

Anatomical features, fiber morphological, physical and mechanical properties of three years old new Hybrid Paulownia: Green Paulownia

ABSTRACT

Objective: Green *Paulownia* (hybridization of *Paulownia elongata* × *Paulownia fortunei* and tropical *Paulownia* spp.) is new hybrid claimed as one of the fast-growing woody plants with the high potential as a fiber material or lignocellulosic material. The material for this study originates from the area of Nanning in China.

Methodology: Cell morphology and anatomical appearances were observed and evaluated under the image analysis system (Leica DMLS). Physical and mechanical properties were evaluated based on the American Society for Testing and Materials (ASTM) standards.

Results: From the results, average value of the mean fiber length was 0.905 mm, mean fiber length 34.59 μm, lumen thickness 26.80 μm and cell wall thickness 3.89 μm. Fiber dimensions of green *Paulownia* are in the normal range for hardwoods. The physical and mechanical properties of 3 years old green *Paulownia* have similar properties than those 7-11 years old *Paulownia* published in China.

Conclusion: The 3 years old green *Paulownia* timbers can be used as materials for furniture.

Keyword: Paulownia; Fiber length; Lumen thickness; Cell wall thickness