

I suggest that the system of clearfelling and leaving seed trees, as practised in the Alton Valley in Southland, has been reasonably successful in restocking silver beech forests. I would also suggest that ecological diversity will be maximised in forests carrying a range of age classes and forest health will be improved. Have a look at Waipoua Forest which has one of the finest collections of stag-headed trees in the country and compare it with Russell Forest which was logged many years ago and now carries a vigorous kauri/podocarp/tanekaha forest.

The point I am trying to make is that our indigenous forests can be managed to produce a sustainable yield of high-quality timber without impairing other forest values, but rather improving them, provided management systems are not dictated by some undeclared edict to maintain the status quo.

2. The protection of soil fertility and soil stability are two of the more important functions of forests, and to fill these roles forests should be in good condition.

The collapse of the canopy species in parts of the Kaimanawa and Tongariro National Park forests was a timely reminder of the vulnerability of our natural forests. Apart from limited areas in the Kaimanawas these forests were undisturbed by man but the collapse of the canopy was spectacular. In the east where some management was carried out to promote the domination of red beech in the next crop there was no such collapse.

Similarly, I have difficulty in coming to terms with the proposition that ecosystems must not be modified in view of the well-documented propensity of kauri forests not only to cause serious loss of soil fertility but also to significantly degrade the structure of the soil and the presence and activity of soil biota.

It is certain that actively-managed forests would solve most if not all of these problems. If the retention of biodiversity is of real concern I presume the whole ecosystem is included. If that is the case then there will have to be some sort of a trade off if kauri forests are to be retained totally unmodified and no active management practised.

There are also the areas of second crop kauri to be considered, as most of these are in Crown ownership. They offer one of the best options for the sustainable production of one of the finest timbers in the world.

If the profession of forestry is to be considered to have any substance at all, then surely the Institute must make an attempt to counter the lock-up policies advocated by the environmental lobby and assorted political opportunists.

3. I agree a good data base is essential but I am surprised the existing National Forest Survey and Ecological Survey data are not being used at least as a starting point.

Of more importance in my view is the need to identify regenerating areas of commercial species, their extent and their suitability for future management. There are many such areas in locations extending from Stewart Island to Northland. In addition, some regenerated areas have been given varying degrees of silvicultural treatment and these should not be forgotten. A small amount of kauri planting was carried out in Northland and Great Barrier Island and the results from this work should not be lost. However it is probable that the plantings on the Barrier have been lost because of lack of tending. I presume Timberlands is continuing to plant the cut-overs on the West Coast, so that area at least has a degree of certainty that forest management will be continued and developed.

4. The Forests Act has become one of the weirdest pieces of legislation that our Parliamentarians have managed to produce, but it appears to have been accepted without comment by the Council. It not only largely negates the purpose of the Resource Management Act by setting out conditions which make sustainable timber production almost impossible. I find it difficult to understand how detailed management prescriptions, which in themselves make little sense and certainly do not "promote the sustainable management of the country's natural and physical resources", come to be written into legislation. No management prescription can accommodate the range of conditions which exist in any forest or forest type and flexibility is essential if management is to be effective.

5. It would be useful if there were definitions of terms used in the draft policy. For example, when we talk about indigenous forests do we include areas of seral vegetation, and if so does this have to be totally indigenous or could it incorporate some exotic species?

6. If the policy is going to function there would appear to be a need to have a reasonable number of well-trained and experienced people on the ground. In the light of the present Government's reluctance to allow any increase in public spending and what is known of the new organisation of the Ministry of Forestry when it is incorporated in the Ministry of Agriculture, it is probable that the policy will become little better than a wish list.

The proposal that the Institute should

become involved in monitoring the effectiveness of this policy could raise some quite serious difficulties, not the least of which would be getting people on the ground with the necessary skills to do the monitoring.

I think the Institute could make a greater contribution to indigenous forest management by ensuring that work, which has already been started by way of various trials and management practices, is at least recorded and where possible continued.

At one stage New Zealand was providing technical assistance and leadership in developing management systems for tropical rain forests, which are similar in structure to many of our own forests. This is no longer the case, even though our ex-Prime Minister, Mr Bolger, not too long ago, said that it was by providing this sort of expertise that we could help developing countries in the Pacific.

The draft Indigenous Forest Policy has considerable merit, but in my opinion the first thing which needs to be sorted out is the Forests Act, which as presently written is almost hostile to developing management systems which will ensure sustainable production from suitable areas of these forests, and their retention in a healthy and vigorous condition. This surely must be the primary aim of this profession.

I also suggest that the State, as the owner of 5,061,000 hectares of indigenous forest of which only 142,000 hectares have been allocated for production, hardly demonstrates a commitment to the Resource Management Act.

With the substantial amount of evidence on the ground of the management possibilities of kauri and beech forests, the profession of Forestry has stood on the sideline and let the present position develop without protest. This is surely a very sad state of affairs.

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## **Sharing risks of longer rotations**

Sir,

I enjoyed reading Piers Maclaren's article (November 1997) regarding wood quality. As Maclaren points out, risk can be an important issue in deciding when to harvest. Typically, the plantation owner hears all the risks associated with longer rotation lengths. But what if sawmills were willing to share some of the risks in order to improve wood quality? Let's consider the following options for a farmer who has just paid cash for a large tract

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

Option A: The farmer sells 10,000 m<sup>3</sup> 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/m<sup>3</sup> (a predetermined contract price). If the stand produced 14,000 m<sup>3</sup>, 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 m<sup>3</sup> and if the wood sold for \$100/m<sup>3</sup>, 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 17m<sup>3</sup>/ha/yr and Regime "B" an MAI of 24m<sup>3</sup>/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\* m<sup>3</sup> and the harvestable yield of the one 20-year-old hectare is 340 m<sup>3</sup>. 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\* m<sup>3</sup> and the harvestable volume of the one 35-year-old hectare is 840 m<sup>3</sup>. 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 m<sup>3</sup> and the harvestable volume is 478.8 m<sup>3</sup>.

The standing value of Reg. "A" forest of 200 ha is 3570 times the average m<sup>3</sup> value of the wood and that of the Reg. "B" is 8640 times the average m<sup>3</sup> of the wood, and the value of the annual harvest is similarly 340 and 478.8 m<sup>3</sup> each by the average m<sup>3</sup> 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 m<sup>3</sup> 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