

CRITICAL AGE, BARK GROWTH AND LATEX VESSEL FORMATION AS ATTRIBUTES FOR DETERMINATION OF TAPPING NORMS

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A study on the dynamics of bark growth and latex vessel formation in *Hevea brasiliensis* was conducted in plantations established in rubber growing area of Cote d'Ivoire. The study showed that bark formation and increase of the total number of latex vessels are well described by a sigmoid logistic model. Analysis of model increase characteristics revealed that half of the theoretical number of latex vessels are produced within six years after planting. The bark formation process showed a hyperbolic relationship with time, which was very strong during the first six years. Thereafter, the speed of bark thickening and latex vessel formation decreased irrespective of the clone. This phenomenon may be considered as an indicator of tapping maturity for rubber trees.

Key words : Bark, *Hevea brasiliensis*, Latex vessels, Logistic model, Tapping.

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INTRODUCTION

Exploitation of the rubber tree (*Hevea brasiliensis* Muell. Arg.) consists of controlled wounding and excision of the external tissues of trunk bark, a process known as tapping (Gomez, 1982; Thomas *et al.*, 1995). On tapping, latex vessels which constitute a specialized tissue organized in concentric rows (Gomez, 1982) are cut open and latex flows out from which natural rubber is recovered (Southorn, 1969). Rubber production in *Hevea* is, therefore, dependent on the number of functional latex vessels cut open (d'Auzac and Jacob, 1989; Templeton, 1969) which also depends on the total number of latex vessels of the tree (La rue, 1921).

The conventional criterion for assessing tappability of a tree is attainment of 50 cm girth at a height of 1.25 m from the bud union (Gan *et al.*, 1991). This criterion has generally been accepted in terms of rubber production, sensitivity to panel dryness (Jacob *et al.*, 1994; Obouayeba *et al.*, 1996) and physiological state of *Hevea* clones with slow and moderate growth rates (PR 107, PB 217, GT 1) which usually attain tappability within six or seven years after planting. Fast growing clones such as PB 235, IRCA 18 and PB 260 may attain tappability by the fourth and fifth year according to the above criterion. However, these clones show high sensitivity to panel