

## SYNOPSIS

## DIAMETER GROWTH OF A FEW AFRICAN RAINFOREST SPECIES

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The present paper summarizes the results of a study on the growth of 17 timber species that are commonly logged in African rainforest areas : aningré (*Aningeria altissima*), obeche (*Triplochiton scleroxylon*), bossé clair (*Guarea cedrata*), dabema (*Piptadeniastrum africanum*), dibétou (*Lovoa trichilioides*), iroko (*Milicia excelsa*), kosipo (*Entandrophragma candollei*), kotibé (*Nesogordonia papaverifera*), limba (*Terminalia superba*), longhi (*Gambeya boukokoensis*), moabi (*Baillonella toxisperma*), niangon (*Heritiera utilis*), okoumé (*Aucoumea klaineana*), sapelli (*Entandrophragma cylindricum*), sipo (*Entandrophragma utile*), tali (*Erythrophleum ivorense*) and tiama (*Entandrophragma angolense*).

In addition, the data are compared with the results of growth ring analyses that were carried out in Cameroon, the Central African Republic and Gabon. The data were collected in a series of sampling campaigns to monitor trunk girths in tree plots (Côte d'Ivoire, Cameroon, Central African Republic, Ghana and Gabon). They will provide a basis for calculating rotations between potential successive logging operations within the framework of forest development projects.

**COMPARISONS**

The mean growth estimates based on growth ring analyses were probably

overestimated because some growth rings were unclear and therefore difficult to measure. There were often false rings that were not identified as such, or very fine undetected rings, especially in sapelli. There could also have been measurement errors due to assessment problems in periods when the studied tree had not reached the canopy (stunted growth). Much interesting information was obtained in the few years beginning in the 1980s, when the girths of standing trees were measured periodically, but the measurement period was not long enough to cover the lifespan of the trees. Comparisons with growth rates calculated on the basis of growth ring analyses involving direct measurements of trunk circumferences should therefore be interpreted with caution. Nevertheless, the growth rates obtained were generally close enough to establish quite accurate growth ranges that could prove useful for determining rotations between two logging operations.

**RESULTS**

Comparisons of the results highlighted a mean diameter growth range of 4-5 mm/year for *Entandrophragma* sp. (sapelli, sipo, kosipo and tiama) and iroko (*Milicia excelsa*). It ranged from 2-3 mm/year for slow-growing species

such as bossé clair (*Guarea cedrata*) and kotibé (*Nesogordonia papaverifera*). In pioneer species such as obeche (*Triplochiton scleroxylon*), limba (*Terminalia superba*) and okoumé (*Aucoumea klaineana*), diameter growth was found to be about 1 cm/year, with trunk diameters ranging from 20 to 100 cm. Within the framework of the Sangha Mbaéré project, the sampling results revealed constant diameter growth rates for ayous and sapelli in each diameter class.

These results will be useful for the purposes of tropical rainforest management. As no reliable growth data were previously available, the periods between two felling operations (rotation) were determined at random, and not based on any biological rationale. The data that we present here could be useful for forest managers, but it should be kept in mind that only a few species were covered. Indeed, these data provide an indication of the trends, but they should be confirmed by further measurements, e.g. growth data for moabi (*Baillonella toxisperma*). Moreover, further in-depth studies on this topic would be highly recommended to be able to determine annual growth rates, per diameter class, of the main species – this would facilitate calculations of the periods between two felling operations.