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## TECHNICAL NOTES



# The SMART method of assessing radiata timber

How best to use a given log? Is it suitable for lumber production, or should it go to pulp and paper manufacture? The best decisions are not always made, because traditional testing methods are time-consuming, cumbersome, and destructive.

But now Wood Products Division chemists have developed a new SMART method (it stands for Spectroscopic Modelling and Assessment of Radiata Timber) that allows them to assess the properties of logs cut from radiata pine trees in a fraction of the time taken by conventional tests. The more rapid screening opens up opportunities for better resource allocation decisions, as well as providing rapid feedback to tree breeders on a number of properties so they in turn can use the best tree breeds for further breeding.

The method is based on the absorption

of infrared light by a sample of the wood. Normally, research chemists use this information to determine the chemical composition of the wood. It has been shown that by analysing a large number of radiata pine samples and using a statistical method to "calibrate" the instrument, it is possible to measure not only the amounts of various chemicals in the wood (sugars, resins etc.), but also the density of the sample. The advantage of the method is that all the information is obtained at once in about 10 minutes, as opposed to the one to two days it would normally take using conventional systems.

Investigations still in progress indicate that the method also has potential to predict the tendency for some lumber to form checks or fractures when dried at high temperature. Once it is possible to predict

the lumber which is susceptible to checking, changes can be made to the drying process to minimise or eliminate the problem. This represents large savings by reducing the amount of reject lumber produced.

Work is also under way to determine if the method can be extended to measure wood strength and stiffness, and predict kraft pulp and paper properties.

The long-term goal of the project is to develop a tool for forest owners and log processors to assess a large number of tree and end-use properties. This will help forest owners assess their existing stands to optimise their end use, as well as helping tree breeders screen large numbers of clones to select the top performers.

**Source: FRI**