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STUDIES ON THE NATURE OF VARIATION AND COVARIATION FOR SOME QUANTITATIVE TRAITS IN *HEVEA BRASILIENSIS*

It is essential to have basic informations on the genetic nature of variation and covariation of various metric traits in plantation crops for the proper planning of breeding strategies . Some information is available on these aspects for many traits in *Hevea brasiliensis* (Webster and Paardekooper, 1989; Simmonds, 1989) except for some quantitative traits. The present study was taken up to analyse the nature of variation and to estimate heritabilities and genetic advance. Attempt has also been made to ascertain the relationship of number of latex vessel rings with some quantitative traits.

The study was conducted at the Regional Research Station of the Rubber Research Institute of India at Dapchari (20.04° N; 72.04° E; 48 m MSL) in Thane District of Maharashtra State. The data were collected from a clone trial laid out in 1985. The experimental design was randomized block with fifteen clones as treatments and three replications. The plots consisted of thirty six plants in square planting with a spacing of 4 m x 4 m (Nazeer *et al.*, 1992). This non-traditional area for rubber experiences severe drought during summer (Chandrashekar *et al.*, 1990).

At the end of three and a half years, data were collected on number of latex vessel rings (NLVR), bark thickness (BTH, mm), girth (GRH, cm), plant height (PHT, m), canopy breadth (CBH,m), number of branches (NBR), branching angle (BAN, degrees) and specific leaf weight (SLW, mg cm^{-2}). Girth was recorded from all the trees at a height of 1.5 metres from the bud union. Bark samples for determining the number of latex vessel rings were collected from three trees of comparable height and girth per plot. Other traits were recorded from ten trees randomly selected from each plot.

Analyses of variance and covariance were done and phenotypic coefficient of variation (PCV), genotypic coefficient of variation (GCV), heritability in the broad sense (H^2), expected genetic advance (GA) at five percent selection intensity, genotypic correlations and phenotypic correlations were worked out after Singh and Chaudhury (1985) and Dabholkar (1992).

Results of the analyses of variance and estimates of genetic parameters of the characters are summarised in Table 1. Clonal differences in the characters were significant only for NLVR, PHT, NBR and BAN. PCV was highest for NBR and lowest for BTH. The trend was similar for GCV. Heritability was highest for PHT and lowest for BTH. The traits NLVR, PHT and NBR showed fairly high heritabilities accompanied with high genetic advance. Phenotypic correlations between GRH and PHT, GRH and CBH, and PHT and CBH were significant (Table 2). Comparison of the significant phenotypic correlations with the corresponding genotypic correlations hinted at the associations of these characters at the genotypic level also. Genotypic