

NEW ZEALAND'S EXOTIC SMALLWOOD RESOURCE - 1983-1992

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Introduction

The smallwood resource is of particular importance during this coming decade because of the very limited expansion in wood supply from conventional clearfelling operations. Consequently, any expansion in industrial capacity over this period is largely dependent on smallwood, whether from thinnings, from cutover salvage, or from clearfelling of small trees.

This paper contains estimates of the exotic smallwood resource that is available over the decade, 1983-92, and the harvesting proposals of the major organisations for harvesting smallwood over that time. It updates a paper prepared by Wells for the 1980 LIRA seminar on smallwood harvesting (LIRA, 1980) and uses the same definition of smallwood as that used previously, e.g. trees up to .35 m<sup>3</sup> in size which are produced from thinning operations or clearfelling of small trees; logs from harvesting of logging residue. The main use of smallwood is for pulpwood, posts and poles; most of these trees are too small for sawlogs. Smallwood produced as a by-product of other operations (e.g. while clearfelling large trees) is excluded.

Acknowledgement

LIRA acknowledges the co-operation of forest owners who have made this information available.

The Questionnaire

To update our information on industry intentions, a questionnaire was circulated in 1982 to all major forest owners who had previously indicated their intention to production thin on a significant scale. Information was sought on species, volumes, areas scheduled for treatment, piece size, and current silvicultural regimes. Additional information was sought for work that LIRA was carrying out as part of an international project on thinning.

Results

(1) Total Smallwood Resource

The total smallwood resource in New Zealand that is potentially available over the ten year period 1983-92 is estimated to be 48.1 million m<sup>3</sup>. It is composed of :

- (i) 23.1 million m<sup>3</sup> of thinnings, almost entirely radiata pine.
- (ii) 6.4 million m<sup>3</sup> from clearfellings, almost entirely minor species, such as ponderosa pine, corsican pine and contorta pine.

(iii) 18.6 million m<sup>3</sup> of biomass from thinnings and clearfellings, composed of broken tops, branch wood, foliage, twigs and bark.

(2) Smallwood Scheduled for Harvesting

The resource that is currently proposed for harvesting over this decade is estimated to be 20.5 million m<sup>3</sup>. It is composed of :

- (i) 13.3 million m<sup>3</sup> of radiata pine from production thinnings.
- (ii) 6.4 million m<sup>3</sup> of minor species from clearfelling.
- (iii) 0.8 million m<sup>3</sup> from salvaging radiata pine cutover.

Harvesting constraints are covered in a separate paper. However, it is useful to indicate the range of piece sizes for this resource as this is a major factor in determining harvesting costs.

Radiata pine - first waste thinning - .015 m<sup>3</sup>,  
- second waste thinning - 0.67 m<sup>3</sup>.  
- first production thinning - .16 m<sup>3</sup>,  
- second production thinning - .25 m<sup>3</sup>.

Minor species - clearfelling small trees - .32 m<sup>3</sup>.

(3) Stand Size

Stand size (e.g. stand area) is important in terms of economies of scale which can influence the cost of harvesting, especially where heavy equipment has to be moved a considerable distance to a small stand. To provide an indication of the distribution of area and ownership of individual stands that were capable of producing smallwood over the forthcoming decade, information was obtained from the N.Z. Forest Service data bases for State and private exotic forests for stands planted 1961-80 by five year age classes and by planning districts.

This information indicates that, for woodlots under five hectares, the resource is not of major economic significance, being less than 2% of the area of that age class. However, it does have some political importance as it includes 55% of the 10,400 stands in this age class. If we include stands up to 20 hectares, these figures become 5% of the resource area and 82% of the stands. Unfortunately, no information was available on terrain, access, or whether these stands (woodlots) were considered able to be harvested by ground-based machinery or by haulers. All these factors will have a major influence on extraction costs.

These results are summarised in three tables attached as an appendix to this paper.

References

Wells, G.C. "Smallwood harvesting - some definitions", In Smallwood Harvesting Seminar Proceedings, Project Report 13, Logging Industry Research Association, Rotorua, June, 1980.

Wells, G.C. "Industries smallwood harvesting intentions". (op cit).

APPENDIX I

Table 1 : Estimate of N.Z. Exotic Smallwood Resource Potential  
1982-1992

Origin	Area (1000 ha)	Volume (million m <sup>3</sup> )	Stem Volume (m <sup>3</sup> /tree)
First waste thinning	402	6.0	.015
Second waste thinning	63	3.8	.067
First production thinning	131	10.6	.16
Second production thinning	34	2.7	.26
Clearfelling small trees (minor species)	25	6.4	.32
Biomass	655	18.6	-

Table 2 : Industry Harvesting Intentions 1983-1992

Operation	Area (1000 ha/year)	Volume extracted (million m <sup>3</sup> /year)
Production thinning	16.5	1.33
Clearfelling small trees	2.5	.64
Cutover salvage	2.0	.08

Table 3 : N.Z. Exotic Resource 1961-1980

	1961-70	1971-80
Total area (1000 ha)	199	531
Private ownership	44%	51%
Radiata pine	85%	94%
Stands under 5 ha	1.9%	1.0%
Stands under 20 ha	5.0%	5.0%
Number of stands	3189	7190
Stands under 5 ha	61%	52%
Stands under 20 ha	84%	67%