

AGROMETEOROLOGICAL MODEL FOR SEASONAL RUBBER TREE YIELD

Altino A. Ortolani, P.C. Sentelhas, M.B.P. Camargo, J.E.M. Pezzopane and P. de S. Goncalves

Ortolani, A.A., Sentelhas, P.C., Camargo, M.B.P., Pezzopane, J.E.M. and Goncalves, P.de S. (1998). Agrometeorological model for seasonal rubber tree yield. *Indian Journal of Natural Rubber Research*, 11(1&2) : 8-14.

A model for predicting seasonal yield of rubber (*Hevea brasiliensis*) tree was evolved using meteorological data, crop phenology and production of trees of clone RRIM 600 at Jose Bonifacio county, Sao Paulo state, Brazil close to 21°00'S, 49°42'W and 470 m above sea level. To quantify monthly and ten day basis yield response the model was adjusted considering the ratio of actual to potential yield as a productory of penalization by moisture and thermal factors. The monthly and decendial potential yield were estimated as a senoidal curve, which fits well to the seasonal periodicity of latex production. The best performance for the ten day basis model was found considering 100 mm of storage soil water and moisture factor expressed by the ratio of actual to potential evapo-transpiration, resulting in $R^2=0.73$ and d-index = 0.90.

Key words: Agrometeorological model, *Hevea brasiliensis*, Seasonal yield.

A.A. Ortolani (for correspondence), M.B.P. Camargo and P.de S. Goncalves, Instituto Agronomico de Campinas, C.P. 28, CEP 13.031-970, Campinas, SP, Brazil. Email : altino@cec.iac.br.; P.C. Sentelhas, Escola Superior de Agricultura 'Luiz de Queiroz', Universidade de Sao Paulo, Piracicaba, SP, Brazil; J.E.M. Pezzopane, Universidade Federal do Espirito, Alegre, ES, Brazil.

INTRODUCTION

The effect of environmental factors on growth rate and yield of *Hevea* latex was reviewed by Watson (1989) and Rao and Vijayakumar (1992). Temperature and rainfall are referred to as the most critical climatic factors for successful growth and production (Omont, 1982; Ortolani *et al.*, 1982; Monteny *et al.*, 1985; Zongdao and Yanqing, 1992). In some areas like China wind speed is a serious problem (Zongdao and Xueqin, 1983). Solar radiation and relative humidity influence many physiological processes of *Hevea* tree but are not generally thought

to play as important roles as thermal and rainfall conditions in defining potential yield or ecological limitation for this crop.

Rao *et al.* (1993) summarized the influence of meteorological factors on growth and latex production of *Hevea*. Monthly rainfall of 125 mm is adequate to compensate mature rubber tree crop evapo-transpiration of 3-5 mm per day, measured and estimated by Monteny *et al.* (1985) and Haridas (1985). This daily water requirement at the rubber production area of Sao Paulo state, Brazil coincides during the summer months from December to Febru-