Wood Quality of *Acacia* Hybrid and Second-Generation *Acacia mangium*

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Two new tree variants, namely *Acacia* hybrid and second-generation *Acacia mangium*, have been introduced in plantation forests in Sarawak, Malaysia, and their wood qualities were examined. The mean basic density of *Acacia* hybrid was comparable with *Acacia mangium*. However basic density and strength properties of second-generation *A. mangium* were significantly lower compared to *Acacia* hybrid. The mean fibre length and fibre wall thickness in the hybrid were found to be greater than that of second-generation *A. mangium*. Fibre diameter and fibre lumen diameter of *Acacia* hybrid were smaller compared to second-generation *A. mangium*. Runkel and slenderness ratios of *Acacia* hybrid and second-generation *A. mangium* fibres showed that they were suitable for pulp and paper production. *Acacia* hybrid was more resistant to *Coptotermes curvignathus* attack than second-generation *A. mangium*. A laboratory soil block test showed that *Acacia* hybrid and second-generation *A. mangium* were moderately durable timbers. In summary, marked differences in wood properties and qualities were observed between *Acacia* hybrid and second-generation *A. mangium*.

Keywords: Acacia hybrid; Second-generation Acacia mangium; Wood quality; Natural durability, Plantation species

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INTRODUCTION

Forestry remains a significant economic activity in Malaysia. Realizing the present importance of forestry and also to cater for future demands for wood and wood products, there have been efforts to establish forest plantations. One million ha of land in Sarawak, Malaysia's largest state, is earmarked for planted forests by the year 2020 (PERKASA 2009). This is a serious effort to meet the current and future raw material demand from the timber industry as well as to conserve the natural forests. The main forest plantation species in Malaysia is *A. mangium*. Besides *A. mangium*, other tree species planted in Sarawak are *Neolamarckia cadamba*, *Paraserianthes falcate*, and *Eucalyptus* spp.

Recently two improved tree variants have been introduced in Sarawak, *viz. Acacia* hybrid and second-generation *A. mangium*. *Acacia* hybrid is the cross between *A. mangium* and *A. auriculiformis*. The hybrid of *A. mangium* x *A. auriculiformis* has the potential to become an important tree variant in plantation forestry. In general, the tree form is satisfactory, since it inherits better stem straightness of *A. mangium* and self-pruning ability and better stem circularity of *A. auriculiformis* (Mohd Hamami and Semsolbahri 2003). The wood density is slightly higher than *A. mangium*, and moreover the shape of the log is almost completely round, which renders *Acacia* hybrid as a valuable and excellent source of timber.

Second-generation *A. mangium* is an improved and selected plus tree as a result of a tree improvement program. It is propagated from the seed of *A. mangium*, and the trees have gone through many years of tree improvement. The second-