

## MARKETING — THE POTENTIAL FOR PLYWOOD

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Because New Zealand has the ability to grow large, pruned, radiata pine logs suitable for rotary peeling on relatively short rotation, it has a real competitive advantage in the production of plywood. This is demonstrated quantitatively in Table 1, which compares veneer and grade yields from USA Southern pine and Douglas fir (both old and second growth) with those expected from pruned radiata pine logs. New Zealand pruned logs can be expected to produce a higher proportion of the clear (A grade) veneer than even the large old-growth Douglas fir. Pruned radiata logs will give higher rates of conversion as well.

Structural pine plywood (principally C grade veneer) has only been commercially important since 1967 when the Southern pine plywood industry became established. The technology for the production of pine plywood from rotary peeled veneer was developed in the USA. It is now used in Scandinavia, Europe (FAO, 1976: 373) and most recently in Russia (Anon., 1978: 103).

Our radiata pine may not be so competitive in the structural grades, as it is very difficult to grow the species with knots small enough to meet the specification for C grade veneer (25 mm max. in the Southern pine).

Plywood manufacture requires good quality logs, and plywood manufacturers have traditionally outbid sawmillers for these. This price differential led to the development of log merchandisers in the USA (Bankston, 1973).

Figure 1 indicates the relative value of New Zealand radiata pine logs to a local primary processor manufacturing for the export market. The data are based on simulation studies done by the author at the Forest Research Institute. The capital investment is lower for softwood plywood than for any other wood-based panel (FAO, 1976: 323).

The structural strength, dimensional stability and other intrinsic properties of plywood make it a very versatile material. Many panel products, such as flake and wafer boards, have been developed to simulate plywood. These substitute products were all developed because the log supply suitable for peeling is diminishing and manufacturers were forced to develop alternative panel construction methods. Many of these

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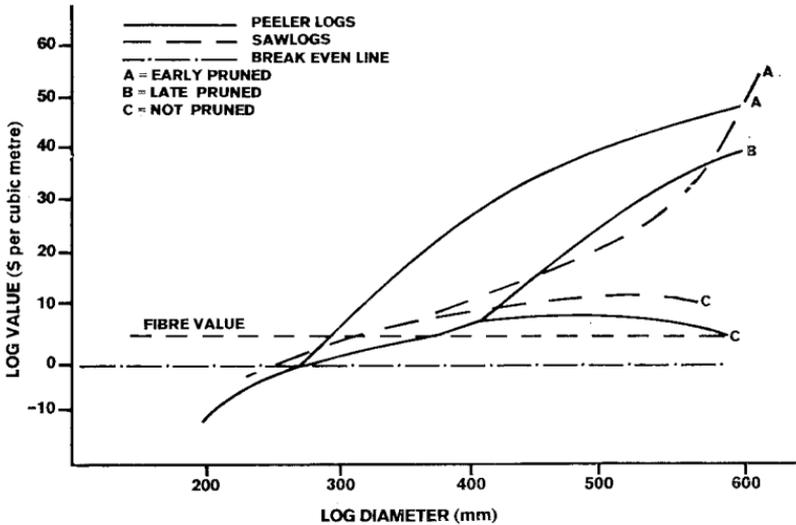


FIG. 1: *Relative value of different types and sizes of Pinus radiata logs to a local primary processor manufacturing for the export market.*

panels are dependent on low-cost sawmill and plywood residues, and indications are that the amount of these residues becoming available is reducing. One forecast is that in 20 years' time medium-density fibreboard will no longer be produced because of the unavailability of low-cost residues (Fahey and Starostovic, 1976: 6).

Plywood travels well and is an item of international trade. In contrast, there is little international trade in particleboard. For economic particleboard production, both raw material resources and markets must be nearby (Muller, as quoted by FAO, 1976: 327).

The world demand for plywood is expected to grow at about 5.2% per annum until 1994, compared with 9.4% for particleboard and -0.4% for paper and paperboard (FAO, 1978: 1).

The growth rate for plywood may not be achieved because of limited world peeler log supplies. This shortage may cause a rise in the plywood price. As prices go up, plywood will face competition from substitute products. Product development will therefore continue to be important to producers. A united stance by New Zealand plywood producers could make an impact on the market similar to the Southern States plywood producers in the late sixties as described by Orth (1968: 40).

Timing is vital if a viable plywood industry is to be established in New Zealand. To enter the market, manufacturers

will have to start with a flexible, batch-manufacturing process. This will not be very cost-efficient, and as the market matures the producers will have to move to a less flexible, higher-volume, more efficient, integrated production line (Hayes and Wheelwright, 1979: 133-40).

The availability of pruned logs suitable for rotary peeling will remain a major constraint until about 1990 (Levack, 1979: Table 1). At that time, batch production can be superseded by continuous-flow production.

Plywood marketing would be helped if the timing of the expansion of the New Zealand plywood industry was planned to coincide with the expected world supply deficit. According to a 1972 study of the Asian plywood industry, a supply deficit of 7.6 million tons of plywood in this region is projected by

TABLE 1: COMPARISON OF VENEER VOLUME, GRADE AND SHEET RECOVERY FOR OLD-GROWTH DOUGLAS FIR, SECOND-GROWTH DOUGLAS FIR, SOUTHERN PINE AND TENDED NEW ZEALAND RADIATA PINE

	<i>Old-growth Douglas Fir</i> <sup>1</sup>	<i>U.S.A. Second-growth Douglas Fir</i> <sup>2</sup>	<i>Southern Pine (Pinus taeda)</i> <sup>3</sup>	<i>N.Z. Tended Pinus radiata</i> <sup>1</sup>
<i>Veneer Volume Recovery (%)</i>				
Small-end diam. (mm)				
762	55			
762	57	51		
600	57	56		
450	58	53		64
300	56	35		46
150	40	28		
<i>Veneer Grade Recovery (%) for Logs of Diameter 450 mm</i>				
Grade A	11	2	7	31
Grade B	17	7	22	12
Grade C	50	68	39	11
Grade D	22	20	32	46
<i>Sheet Size Recovery (%) for Logs of Diameter 450 mm</i>				
Full sheets	50	68	61	73
Half sheets	20	11	23	)
				27
Other sheets	30	21	16	)

<sup>1</sup> Lane, P. H., *et al.*, 1973.

<sup>2</sup> Fahey, T., 1974.

<sup>3</sup> Guttenberg, S., 1967.

<sup>4</sup> Simulated recoveries for pruned logs using FRI program SIMPEEL. Assumed a diameter over stubs of 300 mm representative of fairly late pruning.

1985 (Asian Industrial Survey for Industrial Co-operation, 1972).

To assist New Zealand plywood manufacturers to enter the profitable high-volume phase of production, timber growers will have to consider the following points and perhaps forgo some earlier profits for much bigger later gains:

To make the most of the future opportunities, the plywood industry must continue to build up market expertise. It must therefore have an early and continuous supply of high-quality raw material, even if this means some premature clearfelling and deviating from optimum silviculture rotations.

During the initial batch development production phase, profits will be small. This places a ceiling on the log price.

Although radiata pine plywood has been accepted in a few markets, customer acceptance in major new markets can be expected to be slow. Market development and early planning are thus important.

Log cross cutting and allocation may prove expensive and difficult until the volumes justify more efficient merchandising.

#### REFERENCES

- Asian Industrial Survey for Regional Co-operation, 1972. Proposal for regional co-operation in the field of plywood manufacture. Bangkok, Thailand. As quoted by FAO, 1976: 317 (unpublished).
- Anon. 1978. Panel products markets, plywood and blockboard trading in 1977. *Timber Trades J.*, Annual special issue.
- Bankston, J. R., 1973. Product selection: peelers or sawlogs and chips, *Modern Sawmill Techniques*, Vol. 2. Miller Freeman, San Francisco.
- Fahey, T., 1974. Veneer recovery from second growth Douglas fir. Pacific Northwest For. & Range Exp. Sta., USDA, Portland, Oregon.
- Fahey, T.; Starostovic, E., 1976. Changing resource quality. Its impact on the construction industry. *USDA For. Ser. Reprint 1600 - 12 (6/76)*.
- FAO, 1976. *Proceedings of the World Consultation on Wood-based Panels, New Delhi, 1975*. Miller Freeman, Brussels, p. 317.
- 1978. Projections of consumption of industrial forest products. *FO: MISC/78/13*. Food and Agriculture Organisation of the United Nations, Rome.
- Guttenberg, S., 1976. Veneer yields from Southern pine bolts. *Forest Products J.*, 17 (12): 30-32.
- Hayes, R. H.; Wheelwright, S. C., 1979. Link manufacturing process and product life cycles. *Harvard Business Review* (January-February): 133-40.
- Lane, P. H.; Woodfin, R. O.; Henley, J. W.; Plant, M. E., 1973. *Veneer Recovery from Old-growth Coast Douglas Fir*. Pacific Northwest For. & Range Exp. Sta., USDA, Portland, Oregon.
- Levack, H. H., 1979. Future national wood supply. *N.Z. Jl For.*, 24 (2): 159-71.
- Orth, T. M., 1968. How it all happened: Southern pine plywood. *Wood and Wood Products* (May).