Growth dynamics and timber yield potential of underutilized tree species in the Congo Basin

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In Central Africa, logging predominantly targets a limited number of high-value commercial timber species, whose harvestable stocks are increasingly depleted in natural forests. Promoting lesser-known timber species (LKTS) would be a promising strategy to reduce pressure on these species while supporting sustainable forest management. Existing studies have mainly focused on the technological properties of underutilised species, with limited attention given to their long-term capacity to sustain timber production. This study assesses the growth dynamics and timber yield potential of three underutilized species in the Democratic Republic of the Congo: *Trilepisium madagascariense*, *Funtumia africana*, and *Macaranga monandra*. Given their smaller size compared to commonly harvested species, a key question is whether their abundance, growth rates, and regeneration capacity can compensate for lower individual volumes and support sustainable timber yields.

We combined tree-ring analyses and forest inventory data to assess radial growth, population structure, and long-term timber stock potential. Data were collected in the Yangambi and Yoko forest reserves, located in the northeastern Democratic Republic of the Congo.

The results indicate moderate to relatively fast growth rates, averaging 0.54 cm yr^{-1} for *F. africana*, 0.68 cm yr^{-1} for *T. madagascariense*, and 0.92 cm yr^{-1} for *M. monandra*. Diameter distributions are dominated by small and medium-sized individuals, consistent with their ecological role as pioneer or early-successional species. Despite their relatively small maximum diameters, these species contribute measurable timber stocks and could help support timber production under shorter harvesting cycles than traditionally logged species.