

PERFORMANCE OF WILD AMAZONIAN ACCESSIONS AND HYBRID *HEVEA* CLONES OF WICKHAM ORIGIN IN A DROUGHT STRESSED ENVIRONMENT

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Natural rubber cultivation in India faces adverse effects of drought and cold stresses in the non-traditional rubber growing areas. As genetically divergent germplasm accessions are an excellent repository of various stress tolerance traits, their systematic screening can help to identify potential accessions with intrinsic tolerance to abiotic stresses such as drought, temperature extremes *etc.* With this objective, a field evaluation of 33 *Hevea* clones comprising of wild Amazonian accessions and Wickham clones was initiated at Regional Research Station (RRS), Dapchari located in Maharashtra, experiencing high temperature, high light intensity and very low soil moisture during the summer months. The check clones in the experiment were RR1105, RR11430, RR11414, RR11208, RR11600 and Tjir 1. Growth parameters such as annual girth and girth increment were recorded from the third year onwards. Based on empirical visual scoring on leaf yellowing and drying during summer period, potential drought tolerant clones were identified and they were further evaluated for *in vivo* leaf chlorophyll stability during the following summer. Based on per cent reduction in chlorophyll content the accessions were ranked for intrinsic tolerance. Among the 20 tested, five tolerant and three susceptible accessions were again evaluated in polybags under controlled moisture stress condition and various drought related physiological parameters were monitored. A structural parameter *viz.* quantification of intra xylary phloem (IXP) from one-year-old twig samples was also evaluated for its usefulness to identify the potential accessions. These physiological and structural parameters were utilized to compare the actual field performance of these clones. Results indicated significant clonal differences leading to the selection of potential candidates towards the development of drought tolerant rubber clones.

Keywords: Drought tolerance, *Hevea*, Wickham clones, Wild germplasm

INTRODUCTION

Rubber cultivation face various climatic constraints even in traditional and non-traditional regions and these constraints are expected to become more serious in future as a result of the climate change that is fast

happening (Debabrata *et al.*, 2015). Soil and atmospheric drought and high temperature are major environmental factors limiting growth and yield in *Hevea* necessitating development of drought tolerant clones suitable for stress-prone areas (Devakumar, 1998).