

## SEASONAL CHANGES IN PHYSIOLOGICAL CHARACTERISTICS AND YIELD IN NEWLY OPENED TREES OF *HEVEA BRASILIENSIS* IN NORTH KONKAN

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Seasonal changes in physiological characteristics and yield were studied in *Hevea brasiliensis* in the North Konkan region. This is a non-traditional rubber growing area where the crop experiences severe drought in summer months. The study was carried out in newly opened trees of clones GT 1 and RRIM 600. The per tap dry rubber yield in summer months was extremely low and not economical. The estimated first year yield ha<sup>-1</sup> for the remaining period was 493 kg for GT 1 and 549 kg for RRIM 600. The extreme soil and atmospheric moisture deficits resulted in very low plant moisture status and high plugging indices. Stomatal conductance and transpiration rates were also severely inhibited throughout the day. Partial defoliation and leaf margin drying were observed during this period. In general, RRIM 600 maintained relatively higher yield and plant moisture status.

*Key words:*- *Hevea brasiliensis*, Drought tolerance, Yield components, Water relations, Konkan region.

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### INTRODUCTION

The traditional rubber growing tract in India extends from Kanyakumari (8°N) to Mangalore (12°N). The total production from the region is not sufficient to meet the country's full requirement. Further expansion of area under rubber in this zone to increase the production is not feasible due to environmental and socio-economic reasons. Therefore it became necessary to explore the possibilities of extending rubber cultivation to other less congenial but potential areas (Sethuraj *et al.*, 1989). One such region identified is the Konkan region of Western India (15° to 20°N).

In this region prolonged severe soil moisture deficits and high summer temperatures are the major environmental constraints

for growth and productivity of rubber. Effects of these adverse conditions on growth of *Hevea* is now fairly understood (Sethuraj *et al.*, 1989; Bhaskar *et al.*, 1990). However, at present there is no data on the yield performance of *Hevea* in the region. Effects of extreme stress conditions on yield and yield components and plant moisture status are not known, though such information on the effects of drought in the traditional region is available (Gururaja Rao *et al.*, 1988; Devakumar *et al.*, 1988; Vijayakumar *et al.*, 1988). The objective of the present study was to understand the water relations and yield performance in *Hevea brasiliensis* under the prevailing conditions of North Konkan region, Maharashtra State. The paper, for the first