MULTI-TRAIT SELECTION FOR IDENTIFYING POTENTIAL DROUGHT TOLERANT CLONES OF *HEVEA BRASILIENSIS*

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The ever-increasing demand for natural rubber has necessitated expansion of rubber cultivation to marginal areas which experience extreme climatic conditions *viz*. drought stress during summer and cold stress during winter. The drought prone areas require clones with drought tolerance potential for girth, growth rate and yield to survive and perform well. In this study, attempts were made to evaluate a set of 49 *Hevea* clones grown in a drought-prone region of Maharashtra in terms of girth, dry rubber yield and major component traits of yield. Based on juvenile yield, six high yielding and five low yielding experimental clones along with four check clones were selected for further assessment with anatomical (bark thickness and number of latex vessel rows), physiological (CO_2 assimilation rate) and biochemical (levels of ATP, sucrose and thiols in latex) parameters. Under drought stress conditions, the CO_2 assimilation rate and the latex ATP levels exhibited a significant positive correlation with yield while the sucrose and thiol levels had significant negative correlation. The stepwise multiple regression analysis among the parameters studied indicated CO_2 assimilation rate and latex [ATP] as the most significant predictors for yield, accounting for 72 per cent of the total parameters contributing for yield. Based on rank sum analysis, the high yielding experimental clones 114, 66 and 69 were found superior to the drought tolerant check clones RRII 208 and RRIM 600 under drought stress conditions. This study revealed promising clones with drought tolerance potential which have to be further subjected to large scale evaluation to identify the most climate resilient clone/s suitable for drought prone regions.

Keywords: Bark anatomy, Biochemical parameters, Climate resilient clones, Drought tolerance potential, Gas exchange parameters, *Hevea brasiliensis*

INTRODUCTION

Hevea brasiliensis flourish under optimal climatic conditions prevalent in traditional rubber-growing regions. The facts like deficit of cultivable land in the traditional region combined with the ever increasing demand for natural rubber has necessitated expansion of rubber cultivation to marginal lands of the country which experience harsh environmental conditions such as extreme cold stress in northeastern states during winter and severe drought stress in the North Konkan region during summer which causes significant hurdles for the establishment and optimum productivity of *Hevea* plants. Drought stress is multidimensional that significantly affects

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