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GROWTH PERFORMANCE DURING THE IMMATURE PHASE OF A FEW RUBBER (*HEVEA BRASILIENSIS*) CLONES IN ORISSA

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Growth response during the immature phase of ten *Hevea* clones to prolonged soil moisture stress, high wind speed and high summer temperature in Orissa, a non-traditional area for rubber, was studied. The plants wintered by the end of February or first week of March. From April onwards, severe chlorosis, leaf margin drying and partial defoliation were observed. The variations of the clones in terms of six morphological characters were assessed from June 1996 to July 1998 and correlations worked out. Significant positive correlation of girth with the other four morphological traits (plant height, canopy height, canopy breadth and number of branches) were noticed. Higher growth indices were recorded in the clones RRIM 600, SCATC 93-114, RRII 208 and RRIJ 5 than the general mean indicating better adaptability to the stress situations. In general, RRIM 600 maintained relatively higher growth during the immature phase.

Key words : Abiotic stress, Clonal variation, Girth, Growth index, *Hevea*, Immature phase, Non-traditional region.

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INTRODUCTION

Rubber (*Hevea brasiliensis*) is traditionally cultivated in humid tropics within 10° North and South of the equator, where the quantity and distribution of rainfall and the ambient temperature are suited for its growth. In India, the traditional rubber growing area extends up to 13° N on the South West Coast. Attempts are now being made to extend rubber cultivation to the non-traditional regions of India, where near tropical climatic conditions exist (Sethuraj *et al.*, 1991). One such region identified is Orissa in Eastern India (20° N and 85° E). Prolonged severe soil moisture stress, high ambient day temperature during the summer months, moderate winter temperature and high wind velocity are the major agroclimatic constraints in this region that may affect growth and productivity of rubber (Sethuraj *et al.*, 1991; Chandrashekar *et al.*, 1996; Meenattoor *et al.*, 2000).

Very limited information is available on suitability of *H. brasiliensis* clones and the cultural practices to be adopted under prolonged drought conditions (Pushparajah, 1993; Sethuraj, 1986), crop performance under high temperature stress (of more than 40°C) and on the combined effect of low and high temperature and drought on growth and yield (Sethuraj *et al.*, 1991; Vijayakumar *et al.*, 1988).

It is known that the annual growth rate determines the length of the immaturity period and girth is the parameter used for evaluating the maturity of a rubber plantation (Sethuraj and George, 1980; Paardekooper, 1989). Growth performance analysis can also provide useful information on the clonal differences in growth (Chandrashekar *et al.*, 1998).

At present there is no information on the growth performance of *Hevea* in Orissa. The objective of the present study was to assess the early growth of ten *Hevea* clones using a