FORESTRY DEVELOPMENT OVER THE NEXT TWO DECADES

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INTRODUCTION

The basic change in the forestry situation in New Zealand in the coming decade, as compared with the last one, will be that we have moved from a period of abundance of wood acceptable for new industries to one where raw material for the expansion of forest industries must be obtained from wood previously wasted, or considered neither suitable nor economic for such purposes, or from a specially created new resource. Generally speaking, adequate steps are being taken to ensure that the present and planned industries have sufficient supplies for their announced levels of production and forests are being expanded by the planting of additional areas so that under present conventional forest-management methods considerable expansion will be possible 25 to 30 years hence. The challenge of this decade and the next is how to achieve an increasing rate of growth of forest industries between now and 1995. It is this challenge that I believe should receive consideration by the Forestry Development Council in the immediate future.

POTENTIAL AREAS FOR DEVELOPMENT

The problem of providing raw material for the expansion of forest industries during the next two decades has four possible solutions: to use species not at present used; to use wood at present wasted; to grow wood on rotations shorter than 25 years; and to grow more wood in the present forests.

1. Use of species not at present used

Steps are being taken to utilize beech and tawa for chips and pulpwood, and these will increase in the future. Consideration needs to be given to pulping other native species that are available either as standing trees or from sawmill and logging waste. Investigations should cover quantities available, and barking, chipping and pulping problems.

2. Use of wood at present wasted

In the second instance very considerable progress has been made by integrated industries in this regard. Elsewhere, however, there is wide scope for action. Critical quantitative

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studies should be made on all logging operations and should go through to the point where wood pieces are reduced to chip size. This should be followed by studies of how to convert this waste material into valuable products.

More attention is also needed to ensure that the maximum volume of wood is recovered in harvesting. Stump heights should be as low as they can possibly be. This would cause butt logs to be rougher and more buttressed than at present and, if sawlogs were the major product being sought, the log would need to be short-butted later and the offcut delivered to the chip mill. Breakage during felling is another cause of loss, and is probably higher in this country than in northern-hemisphere countries. The more economic method is to take steps to avoid the breakage during felling than to devise means of collecting the shattered pieces later. However, in most logging areas there is chippable material left on the area. Means of collecting this material and transporting it to chippers requires further development.

Investigations are needed to determine whether this material should be barked and chipped in the forest or brought to a central site before processing. To decide this it will be necessary to know what end products are to be made, as this will determine the acceptable bark percentage and chip quality, the type of barking needed, and how small the pieces fed to the chipper can be; the smaller and rougher the pieces, the more difficult it is to get clean barking and to produce chips of even quality. The location of these operations could also be influenced by the possible uses for bark and for reject chips. There has been some work done overseas on putting complete trees through chippers, including needles and leaves. This, too, needs careful consideration, but the loss of nutrient through the removal of the foliage should not be overlooked.

3. Growing wood on short rotations

The growing of trees on very short rotations is gaining ground rapidly in some parts of the world, and most notably in Brazil where it is now proposed to grow eucalypts on a seven-year rotation; one project alone is scheduled to plant 400,000 ha. For this to be done in New Zealand, the important factors would appear to be:

(a) Topography must be flat to easy undulating, suitable for mechanical cultivating, planting and harvesting.

(b) Nursery techniques must be developed so that plants can be raised in quantity under controlled conditions and planted out into prepared soil just at the start of the peak growing season without any check in growth.

(c) Trees, when grown, must be as uniform as possible to facilitate mechanical harvesting and to give uniform handling, barking and chipping conditions.

The species suitable for this type of forestry will depend to a certain extent on the end use, but a number of species
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will provide chips that are acceptable on the export and local markets. First choice must go to various species of eucalypts. The actual species will depend on the climate and sites to be planted. So far in this country eucalypts have given varying results. The trees have lacked uniformity and there has been difficulty in obtaining seed of constant quality from a reliable source. Research in Brazil has demonstrated that by selection a great improvement in uniformity can be achieved, and local experiments indicate that applications of fertilizer and the cultivation of planting areas can also significantly improve uniformity.

Consideration of short rotations forces us once again to consider the possibility of using acacias. In Tasmania, for the first ten years of growth, *Acacia dealbata* can outgrow radiata pine and produce wood of equal density to eucalypt with a fibre length between that of eucalypts and pines. If land of high fertility is available there will be those who would want to plant poplars. These have proven rates of growth, but planters who have chip markets in mind should be aware of the differences in basic density of poplar wood compared with that of eucalypts and wattles.

No programme would be complete without giving critical consideration as to how to include radiata pine. What could be achieved if we modified our nursery techniques and grew radiata pine in pots or tubes, and planted these out into well-cultivated ground at the start of a growing season, at the same time applying fertilizers to stimulate growth? Would we use selected seed or rooted cuttings in these circumstances? What planting spacing would we use? If the production of chipping material is the aim, the results obtained at Whitford by Henderson and Pollard Ltd. should be considered. There, radiata pine was planted at 1.2 × 1.2 m (6,700/ha). At 11 years, volume to 7.5 cm top was 340 m³/ha. This was achieved without the addition of fertilizer or previous cultivation of the site, and using conventional nursery techniques. What could be achieved by good cultivation, fertilizer and the planting of specially raised plants that had not been checked by normal wrenching practice?

New Zealand forestry is coming under increasing pressure from local bodies and power authorities who are objecting to trees being planted close to roads and power lines. In some cases it would be possible to grow trees on short rotations and to clearfell them when they are 20 to 30 m tall. In other places even these heights would be unacceptable. What useful product could be grown on these areas? Some possible producers of fibre warrant consideration. These are kenaf, hardwood coppice, flax (*Phormium tenax*) and perhaps other tree species that could be grown in dense stocking and mechanically harvested, such as some acacias.

4. Grow more wood in the present forests

Foremost in this will be the use of fertilizers to stimulate growth. Considerable work is being done in this field and this will need to continue.
Measures should be taken to ensure that all cutover forests are quickly and completely re-established. The aims would be to achieve full stocking of all areas and the fastest possible growth right from the start. This will require investigations into site clearing and preparation, the use of good nursery stock and the rapid growth of trees once planted. Here, as for the third suggestion above, good techniques should allow rotations to be shortened by one or two years and should bring the first thinning yields ahead by the same period.

CONCLUSION

Future development should be into methods of fully utilizing the wood we already have available and of growing extra wood in a short period of time. Research should be directed towards these two basic objectives.