advantage to the forestry industry, with most being concentrated at the forest growing level. The country's factor endowments are well suited to tree growing, especially the fast-maturing radiata pine. Coupled with direct State involvement in R & D and tree growing, New Zealand has developed a considerable advantage over its rivals in plantation forestry. (Entrican and others pointed this out long ago.) Our advantage is likely to become more prominent in coming years as a result of a growing world scarcity of high-quality timber, due to overcutting, conservation and increasing logging costs of native forests.

To attract individual firms into more investment in afforestation Government has an important role. It needs to create an atmosphere of stability, confidence and reliability, and to enhance the determinants of competitive advantage.

Farmers need to be targeted because the great majority of New Zealand land available and suitable for afforestation – about five million hectares – is on farms.

On Farms

One senior executive in a major New Zealand forestry company told me that his company was unlikely to invest in much more afforestation in this country because it already had "too many eggs in one basket" and was beginning to lay itself open to charges of monopoly and public resentment. He envisaged that the other large New Zealand-owned forestry company would reach the same conclusion. However, although his company was unlikely to invest much more in afforestation it was still very interested in investing in more forestry processing. He believed that New Zealand's future new planting expansion substantially has to be on farms, and consequently he would welcome Government encouragement of afforestation on farms.

To a certain extent Government seems to have accepted some responsibility here. Apart from the previously discussed $7500 preferential tax deductibility for farmers the Government announced last July that it would grant the Ministry of Forestry $3.6 million to provide increased forestry and information advisory services.

Another encouraging signal, although it is aimed more at protection than production afforestation, has come through a Cabinet decision in late September to finance a programme to "achieve sustainable land management". (See D. Allen p. 7.)

Cabinet noted that "Market forces alone are not achieving the necessary changes in the way land is being used and managed, consistent with protecting the land as a resource for future generations".

This major turnaround in thinking is to be applauded. But can we be so positive about another recent Government forestry initiative?

In the run up to the election, Prime Minister Mike Moore announced that Pureora, the scene of a tree sitting protest led by Auckland conservationist Steve King in the late 1970s, was still divided by three Crown-owned exotic forests covering 6000 ha. The Government, through the "Native Forest Restoration Trust", was going to pay for this 6000 ha to be converted back to podocarps. No technical information about how this was going to be done has been provided yet, and it is understood that neither the Department of Conservation nor the Ministry of Forestry was consulted about the decision.

Professional foresters, of course, ask themselves: Would there be more net environmental benefits if the existing exotic forest tracts were left and 6000 ha of rimu, totara, or even radiata pine afforestation was carried out elsewhere?

Hamish Levack

Phenoxies, phobias and forestry

If the United States military hadn't overdosed the Vietnamese ecosystem with 2,4,5-T contaminated with dioxins, what would be the public perception of pesticide usage today? Probably not very different. Lead emissions from cars, and Rachel Carson's book "Silent Spring" were but two of the concerns voiced over chemical and pesticide use and the dispersal or accumulation of residues in the environment. Today we may have pesticide or radioactive residues literally raining down on areas hundreds or thousands of miles away from the application site. But then a similar effect happens after each volcanic eruption; so the process is not new. So how concerned should we be about pesticides in the New Zealand environment, and more specifically, how responsive or responsible are forest managers to/for this problem? If nothing else is clear, environmental concerns are here to stay and the issues are not tackled on level playing fields. Publicity, politics and human emotions will always override scientific reasons and economic justifications.

A recent article entitled "Chemophobia"[1] reviewed the New Zealand situation from an agricultural perspective. The authors pointed out that usage of chemicals had increased enormously over the last 40 years, on the justification of productivity increases, reduced labour inputs, profitability maintenance and meeting export requirements. They stressed that chemicals can be harmful to non-target organisms if used carelessly or in excess. This was true for the eras of first and second generation pesticides like the arsenicals and DDT. Quoting a recent survey of food hazards, the reality now is that pesticide residues come a long way after microbiological and natural poisons – but the public perception is exactly the reverse. Testing of primary products and groundwaters in New Zealand has shown that contamination is rare, generally below international guidelines or undetectable.

This should not lead to complacency as scientific evidence may be substituted by alternative value judgements or political decrees. Increased monitoring, better accountability and disposal of surplus chemicals, and above all more education and training of users should continue to be essential objectives.

The New Zealand forest, sorry, vegetation, manager should be particularly sensitive to these issues and concerns. Radiata forests form the largest monoculture agribusiness; herbicides make up over 60% of the pesticides sold in New Zealand; scrub weed control is by far the largest end-use for herbicides. Forestry may use only 4-8% of all herbicides in New Zealand but it is a conspicuous use – and still tainted by the 2,4,5-T saga.

There have been calls overseas to reduce national use of pesticides by 25% within the next five years and 50% within ten years[2] – it would appear that the first target has already been met in New Zealand for herbicide use. The recent "Pesticides: issues and options for NZ" publication[3] shows that herbicide use in forestry and pastoral agriculture has dropped steadily in recent years. There is by one calculation[4] an apparent 25% decrease of product applied per forest hectare. Rates equivalent to 3-4 kg/ha a.i. may be estimated for establishment forestry. Comparative use rates are 0.11 kg/ha on pastoral land; 2.66 kg/ha in horticulture and 2.04 kg/ha for grain and pea crop[3]; based on 1987 figures).

Why should this reduction have happened in forestry? One of the reasons undoubtedly is the harsher economic climate over the last five years. Manage-

ment has had to become more cost effective and there has been a switch from broadcast application to more spot or line application of herbicides. Newer chemicals, with very effective adjuvants developed in New Zealand for our specific problems, have reduced the range of products and rates required for good weed control. This is one instance where our more liberal registration laws have been to our advantage and allowed rapid introduction of these newer products and technologies.

Three Avenues

As forestry still has the conspicuously highest use rates for herbicides, it can expect further criticisms and pressures to reduce them. There are three avenues that can be followed to overcome these criticisms.

The first is to inform and educate the public of the reasons for chemical use and the benefits and risks which may result. Good examples of such strategies will be found in the US and Forestry Canada programmes, and some chemical companies such as Monsanto NZ who produce very informative literature and host visits by overseas experts. A disastrous home example was the AGCARM "There's a greenie in your gumboot" type literature which was totally confrontational.

But you can't inform others or plead your innocence if your staff don't know what or why they are using specific chemicals. Aerial application is still essential at times, but what do the public know of the safety and risk assessments you have made? More promotion and explanation of present land management methods are needed. To achieve that, much better training of staff **at all levels** is essential. This is probably the single most cost-effective option possible at present. So what are the forest owners doing about it? What is their annual budget? How many of their staff have been trained to specific levels? Do you know? I don't!

The long-term solution to reduced chemical use is either in more effective and efficient application or the use of more "natural" alternatives. There is potential in both these approaches and some research has been initiated, but the overwhelming message from last year's international meeting on "Alternatives to the chemical control of weeds" was how little we knew about these options and how much less was being done for forestry purposes. This may be a "national" interest but forest sector support could give it a much-needed boost to its image and ultimately reduce its operational costs.

So what will the public perception be of pesticide use in ten or 20 years' time? And how will forestry be perceived?

A good question – and it's up to all of us to do something about it from now on.

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References

(1) Chemophobia
East and Holland.
1990, MAF Technology, Ruakura
(2) Resource allocation for future weed control activities Combellack. 1989, Proc. 42nd NZ Weed and Pest Control Conf.
(3) Pesticides: issues and options for New Zealand. MacIntyre, Allison and Penman. 1989, Ministry for the Environment
(4) Weed control in New Zealand forests; costs, constraints and future options. Zabkiewicz and Richardson, 1990. Alternatives to the chemical control of weeds, FRI Bulletin No 155.

Pray for a wet summer and keep your hoses crossed

There was plenty of promise in the Hensley Review (see NZ Forestry, Vol 34, No. 4, February 1990); an expanded Rural Fire Fighting Fund (RFFF), regional co-ordination of fire based on the new regional Government reorganisation, the setting up of a National Rural Fire Authority (NRFA) as well as a National Rural Fire Advisory Committee (NRFAC) and immediate implementation of some supporting legislation. A new Forest Rural Fires Act would follow.

The establishment of the NRFA and the NRFAC with limited powers are the only two positive achievements to report so far. The NRFA and NRFAC were set up by Cabinet and Ministerial decree rather than by legislative action.)

Staff have been appointed to the NRFA (New Zealand Forestry, August 1990. Vol. 35 No. 2). Rural fire records and training material have been transferred to the NRFA from the Ministry of Forestry (MOF). The responsibilities of the Secretary of Forestry and MOF contained in the Forest and Rural Fires Act 1977, Fire Service Amendment Act 1987 and various Regulations have been transferred to the Chairperson of the New Zealand Fire Service Commission by memorandum.

The Minister of Internal Affairs has appointed members to the NRFAC. Two meetings have been held to date with the objective of assisting the Fire Service Commission with the initial work of the NRFA.

There has been no progress with the introduction of the new RFFF for this fire season; no appointment of Regional Fire Co-ordinators by Regional Councils and no new legislation to back up the Hensley Review recommendations.

The original recommendation on the RFFF has been radically changed by a new proposal. There is no interim legislation or new Forest and Rural Fires Act.

NEW FIRE LEGISLATION IS BADLY NEEDED

The lack of legislation will cause some serious concern in the rural fire sector