

YIELD OF MODERN *HEVEA* CLONES AND THEIR RESPONSE TO WEATHER PARAMETERS ACROSS DIVERSE ENVIRONMENTS

T. Meenakumari, J.R. Meenattoor, T.A. Soman¹, S.K. Dey², Gitali Das³, Shammi Raj, T. Sailajadevi, Ramesh B. Nair⁴, Anitha Raman, K⁵, T. Gireesh and Kavitha K. Mydin

Rubber Research Institute of India, Kottayam-686 009, Kerala, India

¹ Hevea Breeding Sub-Station, Rubber Research Institute of India, Kanyakumari-629 851, India

² Regional Research Station, Rubber Research Institute of India, Agartala-799 006, India

³ Regional Research Station, Rubber Research Institute of India, Nagrakata, West Bengal-735 225, India

⁴ Rubber Board, Kottayam-686 002, India, ⁵ International Rice Research Institute, Philippines

Received: 3 January 2011 Accepted: 27 April 2011

Meenakumari, T., Meenattoor, J.R., Soman, T.A., Dey, S.K., Das, G., Raj, S., Sailajadevi, T., Nair, R.B., Raman, K.A., Gireesh, T. and Mydin, K.K. (2011). Yield of modern *Hevea* clones and their response to weather parameters across diverse environments. *Natural Rubber Research*, 24(1): 44-53.

A total of 12 promising clones, including the newly released RRII 400 series clones were evaluated in three geographically diverse locations across the traditional and non traditional rubber growing tracts in India. The present paper reports the yield performance of these clones for the 4th to 6th year of tapping. The response of the clones to changes in meteorological variables in different locations in the same period was also examined. In Kanyakumari, RRII 105, RRII 430 and RRII 203 were on par. In Agartala, RRII 422 and RRII 429 were the top yielders and registered significantly superior yield to both the controls, RRII 105 and RRIM 600. In Nagrakata, RRII 429 was the highest yielder and RRII 417 and RRII 422 also recorded significantly superior yield than the controls. Genotype Environment Interactions (GEI) for rubber yield was analysed from the trials with a view to identify clones with wide adaptability as well as specific adaptation. AMMI model was selected to quantify GEI and the analysis revealed that environment (E) and GEI together contributed to the major proportion (72.8%) of the variations in rubber yield. Twenty seven percent of the total variation was attributed to genotypes (G). Genotype means ranged from 35.31 g/t/t to 56.24 g/t/t. Clones RRII 429, RRII 422, RRII 417, RRII 430 and RRII 105 were high yielding ones across environments. RRIM 600 was found to be the widely adapted clone. RRII 429 showed the highest interaction. Weather parameters *viz.*, maximum and minimum temperatures, RH, sunshine hours and rainfall were studied in relation to rubber yield in the three locations. Maximum temperature was negatively correlated with yield in Kanyakumari, irrespective of clones. In Agartala and Nagrakata the results were however inconclusive.

Key words: Environments, *Hevea* clones, Weather parameters, Yield.

INTRODUCTION

The increasing demand for natural rubber (NR) the world over has necessitated increasing the production of NR through

expansion in area under rubber and/or increasing the productivity of the crop. To this end, all the major rubber producing countries, including India have extended cultivation to non-traditional (NT) areas experiencing