

SELECTION OF VIGOROUS CLONES OF *HEVEA* THROUGH REGRESSION METHOD

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The growth behaviour of 25 *Hevea* clones in response to weather parameters in immature stage (3 to 7 years) was studied. Relative growth rate (RGR) showed positive correlation with monthly rainfall and relative humidity and negative correlation with maximum temperature and sunshine hours. RGR declined by nearly 50% when sunshine increased by more than six hours. The influence of weather is cumulative in perennial crops like rubber. Total rainfall and cumulative monthly mean sunshine hours for a period of five years were used in this study for developing a multiple regression equation to predict the growth of clones. A close relationship between girth and weather parameters was established ($R^2=0.994$). The girth regressed with months after field planting gives an indication of potential clones. The method was found suitable for early prediction of vigorous *Hevea* clones during immaturity period in traditional regions.

Key words: Growth, *Hevea brasiliensis*, Multiple regression, Rainfall, Sunshine hours, Weather.

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INTRODUCTION

The gestation period of rubber, which takes seven to eight years in traditional region and one or two years more in non-traditional area is an important factor for determining the economic viability. The most important parameter based on which the maturity of the plantation is decided for harvesting of latex is the girth of the trees (Sethuraj and George, 1980; Paardekooper, 1989; Chandrashekar *et al.*, 1998). A rubber plantation is considered mature for tapping when the trees attain 50 cm girth at 150 cm height from bud union (Rubber Board, 2001). Attempts have been made to reduce the immaturity period by better management practices and crop improvement. The selection of vigorous clones from available genotypes in a particular climatic condition is another area of importance. High vigour is one of the important attributes associated with early tapping and high yield (Simmonds, 1989). Variations in early growth performance of clones were reported in non-traditional areas (Sethuraj *et al.*, 1991; Nazeer *et al.*, 1992; Meti *et al.*, 1999;

Chandrashekar *et al.*, 1998) and in traditional area (Varghese *et al.*, 1996; Dey *et al.*, 1998). Study of the growth performance of clones and the behaviour of certain physiological parameters may provide useful information of the relative performance of clones. Study of the relationship of seasonal growth with weather parameters during immaturity period can throw light on the response of clonal growth to environmental changes. Though early growth of some clones was studied in response to environmental changes, the selection of clones through regression method has not been reported. The breeders can also use this technique to select vigorous clones in the early stage. The objective of this paper is to study the early growth in relation to climatic parameters and develop clone-wise regression equations, which can be used for future selection of vigorous clones for the traditional rubber growing regions of India.

MATERIALS AND METHODS

The experimental material comprised 25 *Hevea* clones of Indian, Malaysian, Chi-