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## Investigation of timber utilization properties of *Khaya senegalensis* and *Switenia macrophylla*

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### Abstract

As the need for wood and wood products is steadily rising, both the private and government sectors have increasingly become interested in introducing new, commercially valuable, fast growing timber species. A major drawback for the efficient utilization and promotion of new species is the lack of information regarding their wood properties when grown under local conditions. The present work was designed to investigate some wood properties of *Khaya senegalensis*, which has been established by the Forestry Department and much familiar *Swetenia macrophylla*.

Three trees each from three crown classes (suppressed, co dominant, dominant) from 62 years old *K. senegalensis* were studied. Three trees from 88 years old *S. macrophylla* were also studied which belong to co-dominant class. Log end splits were measured from the extracted boles. Sample disks were extracted at breast height from each tree and pith eccentricity, heartwood percentage and colour were measured. Radial variations of density and shrinkage were studied at percentage distances from pith to bark. To investigate the effect of growth rate on specific gravity, ring width and specific gravity were measured from the extracted disks from breast height.

Colour of the heartwood of *K. senegalensis* was reddish brown and sap wood was pinkish white. In *S. macrophylla* heartwood was reddish yellow and sap wood was yellow. Log end splits were higher in *K. senegalensis*. Pith eccentricity and heartwood percentage values were higher in *S. macrophylla*. According to the results, the general pattern of radial variation of specific gravity in both *K. senegalensis* and *S. macrophylla* was similar: remaining more or less uniform from pith to bark. It was observed that the two species show a gradual increase of volumetric shrinkage from pith to bark

The mean ring width values of *K. senegalensis* for suppressed (3.92 mm), co-dominant (6.09 mm) dominant (7.02 mm) crown classes were significantly different. The mean specific gravity for these classes (0.654, 0.602 and 0.686) was also significantly different. But no significant relationship between ring width (growth rate) and specific gravity was found among each crown class. The mean ring width and specific gravity values of *K. senegalensis* were compared with the initial 33 years of co-dominant trees of the *S. macrophylla*. The mean ring width value obtained for the *K. senegalensis* (5.67 mm) was significantly higher than the mean ring width of *S. macrophylla* (4.32 mm). Also specific gravity of *K. senegalensis* (0.647) was significantly higher than *S. macrophylla* (0.577). Therefore, it can be concluded that growth rate and specific gravity are higher in *K. senegalensis* compared with *S. macrophylla*. Hence this initial study suggests that recently introduced *K. senegalensis* will produce better quality timber in term of specific gravity at a faster rate compared with presently popular species *S. macrophylla*. However other factors such as colour and appearance and market acceptability should also be explored.

**Key words:** *Khaya senegalensis*, *Switenia macrophylla*, log end splits, pith eccentricity, heartwood percentage, specific gravity, ring width, shrinkage