

LATEX DIAGNOSIS FOR ASSESSMENT OF CLONAL PERFORMANCE IN *HEVEA*

The concept of physiological diagnosis (latex diagnosis) of *Hevea* (Eschbach *et al.*, 1983) is based on the hypothesis that some specific biochemical and biophysical parameters in latex which exhibit a high degree of correlation with production could be used for predicting the state of the latex producing system at a given time. The assumption is that an analysis of certain constituents in latex could provide information on the productivity of clones under any particular exploitation system.

Latex production at tapping depends on the factors like duration of latex flow and regeneration of latex between two tappings. These yield limiting factors are controlled by genetic constitution of the plant and the environment, and the exploitation systems undertaken. Limiting factors of clonal origin can be anatomical and physiological characters of latex vessels, the latter being more (Jacob *et al.*, 1989). Productivity can be manipulated to some extent by changes in exploitation systems. Certain biochemical parameters in latex namely, dry rubber content (DRC), sucrose, thiols and inorganic phosphorus (Pi) which influences latex flow and regeneration process help in the assessment of the physiological status of the laticifers in the drainage area of the tree.

Since rubber constitutes over 90 per cent of the total solids of latex, DRC can reflect

the biosynthetic capacity of the trees. A high sucrose content in latex may indicate an active metabolism and high productivity (Tupy and Primot, 1976) or a low metabolic utilization and low productivity. The Pi in latex reflects the energy metabolism and has a direct correlation with rubber yield in clones (Subronto, 1978; Eschbach *et al.*, 1984). Thiols in latex trap toxic forms of oxygen protecting the cell compartmentation of latex (d'Auzac *et al.*, 1982).

A study was taken up with nine clones belonging to high (RRII 105, PB 235, PB 215, PB 217), medium (GT 1) and low (Ch 4, Pil B 84, Tjir 16, Ch 29) yielding groups grown in the germplasm garden of the Central Experimental Station of the Rubber Research Institute of India at Chethackal. The trees were in the sixth year of tapping under the 1/2S d/2 system. Six trees in each of the clones were selected for the study from a randomized block design planting. Approximately 1 g of latex extracted with 2.5 per cent trichloroacetic acid and made up to 10 ml was used for estimation of sucrose (Scott and Melvin, 1953), Pi (Taussky and Shorr, 1953) and thiols (Boyne and Ellman, 1972). Biochemical analyses were done in duplicate using samples collected from individual trees and the mean values are presented in Table 1.

Average yield (volume of latex) of the