

EVALUATION OF TEMPERATURE DEVIATION FROM THE OPTIMUM IN DIFFERENT RUBBER GROWING REGIONS

Athira Prasad, M.D. Jessy, A. Abin Divakaran and B. Pradeep

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

Received: 01 May 2024 Accepted: 26 June 2024

Prasad, A., Jessy, M.D., Divakaran, A.A. and Pradeep, B. (2024). Evaluation of temperature deviation from the optimum in different rubber growing regions. *Rubber Science*, 37(2): 139-153.

Among the various constraints faced by rubber growers in India, climate change has growing importance affecting productivity and profitability. Rising temperature, changing rainfall patterns, increasing drought and frequent natural calamities were experienced in various rubber growing regions. An attempt was made to study the deviation of maximum and minimum temperature from the optimum requirement of rubber in South and North East India. Through an extensive analysis of weather data spanning three decades from various meteorological stations across different regions, the study unveiled a discernible trend of escalating maximum temperatures. Certain areas exhibited notable alterations in temperature patterns, alongside a decreasing number of months with optimum temperature. This impact accentuates the imperative for tailored adaptation measures, particularly in regions like Kottayam, which face significant challenges. Overall, the findings highlighted necessity for region-specific adaptation strategies to support rubber growers in coping with the adverse effects of climate change. Ensuring the continued productivity and economic viability of the rubber industry requires proactive measures to address increasing temperature deviations from optimal growth conditions. The study advocated for the adoption of resilient rubber clones like RR II 430 and innovative management practices to mitigate adverse effects of climate change on rubber cultivation, safeguarding sustainability of the industry. Understanding these temperature patterns can also aid in developing more resilient rubber clones and better forecasting models to predict yield based on climatic data.

Keywords: Climate change, Mann-Kendall, Optimum temperature, Rubber, Temperature deviation, Trend analysis

INTRODUCTION

Natural rubber is widely used in the military, industrial, transportation, aviation, medical and consumer industries and it is largely produced by rubber-growing countries of Asia (88%), Africa (10%) and Latin America (2%). Among these countries Thailand, Indonesia, Vietnam and Malaysia account for 70 per cent of world supply. Rubber is currently cultivated in

around 14 million hectares of land globally (IRSG, 2021). Consumption of natural rubber is anticipated to increase and the researchers are trying to find appropriate locations to expand its cultivation to meet the increasing demand.

Among the major factors influencing growth and yield of rubber, the meteorological variables are crucial. Environmental and technological factors