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Variation in Wood Anatomical Properties of Acacia seyal var. Seyal Tree Species Growing in Sudan

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Abstract

Sudan is endowed by a great diversity of tree species, nevertheless the utilisation of wood resources has traditionally concentrated on a few number of species. With the great variation in the climatic zones of Sudan, great variations are expected in the anatomical properties between and within species. This variation need to be fully explored in order to suggest best uses for the species.

Research on wood has substantiated that the climatic growth condition has significant effect on wood properties. Understanding the extent of variability of wood is important because the uses for each kind of wood are related to its characteristics.

The present study demonstrates the effect of rainfall zones on some anatomical properties of *Acacia seyal* var. *seyal* growing in Sudan. For this purpose, twenty healthy trees were collected randomly from two zones. One zone with relatively low rainfall (273 mm annually) and the second with relatively high rainfall (701 mm annually). From each sampled tree, a stem disc (3 cm thick) was cut at 10% from stem height. One radius was obtained in central stem dices. Two representative samples were taken from each disc, (at 10% and 90% distance from pith to bark), in order to represent the juvenile and mature wood. The investigated anatomical properties were fibers length, fibers and vessels diameter, lumen diameter and wall thickness as well as cells proportions.

The result of the current study reveals significant differences between zones in mature wood vessels diameter and wall thickness as well as juvenile wood vessels wall thickness. The higher values were detected in the drier zone. Significant differences were also observed in juvenile wood fiber length, diameter as well as wall thickness. Contrary to vessels diameter and wall thickness, the fiber length, diameter as well as wall thickness decreased in the drier zone. No significant differences have been detected in cells proportions of juvenile and mature wood. From these results *Acacia seyal* var. *seyal* seems to be well adapted with the change in rainfall and may survive in any rainfall zone.

Keywords: Acacia seyal var. seyal, anatomical properties, rainfall zones, variation

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