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RESPIRATION IN SOFT BARK TISSUE OF TAPPED AND UNTAPPED TREES OF *HEVEA*

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Rate of dark respiration was measured in the soft bark tissue of ten clones of *Hevea* and related to the biochemical composition of the tissue and the dry rubber yield and biomass of the trees. The rate of respiration showed a positive correlation with total proteins, soluble sugars and starch contents in the laticiferous tissue. Tapping increased the rate of respiration in the bark. There was a positive correlation between the rate of respiration and the latex yield on a given day, indicating that a high respiratory activity was required to sustain high yield. Tapping led to substantial loss of biomass in all the clones and this was positively associated with dry rubber yield. There was more than proportionate loss of biomass as the annual mean dry rubber yield increased among the clones. This unaccountable loss of biomass could possibly be due to an increase in the maintenance respiration in the bark tissue of the high yielding clones which may be metabolically more active to sustain a high yield. Thus, it appears that the high yielding clones in general have poor efficiency in converting biomass into rubber.

Key words : Biomass, *Hevea*, Protein, Respiration, Soft bark, Starch, Sugars.

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INTRODUCTION

A substantially large proportion of photosynthates produced by a plant is lost through dark respiration every day. Depending upon the species and prevailing environmental conditions, some tissues can oxidize, through respiration as much as 30-60 per cent of the net photosynthates produced daily (Lambers, 1985). Dark respiration determines the rate of partitioning of photosynthates to different metabolic pathways leading to growth, development and maintenance of various tissues and organs some of which may be economically important. Thus, respiration plays an important role in converting photosynthates into economic yields. While it is indicative of enhanced metabolic activity in a tissue, a high respiratory rate is not always necessarily associated with large economic yield (Wilson, 1982).

Natural rubber latex, the economically important product harvested from *Hevea* trees, with a high content of cis-polyisoprene, is a rich repository of photosynthates in different forms and several other vital resources such as proteins, minerals, *etc.* Harvesting of latex for rubber through tapping of *Hevea* trees, therefore, drains them of large quantities of these resources which