

gave the required level of confidence in the product.

Many other technologies are ready to be added to, and marketed with, radiata pine, including green finger-jointing, vapour boron treatment, and wood hardening, all of which will raise the image and extend the application of radiata pine internationally.

Marketing expertise and technology directly

This is a concept that has not yet been fully explored by the forestry sector. At present, FRI trades in technology internationally after New Zealand companies have declined world-wide involvement in exploitation and such trading will not compromise benefit to the sector or New Zealand.

This situation is acceptable, but greater benefits may result from the FRI and industry jointly exploiting the technology internationally. The type of benefits that can occur are:

- (i) Licensing specific technologies to processors in countries which import radiata pine that would allow value-added processing. This approach would provide a return to the company for a component of off-shore processing, but most importantly would be a vehicle for upgrading the image of radiata pine from its present position as a low-value commodity product. As a consequence, raw material (log) prices should rise and customers should develop an increasing preference for radiata pine so that they can derive commercial benefit from the technological developments. Continual technology improvements will help to establish a dependence on radiata pine long term.
- If, on the other hand, other wood materials are substituted, in part or in whole, for radiata pine a return to New Zealand would still eventuate through licensing fees and royalty structures.

- (ii) New Zealand will always be a small player on international markets, since even with the expansion of the radiata pine resource we will control less than 2% of world trade in soft-woods.
- Licensing technology to competitors also dealing in soft-woods will provide the mechanism for obtaining a proportion of their profits from the

international marketplace. In addition, we will gain information on off-shore markets and potential market developments. We can also "coat-tail" on market development undertaken by competitors with our technology, or possibly share in market development costs for a new range of products. Marketing New Zealand technology in this manner is a mechanism to achieve some forward integration in off-shore markets. It is also fundamental to the development of the high-technology forest industry envisioned in the "Cellulose Valley Project".

- (iii) A further component is the potential for linking our technology developments with those of our countries. These linkages immediately expand the pool of expertise available and it is likely that we benefit as much from technology imports as technology export. Joint development in off-shore target markets also helps to overcome the wide-

spread "not invented here" syndrome and allow more rapid market penetration.

Conclusions

Research and development expertise is a valuable resource, but one which needs management to ensure greatest rate of return on investment. The days have gone in New Zealand when research and development was simply input-funded and the nation waited breathlessly for the next serendipitous invention. Now it is output-funded with the aim of achieving more purposeful research, and certainly New Zealand is beginning to see the benefits of such an approach. However, research and development expertise can be employed in other ways to benefit productive sectors in New Zealand, and I have attempted to explore some of the ways in which it can be used to extend the marketing of radiata pine to achieve greater export earnings. Research and development should not be regarded as an activity from which industry can benefit from time to time by taking up developed technology, but rather as an integrated activity of a productive sector from which continued benefit should be sought.

Forestry development as a target for social assistance

Mike Blakeney

Unlike the New Zealand Forest Service prior to 1987, the Ministry of Forestry does not administer any services which are directly targeted at social policy. However, its services can and do provide significant indirect benefits to society. The positive social impact of forestry is particularly strong because the sector is rurally based and provides employment.

There is a strong potential for forestry development in a number of parts of the country which coincidentally are regions with particularly high unemployment. For example, land is available and suitable for afforestation in Northland, the East Coast and Southland. Much of the work involved in planting and silviculture does not require people with high-level qualifications.

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The forestry industry employs a relatively high proportion of Maori. Of the total Maori workforce, approximately one-third are employed in forestry. (See Table 1.)

Investment in afforestation not only provides employment through the establishment phase, but creates the potential for far greater employment later on when the tree crop is tended, harvested and processed. (See Table 2.)

Although job creation schemes may provide short-term relief measures, the

TABLE 1: MAORI EMPLOYMENT IN THE FORESTRY SECTOR AND IN THE TOTAL WORKFORCE

	Total employment	Maori Employment	
		(1)	(2)
Forestry	11,168	3,242	3,759
Total New Zealand	1,388,875	103,833	134,732

1 = by solely Maori origin.

2 = Maori by origin or descent.

Source: Department of Statistics, 1986 census.

generation of an artificial demand for labour, unlike a demand arising from sound economic expansion, has obvious limitations, and may foster a dependency on the State. At the same time, it is worth noting that there are marginally unprofitable forests, particularly under Crown ownership, in areas such as the East Coast where the level of unemployment is relatively high. There may be options to consider in making private investment in such forests attractive.

Overall the facilitation of higher levels of economically sound investment in forestry provides for a significant and sustainable contribution to society. Analysis suggests that in general New Zealand forestry is economically attractive. Investment in forest establishment, tending and processing operations therefore needs to be encouraged.

TABLE 2: AN INDICATION OF JOBS GENERATED BY AFFORESTATION

Operation and Comments	Age (years)	Man days per hectare
Nursery	0	0.62
Access roading and preparation	0	3.40
Planting	1	2.00
Releasing	2	0.84
Low Pruning	5	2.30
Medium Pruning	7	1.50
Thinning to waste	7	2.00
Pre-harvest forest roads and harvesting (Yield 600 m ³ /ha recoverable)	30	58.24
Sub Total for growing and harvesting		70.90
Supervision and auxiliary @ 10% of subtotal		7.09
Internal transport to NZ factory (120km)		12.00
* Sawmilling (252 m ³ (s))		99.00
* Pulpmilling (180 m ³ making 74.38 tonnes TMP)		15.00
Total days worked up to 1st level processing		204

* = Based on 1980 case-study data

RECENT EVENTS

Implementation of Resource Management law

"The passage of the Resource Management Bill through Parliament marks the beginning of a new era in environmental management for New Zealand," said the Minister for the Environment, Simon Upton, on July 11.

All that remained before the Act became a recognised law was the Royal Assent from the Governor General, Dame Catherine Tizard, which was expected to take about two weeks.

Regulations will be prepared, and the Act will come into force on October 1 of this year.

The Act repeals many of New Zealand's previous resource management laws, including the Town and Country Planning Act, the water and soil legislation, the coastal, mining, geothermal and pollution laws.

"This is the largest piece of legislation to come before the House as a single measure," said the Minister.

"It is not simply an amalgamation of current law; it requires a completely new way of looking at environmental aspects – from a base line of sustainable management of our natural and physical resources.

"It will require New Zealanders to pay attention to the effects on the environment of the actions they take," said Mr Upton.

For the most part, administration of the Act will be the role of local govern-

ment. The Act requires some significant changes to local government planning and decision making procedures.

To smooth the changeover from the old law to the new, provisions to deal with the transition have been built into the Act.

Existing district schemes will roll over and become district plans. When due for review, these plans must be considered in accordance with the new law. All district schemes that roll over must be reviewed within five years.



Simon Upton

Regional councils will need to begin preparing regional policy statements. Existing regional schemes will not be carried over. The Act allows councils a maximum of two years within which to prepare these statements in line with the provisions of the new law.

Instruments in the old regional plans, such as orders and notices relating to land, air and water, and classifications and standards relating to water, will become regional rules.

These regional rules will form the basis of a transitional regional plan to bridge the gap until the new policy statement and additional plans can be prepared.

Existing resource management consents – coastal, planning or mining consents for example – will carry over as they are under the law. Consent reviews, however, must be carried out under the new law.

The Ministry for the Environment will oversee the administration of the new Act. The Ministry will be producing a number of publications and information sheets on aspects of the new law, and staff will be available to answer inquiries.

Local authorities have been preparing for the new law since the introduction of the Bill into Parliament in December 1989 and will be able to assist with specific enquiries.