

YIELD AND ANATOMICAL CHARACTERS IN *HEVEA* : A PATH COEFFICIENT ANALYSIS AND CHARACTERISATION OF CLONES

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Premakumari, D., Panikkar, A.O.N., Marattukalam, J.G. and Sethuraj, M.R. (1996). Yield and anatomical characters in *Hevea* : A path coefficient analysis and characterisation of clones. *Indian Journal of Natural Rubber Research*, 9(1) : 12-16.

Ten clones of *Hevea brasiliensis* were characterised for early yield, girth and bark anatomical traits. Genotypic correlations and direct/indirect effects of girth and structural traits with yield were estimated.

Laticifer area index at the year of opening was the most reliable parameter for early prediction of yield which showed the highest positive correlation ($r = 0.691$; $P < 0.01$) and highest positive direct effect (1.832) on yield over the subsequent three years. The intensity of laticifer anastomosing and ray width also directly contributed to yield and were observed to be independent characters. The number of latex vessel rows showed significant positive correlation with yield ($r = 0.589$; $P < 0.01$) but its direct effect was negative. Correlation of girth, latex vessel density and latex vessel diameter with yield were not significant. These traits and the number of latex vessel rows contributed to yield via laticifer area index.

Key words : *Hevea*, Bark anatomy, Latex vessels, Yield.

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INTRODUCTION

Secondary laticifers of *Hevea brasiliensis* (Willd. ex Ait. de Juss.) Muell. Arg. distributed in the bark of the trunk are commercially exploited for latex which yields natural rubber. A wide gap exists between the achieved yield of 2500-3000 kg/ha/year and the potential yield of 9000 kg/ha (Templeton, 1969). An attempt was made to estimate genotypic correlations of bark anatomical characters and girth at the time of opening of trees for exploitation, with subsequent yield over three years to utilise these parameters in selection.

MATERIALS AND METHODS

The study was conducted in ten rubber clones (RRIC 7, RRIC 36, RRIC 45, RRIC 52, RRIC 100, RRIC 102, RRIC 104,

RRIC 105, Nab 17 and GT 1) laid out in a randomized block design with three replications and planted in 1976 at the Central Experiment Station of the Rubber Research Institute of India. The trees were opened for tapping in 1983 and exploited under 1/2 S d/2 6d/7 system. Girth was measured and bark samples collected from a height of 150 cm above the bud union in 1983 and fixed in F.A.A. Samples were sectioned in radial (100 μ m thickness) and tangential (80 μ m) planes and sections stained with Sudan III. Number of latex vessel rows, density of latex vessels (expressed as numbers per cm per unit girth per row), diameter of latex vessel (μ m), laticifer anastomosing (expressed as the number of connections between latex vessels per 0.25 mm height), laticifer area index as cross sectional area of