

BIOCHEMICAL CHANGES ASSOCIATED WITH LATEX PRODUCTION UNDER LOW FREQUENCY TAPPING IN *HEVEA BRASILIENSIS*

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Received: 01 January 2019 Accepted: 03 April 2019

Sreelatha, S., Thomas, K.U., Rajagopal, R., Karunaichamy, K., Simon, S.P., Annamalinathan, K., and Jacob, J. (2019). Biochemical changes associated with latex production under low frequency tapping in *Hevea brasiliensis*. *Rubber Science*, 32(1): 42-52.

Latex production in *Hevea brasiliensis* can be optimized by appropriate tapping frequency and yield stimulation using ethephon. High frequency tapping and non-judicious use of yield stimulant may cause oxidative stress to the laticiferous system and leads to severe metabolic disorders like tapping panel dryness (TPD). In the present study, low frequency tapping systems with different levels of yield stimulation were tested in the clone RR11 105 for rubber yield. Biochemical parameters related to latex production and oxidative stress indicators were also studied. After four years of tapping, the cumulative yield under low frequency tapping systems was at par with S/2 d2 tapping frequency except S/2 d3 frequency without stimulation. TPD incidence was more than 21 per cent under high frequency (S/2 d2) tapping without yield stimulation. Under weekly tapping (S/2 d7), TPD incidence was only six per cent with the highest rounds of annual ethephon application. No significant stress effects were observed subsequent to various stimulation schedules under S/2 d4, S/2 d6 and weekly tapping as indicated by higher levels of invertase, ATP, protein synthesis, optimum thiol content, high utilization of sucrose and non-accumulation of stress indicators like proline and phenol. Sustainable high rubber yield obtained under weekly tapping without any stress effects due to frequent ethephon stimulation and low incidence of TPD suggests that S/2 d7 tapping system as the best option for rubber growers for harvesting latex from rubber trees to solve the current problems of low rubber price, scarcity of labour and high cost of production.

Key words: Ethephon stimulation, *Hevea brasiliensis*, Latex production, Low frequency tapping, Rubber yield

INTRODUCTION

Latex production in *Hevea brasiliensis* depends mainly on the availability of sucrose and biochemical energy for rubber biosynthesis and tolerance of the laticiferous system to various stresses including tapping

and ethephon stimulation (Jacob *et al.*, 1997). Choosing appropriate tapping system and stimulation schedule are essential factors to get sustainable long term rubber yield and to maintain the optimum physiological status of rubber trees. High frequency