

PLANTATION FORESTRY: THE FUTURE — A STATE FORESTER'S VIEWPOINT

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One of the points made about the practice of forestry is that the time scale is such as to delay the consequences of one's mistakes until long after they will be of personal concern.

In 1977 we are at the 50th anniversary of the beginning of the planting boom which created the massive exotic forest estates of the Bay of Plenty. If we resolve in the future to repeat the achievements but avoid the mistakes of the past, then a consideration of the consequences of past management would seem to be of value.

It is probably unnecessary for me to dwell on the achievements of the last 50 years. These tend to be regularly emphasised, and indeed the existence of the massive forest estate, the annual cut of 8 million cubic metres, the thriving industry it supports, and the significant and increasing contribution to the country's export earnings, all bear witness to the justification for the massive planting effort between 1925 and 1937, and to the development of the forest industries in the 1950s.

The decision in the early 1920s to mount the planting effort was the result both of the recognition that the indigenous resources were inadequate to meet the country's timber demands, and of the fortuitous existence of vast tracts of land considered unsuitable for agriculture.

The magnitude of the subsequent operations, and the amazing speed with which they were accomplished, were not based on a quantitative evaluation of the country's needs; nor was the task undertaken with a clear plan for the utilisation and management of the resulting resource. The impetus was influenced by the vigorous promotion by the private afforestation companies established on over-confidence in the profitability of radiata forests, and by the Great Depression during which the planting operations provided relief work for the army of unemployed. In short, the exotic resource was created first, and the consideration of its utilisation and management was a consequence of that initial decision which was so massively implemented.

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I would suggest that this process of the "tail wagging the dog" has characterised the management of our exotic forests. The growth rate of the trees has exceeded the development of our expertise in planning, and our efforts have been directed to meet the operational requirements of the forests themselves.

The 1946 fire which destroyed 12 000 ha of forest in the Taupo region illustrated the need for a fire control organisation; the *Sirex* epidemic which followed demonstrated the need for thinning, and to a large degree provided the criteria on which subsequent thinning schedules were based; the large industrial plants established in the 1950s were installed to create a market for the forests; and, more recently, the incidence of disease in the nigra and ponderosa pine resource has dictated the accelerated clearfelling of these inferior stands and their replacement with radiata pine.

Our expertise as managers has developed to meet these demands; and our experience has been gained by a process of trial and error necessitated by our inability to examine alternative management strategies before their implementation was required. This is not to say that the process has been ineffective. We have become very efficient at establishing forests and our operational efficiency in implementing large-scale tending and utilisation operations is well recognised overseas. But, in spite of our achievements in this area, our past management has created problems which will be of vital importance in the next 10 years. With the knowledge of hindsight, it could be argued that many of these could have been avoided if more attention had been paid to long-term requirements, while we were meeting the urgent needs of the day-to-day operational crises.

Of major concern to the forestry profession in the next 10 years will be the transition from the utilisation of the untended old-crop to that of the largely-tended second crop. This transition will be somewhat traumatic because of the massive imbalance in age classes caused by the planting boom, and the subsequent 20 years during which relatively little establishment was carried out. For the past 20 years clearfelling has been carried out in old-crop stands of radiata pine whose average piece size has been steadily increasing. When clearfelling commences, piece size will drop abruptly as logging moves rapidly through the small areas of the oldest of the second-crop stands. The effects this will have on the logging industry will be compounded by the need to segregate pruned butt logs. Meanwhile, the utilisation plants will be faced with the large-scale substitution of species such as *P. contorta*, *P. ponderosa*, *P. strobus* and larch which were

planted by the State during the planting boom and whose conversion has been postponed until very recently. The incidence of disease in some of these species adds to the uncertainties of management in the next few years, and to the possibilities of supply shortages during the transition period, which may accentuate the piece size problem.

Following the immediate problems of the next 10 years, during which the supply of wood can be expected to be critical, the utilisation of the second of New Zealand's planting booms will come on stream. This will result from the steady annual increase in plantings between 1960 (around 5000 ha) and the present (around 40 000 ha). It is these stands that are currently falling due for the silvicultural treatment which will determine their quality and piece size and which will influence the timing of their utilisation. We cannot afford to allow ourselves to be left behind by the growth of this second crop.

At present the planning techniques needed to resolve the management alternatives of the next 20 years are being developed by both the Forest Service and the major private afforestation companies, but many fundamental questions still need to be answered before these techniques can be effective.

We have not yet resolved the question of optimum tree sizes for various end products: for example, we have no idea of the relative costs of converting sawlogs of various sizes. We are still arguing about the relative value of clearwood, and are apparently doing little to promote the use of this product which will be produced in quantity within the next 10 years. In this regard it is pertinent to remember the effort expended by the Forest Service in the early 1940s to promote the use of untended exotic pines as a substitute for high quality indigenous softwoods. If we can repeat this achievement of the past we should have no fear of our pruning effort being wasted.

More basic still is the continuing discussion of the effect of pruning and thinning on volume production and on log quality.

In spite of the expensive measures introduced for its control we cannot quantify the effect on growth rate of *Dothistroma pini*, the needle-cast disease in radiata pine.

These mensurational problems have recently been compounded by the introduction of fertilising operations as a means to increase volume production. The combined effect of tending, site quality, fertiliser treatment and disease provides a complex interaction to resolve, and will require a concerted research effort.

A further requirement which must be met before our planning techniques can be applied will be the clearer definition of the afforestation objectives and constraints of each region. In the past such definitions have been vague. We have aspired to "maximum sustained yield" and/or to the provision of "maximum financial return". These platitudes have been of little value in providing a basis for management, and have seldom been adequately explained. Their interpretation is left to the regional authority, in spite of the poor distribution of the country's timber supplies which will require the movement of resources from one region to another. Thus clear national direction will be required to provide the more prescriptive objectives of regions to be defined for the management and marketing of the rapidly growing resource.

If our credibility as forest managers is to be maintained, the operational expertise gained by experience in the last 20 years will have to be backed up by a commitment of manpower and facilities for long-term planning. Such a commitment has been somewhat neglected in the past.