

impediments as have been identified for sustainable land management. There are already defensive positions taken by farmers, by conservationists and by hydroelectricity generators as well as by the forest industry itself. Claims that there is uncertainty as to whether any given forestry crop may be harvested under the Resource Management Act have been discounted by the legal firm of Bell, Gully, Buddle and Weir. There has never been any guarantee of logging and in fact the Resource Management Act can be used to minimise areas of uncertainty. Improved knowledge and improved communication between the stakeholders is essential. There is a role for forest owners in the establishment of land-care groups, particularly if communication links are made with local government and Crown Research Institutes.

Of more fundamental importance will be the need to establish criteria that will enable foresters to substantiate that their forestry practices are sustainable.

The Canadians (Maini, J.S. 1993) were quick to point out to me that their approach has changed from one of sustained yield to sustained development. Their management of forests has changed to management of forest ecosystems. The question of what is sustainable development is answered in part by the indicators they have identified which can measure such a state. Many of those indicators are based on scientific analysis and would apply to whatever forests in whatever country. They included productive capacity of soils, water conservation, soil conservation, habitat value and biodiversity. Indicators were still being worked on which would enable measurement of the ecosystem integrity.

Some of the special issues that were receiving attention were ecological thresholds and limits for insect and soil pests over three to four rotations, as well as what indicators were appropriate in plantations of mixed forest species containing hardwoods and conifers.

There are a number of pointers as to what would be required in a New Zealand Sustainable Plantation Forestry policy.

A commitment will be required by all sectors of the industry and that may mean establishing a set of agreed principles and ensuring the industry is integrated. The walls of suspicion and ignorance need to be broken down. This requires greater attention to improving the flow of knowledge and understanding. It may require attention being paid to community groups.

Sustainable management must be substantiated. This will require identification of criteria that meet government land-management outcomes. It will also mean identifying measurable indicators. We need indicators that are scientifically based and which can measure both biophysical and socio-economic changes taking place. Indicators will be required that deal with the stability and health of communities, as well as for soil and water conservation and ecosystem biodiversity and integrity. These aspects are challenging the more traditional concepts of efficiency and economics.

I firmly believe New Zealand should take the initiative. We have the experience. We should set the standards for sustainable management: that way we remain internationally competitive.

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Forestry technologies sought after by Malaysia

Genetic improvement of forest trees, commercial application of micropropagation practices, and new wood product technologies were on the agenda for discussion when the Malaysian Minister of Science, Technology and the Environment visited the New Zealand Forest Research Institute on August 4.

Malaysia is looking to sustainable plantation forestry practices and expertise to replace traditional tropical forestry methods. NZFRI Chief Executive Dr Frank Wood said the Institute had much to offer countries like Malaysia in providing training and research services. New Zealand's fund of knowledge built up over almost 50 years of research into every

conceivable aspect of radiata pine forestry could be transferred into research programmes for other species in developing countries, he said.

"Direct technology sales and joint venture arrangements with overseas companies for commercialisation of developing technologies are also possible, although we are always mindful of the need to protect the competitive advantage of New Zealand's own forestry industry," said Dr Wood.

"But Malaysia values NZFRI's technologies and research expertise. It is part of a growing trend: the increasing international awareness of NZFRI's contribution to plantation forestry research, and the value gains that industries can make by taking up new wood process and product technologies."

Dr Wood said that NZFRI had long-established links with research counterparts in Malaysia. And as well as the science links with sister organisations, NZFRI staff have frequently carried out research consultancies in Malaysia. A

scientist was in Malaysia last year completing a contract on minimising and utilising harvesting residues, for example. Several more contracts are currently under negotiation.

"The New Zealand industry benefits from contacts such as these," said Dr Wood.

"Malaysia is a fast-growing dynamic economy right in the heart of our major trading region in forestry products. NZFRI can facilitate access to these markets. Our high profile in Malaysia enhances New Zealand's standing in the industry there."

Datuk Law Hieng Ding has been in New Zealand with the Director-General of the Standards and Industrial Research Institute of Malaysia, Dato Dr Ahmad Tajuddin bin Ali, to gain a first-hand impression of New Zealand's science capability. An 'Arrangement on Science and Technology Cooperation' between the Governments of New Zealand and Malaysia was signed in Wellington on August 3.

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