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Developing Timber Classification Systems for Sri Lanka based on Wood Properties and End Uses

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Abstract

This research develops enhanced timber classification systems for Sri Lanka, based on *wood properties* and *end-use* applications. The study analyzed *wood properties* of 60 timber species which are included in eight classes of the current timber classification of State Timber Corporation (STC), assessed the *durability* and applications through local carpenter surveys and proposed improved classification systems integrating *wood property analysis*, survey results, and international comparisons. *Wood property analysis* included the *wood density*, *Modulus of Rupture (MOR)*, and *Modulus of Elasticity (MOE)*. Through expert consultations, the analysis yielded a four-category quality-based classification system (Q1 to Q4) focused on *structural applications*. This data-driven approach revealed significant differences from the existing STC classification. While high-quality (Q1) species like Satin and narrow-leaved Mahogany aligned with higher STC groups, other Q1 species such as *Hora* and Coconut were categorized in lower STC groups (fifth and sixth groups of STC classification). Notable discrepancies included Q3 species like Jack (classified in STC's second group) and Q4 species including *Toona*, Cypress, and *Lunumidella* (classified in sixth group of STC classification). The research further classified the wood species according to *dimensional stability* using the *Tangential/Radial (T/R) ratio*, *durability* characteristics and *end-use* suitability. These classification systems provide a scientifically grounded framework for timber selection process in Sri Lanka, enabling evidence-based decision-making and optimal utilization of timber resources across various applications.

Keywords: *Timber classification, Structural applications, Dimensional stability, Durability, Expert consultations*