

system of xylem differentiation and a lot of cytological knowledge have been accumulated. But until now, there are no in vitro differentiation systems that induce secondary xylem like tracheary elements. Therefore, we have still lack of information of detailed process of differentiation of secondary xylem cells.

We established a new system to induce the differentiation of secondary xylem like tracheary elements using a hybrid poplar (*Populus sieboldii* × *P. grandidentata*) callus. Tracheary elements were induced in callus derived from petiole of hybrid poplar cultured on an induction medium containing brassinolide without auxin. Tracheary elements were observed 10 days after callus had been transferred to induction medium. The rate of induction was increased as cultivation time set longer. Two-three weeks after induction, active differentiation of tracheary elements was observed. These tracheary elements formed modified structure of secondary xylem, such as bordered pits.

In addition, we established callus that expressed GFP-MAP4 (green fluorescent protein-microtubule associated protein 4) fusing protein by *Agrobacterium* method. In the transgenic callus, dynamic changes in orientation and localization of microtubules were observed in dividing and elongating cells.

Keywords: in vitro; microtubule; secondary xylem; tracheary elements

PP025

Influence of morphology of the parenchyma on the machinability of *Eucalyptus grandis* wood

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Size, frequency and arrangement of cells that make up wood are important characteristics which influence on the wood workability. So, these must be considered to improve the processing of that material. This study aimed to verify the influence of the radial parenchyma variation on the mechanical processing of log into lumber.

Six logs were collected between 3 and 6 meters in different trees of 24-years-old *Eucalyptus grandis* Hill ex. Maiden from commercial plantations in Brazil. Disks were removed from the ends of the logs and small specimens were cut in different relative positions from pith to bark (0, 33, 66 and 100% of the radius). The specimens were used in the preparation of permanent, histological cuts. The study of microscopic structures of the radial parenchyma was performed based on the IAWA Committee, providing the number of rays per millimeter, total height and width of the rays in the tangential plane and the average height and width of the radial cells. The wood samples belonging to the central (0 a 33%), intermediate (33 a 66%) and external (66 a 100%) regions of the log were machined and their performance were evaluated and the effects of the morphology of the parenchyma were examined.

In regard to the macrostructure, the rays visible under the lens were, on average, homogeneous and rarely heterogeneous, presenting variation in width of 3-15-33 mm; in height of 33-205-633 mm; and composed of 02-11-36 cells in height with variation of 7-12-19 rays per mm. These characteristics from the intermediate and outer regions were similar, but different from the central region.

The machining performances were investigated and also showed

similar trends: the results from the intermediate and outer regions were closer between themselves, but different from the central region. Scores from 1 (best quality) to 5 (poor quality) were attributed for the performance of different types of cuts. The operations of jointing, planning and top moulding in the central zone obtained higher scores than those reached in the external zone. Stopped axial moulding and transversal cutter block yield presented poor quality machinability and similar scores in the three zones.

Significant Pearson correlations were found between the parenchyma features and the surface quality of some machining set-ups. However, it was not possible to predict the sense and the direction of the rays in relation to the cutting edges.

Keywords: anatomical features; radial parenchyma; machining operations; *Eucalyptus*

PP026

Technological Characteristics of 245 Tropical and Temperate Timbers Species

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Developed by the Cirad's "Mediterranean and Tropical Forest Products Research Unit", the new release of TROPIX software (version 7) presents the main characteristics of 245 tropical or temperate wood species.

For each species, TROPIX provides data and information on: the scientific and local names of the species described, their origins (distribution maps) and any commercial restriction according to the CITES regulation; appearance of the log or wood, including pictures of wood and wood utilisations; leading physical and mechanical properties; natural durability against fungi / dry wood borers / termites, and preservation; drying behaviour, including a drying schedule given for information; processing behaviour (sawing, machining, assembling); appearance grading and visual grading for structural applications; actual and potential uses and reaction to fire.

Some of this information is displayed in graphical format.

TROPIX 7 allows multicriteria search using preselected search terms or similarity to a different species. It also allows graphical species comparisons based on one or two physical or mechanical properties.

Multicriteria searches results, graphics and technical sheets can be printed or exported as files.

Keywords: Tropical woods; software; database; technological characteristics; uses

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