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Comparison on Wood Properties of African Mahogany (*Khaya senegalensis)* in Different Age Categories in Sri Lanka

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Abstract

The faster growth of the *Khaya* tree has been imitated for large scale plantation establishment about 25 years ago by Forest department for timber purpose. It is planted in dry and intermediate zone areas in the country and 2,187 total hectares has been established in ten districts. Timber properties of *Khaya* wood are not adequately known under the local conditions mainly due to the unavailability of timber in the local market. It is important to identify the harvesting age of the tree and wood properties of its timber. This study is aimed to identify the timber properties of *Khaya senegalensis* in different ages. All samples were used in the study belong to three age groups that were collected from two forest plantations and forest arboretum of the Forest department in Sri Lanka. 14 years old *Khaya* wood samples were collected from forest patch belongs to the Kottagoda beat of Ampara forest plantation which was established in Ampara district in 2003. 25 years old samples were collected from a *Khaya* plantation in Nakkawatta beat of Kuliyapitiya forest located in Kurunegala district established in 1992 and oldest samples of more than 48 years old were collected from the arboretum in Mudunpita, located in Kurunegala district. 3 samples were extracted from heartwood at diameter at breast height from randomly selected 5 fall trees of each age. Modules of Elasticity (MOE), Modules of Rupture (MOR), Bending Strength, Compression Parallel to Grain (CPG), Compression Perpendicular to Grain (CPP) and Density were calculated under the moisture level of 12%. Three point bending test and compression tests were conducted on prepared specimens by using Universal Testing Machine (UTM) according to code of practice BS 373:1957. Considering the mean values of tested *Khaya* specimens, Density, Bending Strength, MOR, CPG values are 803 kgm^{-3}, 34 Nmm^{-2}, 75 Nmm^{-2}, and 48 Nmm^{-2} respectively highest in more than 48 year *Khaya* samples. MOE 8,084 Nmm^{-2} and CPP 12.4 Nmm^{-2} also showed considerable higher values in more than 48 year *Khaya* wood among these 3 age categories. The least strength properties were showed in 14 year *Khaya* specimens. Therefore it highlights that more than 48 trees were the best suited age category of *Khaya* species for the structural uses and furniture production among tested ages.

Keywords: Strength properties, *Khaya*, Universal testing machine