option A. On the other hand, a tree farmer who is a risk taker may choose Option C. Risking everything for 10 years MIGHT be worth an additional \$417,000 (2008 dollars). Some individuals might gamble that by 2008 the "wall of wood" will not have driven down the real price of export logs.

A risk adverse farmer might also see Option B as attractive. In this case, some of the risk associated with a longer rotation would be shifted from the grower to the sawmill owner. For example, if the plantation burned just before harvest, the sawmill would lose \$295,672 and the landowner would lose \$980,000. Although the sawmill would be taking some risk, it would potentially be gaining a supply of higher-quality wood at a discounted price.

Even though it appears to be a good deal for the sawmill, I doubt many sawmill owners would be willing to make offers similar to Option B. I expect most sawmill owners are risk adverse. I doubt they would be willing to take a gamble on a long-term investment in improving wood quality. However, if sawmill owners were willing to shoulder some of the risks associated with growing trees, perhaps more landowners would be willing to consider longer rotations.

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The timing factor

Sir,

I agree with what Piers Maclaren (1997) has to say until he gets to the sustained-yield situation, the assessment of risks and the application of costs.

Using the same figures as the author, consider first the situation of a sustained-yield forest. Regime "A" has an MAI of 17m³/ha/yr and Regime "B" an MAI of 24m³/ha/yr. In a 20-year rotation on Regime "A" where there is one hectare of each age class, 1 - 20 years, the standing volume is 3570* m³ and the harvestable yield of the one 20-year-old hectare is 340 m³. In a forest of 35-year rotation [Regime "B"] that also has one hectare of each age class, 1 - 35 years, the standing volume is 15120* m³ and the harvestable volume of the one 35-year-old hectare is 840 m³. Here one forest is 20 ha. And the other 35 ha. To bring the latter down to a 20 hectares each age class must only be 0.57 ha. The standing volume is then 8640 m³ and the harvestable volume is 478.8 m³.

The standing value of Reg. "A" forest of 200 ha is 3570 times the average m³ value of the wood and that of the Reg. "B" is 8640 times the average m³ of the wood, and the value of the annual harvest is similarly 340 and 478.8 m³ each by the average m³ value of their respective wood qualities. These are the comparative values of sustained-yield forest of these different ages.

To consider the cost factors, allow that each forest is grown on the same land. This eliminates any difference in land values. Annual harvesting and transport costs should be calculated on a m³ basis and not on an area basis because, for this exercise, they are done on the same hectare. The cost of establishment and pruning may be higher for Reg. "B" on a per hectare basis, but only 0.57 ha needs to be established each year against one hectare for the Reg. "A" areas. Annual maintenance costs will be the same for each forest. These are the factors to be considered when applying the timing factor.

Next let us consider the risk factors. Using his example of three 20-year rotations versus one 60-year rotation, consider the physical and biological risks. His assessment of the latter rotation being three times greater is not correct.

Firstly, stands are at greater risk in their first 20 years than in the 21-60 year ages. For instance, young trees are more susceptible to fungal diseases and insect attack and there have been notable examples of this with *Dothistroma* and

* These standing volumes overstate an actual position but are indicative of the relative position.

Sirex in our forests.

Secondly, when it comes to fire and wind damage there is little chance of any salvage in the young stands but many stands over 20 have been successfully salvaged.

In the sustained-yield situation one must look at the objects of management and the obligations that the forest manager has to supply wood on a continuous basis. Many large forests are grown to supply wood to utilisation plants. These need wood, not money, to feed them. There is often as much invested in these plants as in the forest and they need a **continuous** supply of wood. In these situations the risks of being dependent on only 20-year forests is unacceptable.

The small investor can get some comfort from insurance but this does not help when there is a utilisation plant to feed. He will only be interested in getting the best return irrespective of the quality of the wood that he sells. Unless the utilisers are prepared to pay a premium for the quality that they want, the grower cannot be blamed for the quality of the end product. However there is more to this, if the finished product is of poor quality then the industry as a whole will get a bad reputation, and this will reflect back into the stumpages that the grower gets.

Some countries have restrictions aimed at quality control, be it by age or size of the trees that can be harvested. The industry as a whole should be guarding the good name of New Zealand *P. radiata*.

Market forces only apply to the harvested product. Foresters unfortunately, have to make the crucial decisions at the start of the rotation; therefore faith and far-sightedness are essential characteristics of the profession. Fortunately these have been strong in our past leaders. Foresters need the help of economists, but as Maclaren states, they must rethink their ideas when it comes to forests. We must get the logic and the data right, then let the chips fall where they may.

J.E. Henry

Reference: Maclaren P. 1997. The importance of wood quality. NZ Forestry, Nov, p3, 4.

Alternative management regimes and straw men

Piers Maclaren's article (*The importance of wood quality* — November 1997) begins by comparing the mill door radiata prices with higher prices for other species (coal and diamonds) and proceeds

to construct a straw man. He argues that the advocates for the latter (the diamond mine, a.k.a. species or regimes of longer rotations) follow a simplistic "diamonds or coal" philosophy — that is, the higher price is the better choice. He then proceeds to lay a match to the straw.

This would all be well and good if his mythical straw man existed. Unfortunately for Piers, it does not. He misrepresents the argument. The advocates for longer rotations, different species, more 'conservative' regimes, and diversity do so for many more reasons than mere mill-door price, or mere cost of capital. To return his pejorative — he simplifies the issue to one of straight finance, to capital, discount rates and cash flows.

There are broader, non-quantifiable issues to consider, related to "strategy". The issue Piers is really one of "*what ought to set strategy?*" — financial criteria? or a broader perspective taking into account market preferences, the actions of competitors, and where a company wishes to position itself for whatever reason?

Focusing, as Piers does, on "farming capital" as the apparently all-encompassing criteria only emphasises a production mentality coupled with a Romney-like tendency to run with the flock. This may be the appropriate strategy for some, but others, I am sure, would far rather focus on building a mousetrap (for want of a better analogy) that puts them in a sellers' market, and where risk is reduced through

options.

There is an old adage that designing the "best" mousetrap will not ensure future success: to that we should add — nor will the cheapest! Cost of capital is a relevant consideration, but not in the sense of its minimisation at the expense of reason.

Rejoice at the diversity of strategies, Piers. Long-term is not necessarily more risky, but chasing the highest theoretical future return using past financial data almost certainly is! Rather like driving while gazing in the rear-vision mirror. Throw a grain of salt on your spreadsheet.

Chris Perley



CONFERENCE PAPERS



Sustainable management of private native forests in New Zealand: what's in it for the landowner?*

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Abstract

The 1993 amendment to the Forests Act (1949) (hereinafter referred to as the Forests Act) requiring that private native forests be managed with minimum impact, with due regard to flora and fauna, natural and amenity values, and protected from a variety of threats, has caused us to expand our approach to forest management beyond the timber. We must now meet the challenge of harvesting our native forests and undertaking monitoring, silviculture and protective management to a standard rarely aspired to, or achieved, in the past.

The Forests Act has curtailed an historically opportunistic, exploitative approach to forest use, and while the changes have attracted a negative reaction from a number of landowners there are glimmerings of interest by many in the idea that they can have their cake and eat it too, albeit in smaller mouthfuls. They are facing up to change and approaching the challenges of managing, processing and marketing the traditionally abundant timber species, little used species of limited resource, and some, present as relatively large resources, but not previously

favoured by the timber industry.

*The future New Zealand native timber market will revolve around a relatively small but continuous supply of predominantly southern beeches (*Nothofagus* spp.), rimu (*Dacrydium cupressinum*), and broadleaved hardwood species such as tawa (*Beilschmiedia tawa*). Better timber utilisation and an upward shift in timber prices may in part, at least, compensate for the higher standards of forest management demanded by our society and reflected in the Forests Act.*

Introduction

The 1.3 million ha of privately-owned native forest in New Zealand represents 20% of our native forests; a similar area to New Zealand's plantation forests. Much of this forest is located on steep terrain and has either been subject to exploitation for the most profitable timber species in the past, or has been difficult of access for traditional harvesting methods and similarly not suitable for agricultural development. The forests are classified by the Ministry of Forestry (1996) as about 10% potentially commercially available, 40% currently unavailable (due to low timber volumes or previous harvesting), and the remaining 50% as protection forest. While the use of helicopters and on-site milling using portable equipment has blurred the boundaries between these categories it is a fair guess that about 50,000 ha of the

private native forests remaining have potential for long-term management for timber production, with a further 130,000 ha of Crown-owned forest dedicated to management for timber production, albeit at low levels compared to plantation forests.

This paper describes, mainly in anecdotal fashion, the diverse reactions of private landowners to the introduction of this legislation and outlines some of the challenges in moving towards a viable industry based on sustainably-managed native forests.

Forest Owner Support for and Opposition to the Legislation

With the expiration in 1996 of the Transitional Provisions of the Forests Act, unsustainable timber harvesting from freehold land is a thing of the past. Many landowners have openly supported sustainable management of our remaining private native forest and are prepared to work with the legislation. A positive attitude is evident in the formation of an 'Indigenous Forestry Section' of the NZ Farm Forestry Association, where landowners are sharing their knowledge and enthusiasm for the protection, management and enhancement of their forests. This enthusiasm is further demonstrated in the Association's collaboration with the NZ Ministry of Forestry in compiling a user handbook on Indigenous Forestry.

* Reproduction of a paper published in the Proceedings of the ANZIF Conference, April 21-24, 1997, Canberra.

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