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CONTRIBUTION OF LATEX CATIONS TO THE WATER RELATIONS AND LATEX YIELD IN *HEVEA BRASILIENSIS*

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The latex cationic composition and their contribution to osmotic potential were studied in eight *Hevea* clones (RRII 43, RRII 118, PB 311, RRII 105, GT 1, RRII 308, RRIM 600 and Gl 1) during the peak yielding (October - November) and summer (February - March) seasons. The differences in the concentrations of potassium (K), calcium (Ca) and magnesium (Mg) in the latex were significant among the clones. K and Mg contents in the latex were influenced significantly by seasonal effect and varied differently among clones. All the clones showed low osmotic potential during the summer stress season compared to the peak yielding season. The contribution of K to osmotic potential was found to have significant seasonal and clone x season effects and in the latex it ranged between -2.4 to -3.14 bars during October-November and -2.4 to -3.00 bars during February- March. The clone GT 1 having lesser variation in the latex K content during the peak yielding and stress seasons showed the highest osmoregulation.

Keywords: Cations, *Hevea brasiliensis*, Osmotic potential, Osmotic regulation, Water relations

INTRODUCTION

Harvesting of latex from *Hevea* trees is carried out by tapping the tree bark. While tapping, the latex vessels are opened up and the latex exudes from the vessels by hydrostatic pressure. There is pressure drop in the laticifers and therefore water from the surrounding cells enters into the laticifers resulting in the dilution of the latex and continuous flow of latex. This leads to osmotic imbalance in the laticifer tissue, ultimately leading to bursting of lutoid particles present in the latex which accelerates coagulation of latex. Latex flow from the tree is influenced by plant-water relationship (Buttery and Boatman, 1976). Latex yield during rainy and summer seasons is influenced by osmotic potential of B and C-sera of latex (Satheesan *et al.*, 1982). It was reported that high yielding clones that had high rubber yield during summer have maintained a high osmotic concentration in the C-serum of latex. The capacity of the tree to overcome the fluctuation in osmotic environments in latex influences its performance during summer periods (Raghavendra *et al.*, 1984).

The osmoticum of *Hevea* latex is maintained mainly by carbohydrate components (d'Auzac and Jacob, 1989). Osmolytes other than the organic solutes present in the latex are the mineral components. The minerals present

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