CORRELATION AND PATH ANALYSIS OF YIELD AND ITS COMPONENTS, SOME FACTORS OF WATER RELATIONS AND SOIL MOISTURE IN *HEVEA BRASILIENSIS*

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Interrelationships among yield, some physiological factors and soil moisture were studied in *Hevea*. Data on girth (G), latex yield (LY), rubber yield (RY), latex solute potential ($\Psi \pi$), rubber content (Cr), initial flow rate (F), plugging index (p), latex turgor before and after tapping (pretap and post-tap Plv), predawn leaf water potential (PD Ψ 1), and soil moisture (SM) were collected during the first year of tapping. Correlation analysis was performed to understand the relationship existing among the different variables. The contribution of different variables to yield was discerned by subjecting the correlation matrix to path coefficient analysis. By performing a series of path coefficient analyses, an explanatory model was worked out for showing the dependence structure and path of action of factors important for response function. Correlation between LY and RY was close to functional. Correlations of both LY and RY with other variables were similar and the coefficients were higher for LY. The results indicated that among the system variables considered in the study, $\Psi\pi$ and Cr are the primary factors and post-tap Plv, PD Ψl and G are the secondary factors influencing yield, with soil moisture as the driving force. The different variables accounted for 42 per cent of variablity in yield.

Key words : - *Hevea brasiliensis*, Yield components, Water relations, Correlations, Path analysis, Explanatory model.

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INTRODUCTION

Like in other crops, in *Hevea* also yield is a complex trait. All effects on yield must go through the various components associated with it. All variation in yield is the integrated effect of the variation occurring in the component traits. In order to interpret the variation in yield, it is necessary to understand the interrelationships existing between yield and the component factors. In *Hevea* substantial amount of information can be found on the ralationship of various plant and non-plant factors on yield (Webster and Baulkwill,

1989; d'Auzac *et al.*, 1989; Sethuraj and Mathew, 1992). However any study on the relationship of yield with girth, latex yield, rubber yield, rubber content, latex solute potential, initial flow rate, plugging index, latex turgor before and after tapping and soil moisture is lacking. The objectives of this paper are to report (1) the interrelationships existing among the variables studied, (2) the contribution of independent variables to response variable and (3) an explanatory model showing the dependence structure and path of action of variables discerned as important for the response variable.