

EFFECT OF IRRIGATION ON GROWTH AND ESTABLISHMENT OF YOUNG RUBBER PLANTS IN A HUMID TROPICAL REGION OF INDIA

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In an experiment to study the growth response of young rubber during the initial three years to varying levels of irrigation, plant girth and girth increment were on par with irrigation at 1.2, 0.9 and 0.6 IW/CPE ratio and significantly superior to that of the control and irrigation at IW/CPE of 0.3. Growth showed a peak in April and August for the irrigated plants. Seasonal girth increments showed that growth during the period from June to November was higher than that during December to May. Irrigation at IW/CPE ratio of 1.2, 0.9, 0.6 and 0.3 during the period from December to May exhibited a girth increment that was 84, 67, 49 and 46 per cent higher than that of the corresponding girth increment observed during the monsoon season. In the unirrigated treatment this was only 38 per cent. A significant increase in RGR was observed for the treatments irrigated at IW/CPE ratio of 1.2 and 0.9 over that of the other treatments. Consumptive use and the ratio of consumptive use to pan evaporation were also worked out.

Key words: Girth, *Hevea brasiliensis*, Immature rubber, Irrigation, IW/CPE ratio, Relative growth rate.

INTRODUCTION

Rubber (*Hevea brasiliensis*) is predominantly grown in the tropics between 10 °S and 8 °N latitude where an equatorial monsoon climate prevails. It prefers an annual rainfall of 2000 mm or more, well distributed throughout the year with 125 to 150 rainy days and with no excessively wet or dry period (Vijayakumar *et al.*, 2000). Besides a high atmospheric humidity of 80 per cent with moderate wind, bright sunshine at the rate of 6h/day throughout the year with a maximum temperature of 29 to 34°C and minimum of 20°C are the other atmospheric parameters, which support congenial growth of rubber. Any deviation from

these ideal conditions results in delayed maturity.

Lack of soil moisture and limited root development coupled with high temperatures are main factors limiting early tree growth. The adaptability of rubber plants to thrive in marginal areas with an annual water deficit of 200 to 350 mm has been reported (Moracs, 1977). Studies in Thailand, which has a marked dry season of six months, have indicated growth inhibition of rubber to the extent of 15 per cent (Saengruksowong *et al.*, 1983). Inhibition of growth in rainfed plants compared to that of the irrigated plants has been observed at Dapchhari, India and irrigation at 50 per cent