

Wood quality

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Radiata pine has variously been described as a first-class, second-rate timber. Its wood qualities do not match those of many other tree species, but not for nothing does it now occupy 90 per cent of the area of New Zealand's intensively-managed planted forests. The wood can be pulped, made into fibre-board, peeled for plywood or laminated veneer lumber, and used for building construction. Its timber can readily be kiln-dried, nailed, treated, machined, finger-jointed and heat/chemically modified. At the same time the wood qualities vary greatly – within a tree, between trees from the same stand, and between stands and forests across the country.

Several adverse characteristics cannot be determined merely by visual observation, for example, resin pockets in pruned logs or within flitches and, most particularly, inadequate stiffness and strength. Using the timber inappropriately can lead to disaster; untreated wood used for house building where the wood can be periodically wet, known as the leaky building crisis, has led to financial ruin. There is a range of timber and log grades reflected in log prices, with good quality pruned logs worth nearly three times more than pulp logs (on average, over the last three years), compared to Scots Pine in Sweden, where saw logs are only one-third again as valuable as pulp logs. The set of log grades used by the Ministry for Primary Industries are now some 30 years old and do not take into account the work done subsequently on identifying and understanding quality, notably stiffness.

The key issues are how to:

- Recognise different wood qualities without excessive cost
- Segregate, or whether it is necessary to do so
- Reconfigure and optimise processing pathways should input variability to the line be reduced
- Grow a more uniform and higher quality crop
- Sell wood products of known qualities for the best end use.

Despite much talk by government, and the realisation of the financial gains to be made for the nation, New Zealand remains the developed country with the highest exports of raw unprocessed logs. While, perhaps through bitter experience, we know a great deal about New Zealand-grown radiata pine

wood quality and suitability, overseas log-buyers and customers may not. It is not inconceivable that timber sawn abroad, of low stiffness, unrecognised, may be promoted and sold for construction use for which it is not fit. Wink Sutton has commented that in the longer term this could give New Zealand wood products an unenviably bad reputation in those markets.

This February 2015 issue of the Journal has wood quality as its theme. John Moore and Dave Cown describe wood quality variability and what can be done about it, stressing that it is important to better characterise wood properties in existing stands and to understand the drivers of variation for forests of the future. Dave Cown and Leslie Dowling discuss juvenile wood, the wood formed around the pith during the first 10 to 15 years of growth, with properties that result in high variation in stiffness and strength. Philip Harris presents a paper for practising foresters on wood chemistry research applied to compression wood. Karen Bayne writes on wood quality in terms of fitness for end use in international markets. Keith Mackie rounds out the topic in 'The Last Word', with a plea on the need 'to deliver better performing materials; higher yields, more consistent and with properties targeting specific market needs.'

An example of targeting a specific market is shown on the front cover. Here, high quality clear boards of radiata pine are sold to the public in the United States through retailers of home improvement and construction products. On The Home Depot website, New Zealand finished eight and 12 inch wide, eight foot long boards, individually labeled as FSC coming from well-managed forests, sell for US\$20 to \$25 each. A 40 foot container will contain product valued upwards of NZ\$150,000 at those retail prices. However, not only must wood quality be everything the customer requires but the rigorous, high demands of the retailer must also be met.

There is another paper of note. A major challenge to New Zealand management and harvesting practice in steep, fragile terrain is to identify those areas of potential risk from storm-initiated failures during or after earthworks and logging. Marden et al. argue that developing improved quantitative hazard identification will underpin any need to modify practice and requires the detailed mapping of terrain stability susceptibility.



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