

COMPARISON OF THE SPECIFIC GRAVITY VARIATION OF *Swietenia macrophylla*, *Khaya senegalensis* AND *Paulownia fortunei*

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Since the existing natural forests have become increasingly subjected to conservation pressure, forest plantations have been recognized as an alternative to meet the future demand for sawn timber. A major drawback for the efficient utilization and promotion of new species such as *Khaya senegalensis* and *Paulownia fortunei* as well as much familiar *Swietenia macrophylla* is the lack of information regarding their wood properties grown under local conditions. The present work was designed to determine specific gravity of each species, investigate the variation of specific gravity within the species and to determine the effect of growth rate on specific gravity.

Specific gravity variations were studied in 79 year old *Swietenia macrophylla*, 49 year old *Khaya senegalensis* and 16 year old *Paulownia fortunei* trees. Three trees were selected from each species and pith to bark variation was investigated in sample disks removed at breast height, 50% and 80% heights of the bole length. Radial variations were studied at percentage distances from the pith.

The mean numerical specific gravity values obtained for *Swietenia macrophylla*, *Khaya senegalensis* and *Paulownia fortunei* were 0.511, 0.617 and 0.317 respectively and these values suggest that the values are comparable to those earlier published data for other countries. The results of this study indicate that general pattern of radial variation of specific gravity in both *Swietenia macrophylla* and *Khaya senegalensis* was to remain uniform from pith to bark. This pattern was evident at all the height levels. In *Paulownia fortunei*, the radial trend was to show a gradual increase from pith to bark at all the height levels. The axial trend of *Swietenia macrophylla* was higher specific gravity at the base, drops to a minimum at mid height and increase again to a maximum at merchantable top. *Khaya senegalensis* showed a gradual increase from base to top. The axial variation was not significant in both these species. and *Paulownia fortunei* showed a significant reduction of specific gravity from base to top.

To investigate the effect of growth rate on specific gravity, sample disks were extracted at breast height and ring width and whole ring specific gravity were measured based on the growth rings identified from pith to bark. Results indicated that no substantial and definite relationship appears to exist between whole ring specific gravity and ring width representing the growth rate in *Swietenia macrophylla*, *Khaya senegalensis* (diffuse-porous) and *Paulownia fortunei* (ring-porous).