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IDENTIFICATION OF POTENTIAL DROUGHT TOLERANT *HEVEA* GERMPLASM ACCESSIONS USING PHYSIOLOGICAL AND BIOCHEMICAL PARAMETERS

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Hevea brasiliensis is the most important commercial source of natural rubber. Its cultivation is being extended to drought prone non traditional areas to meet the increasing global demand. The wild germplasm accessions of *Hevea* collected from its primary centre of origin, the Amazon forests, are valuable source of genes conferring tolerance to various biotic and abiotic stresses. Identifying suitable germplasm accessions with stress tolerance and yield sustainability would be important to enhance crop productivity. In the present study, a set of 18 *Hevea* germplasm accessions (14 relatively drought tolerant and 4 relatively drought susceptible), short listed based on previous observations were further evaluated for their drought tolerance potential using physiological and biochemical parameters such as photosynthetic rate, chlorophyll fluorescence, leaf wax content and pigments. The data revealed wide genetic variability among the accessions as indicated by a wide range obtained for these characters in the ranking. The accessions were ranked for their pooled performance using the rank sum method and the results indicated that accessions RO 3261, AC 612 and RO 3157 are the top three drought tolerant accessions among the lines studied.

Keywords: Carotenoids, Chlorophyll, Drought, Epicuticular wax, Fluorescence, Germplasm, Photosynthesis

INTRODUCTION

Hevea brasiliensis, the commercial source of natural rubber (NR), is widely cultivated in south-east Asian countries like Malaysia, Thailand, Indonesia, India, China, Sri Lanka and Vietnam. In India, the traditional rubber growing regions include Kerala State and Kanyakumari District of Tamil Nadu where the climatic conditions are more favourable for NR cultivation. The non-traditional regions in India include drought prone areas such as North Konkan regions, parts of Karnataka, Odisha, Madhya Pradesh and low temperature prevailing areas in the north-eastern states. To cope with the increasing global demand for NR, its cultivation needs to be extended to these non-traditional regions which warrant identification of suitable clones that can perform well in such regions.

Plant responses to water deficit stress are complex phenomena encompassing many

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