

Jirawat Riyaphan 2013: Chemical and Mechanical Properties of Wood in Seven Para Rubber (*Hevea brasiliensis* Muell. Arg.) Clones. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Chalernpol Phumichai, Ph.D. 113 pages.

Although Para rubber (*Hevea brasiliensis* Muell. Arg.) is mainly grown for latex, rubberwood from old rubber trees is an important economic byproduct after the trees' latex production begins to decline. In general, the quality of wood depends on multiple factor, including chemical and mechanical properties. The objectives of this study were to investigate the effect of clones, height of sampling above ground level (1.3 and 6.0 m) and the interaction between clones and height on chemical and mechanical properties of seven clones of Para rubber. These data will be used to develop a selection index for rubberwood breeding. The seven clones were selected genetic diversity in a preliminary trial of clones from a 13-year-old plantation at Surat Thani Rubber Research Center. These seven clones included two commercial clones (RRIT 251 and RRIM 600) and five of their progenies (RRI-CH-35-59, RRI-CH-35-650, RRI-CH-35-1397, RRI-CH-35-1757 and RRI-CH-35-2086). The statistical experimental design used in this study was Nested design in a completely randomized design (CRD) including two factors (clones and height) with two replicates for chemical properties and eight replicates for mechanical properties analysis. The results show that clones had an effect on chemical composition (ethanol-benzene solubility, lignin and 1% NaOH solubility) and mechanical properties (modulus of rupture, tension perpendicular to grain and hardness). Likewise, the height of sampling above ground had an effect on chemical composition (except for ethanol solubility and lignin) and mechanical properties (shearing parallel to grain and hardness). The interaction between clones and height had an effect on chemical compositions (except for lignin), but not on mechanical properties. Moreover, chemical composition values were also correlated with mechanical properties. In this study, RRI-CH-35-1757, RRI-CH-35-2086 and RRIM 600 had high values for chemical composition and mechanical strength which provided the best quality of wood. Therefore, these clones have good potential to be used in the rubberwood industry.

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