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IMPACT OF COLD WEATHER CONDITION ON THE GROWTH OF *HEVEA BRASILIENSIS* CLONES IN NORTHERN WEST BENGAL

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In an experment to study the response of 12 different clones of *Hevea brasiliensis* to cold weather in the early stages of establishment in the northern part of West Bengal, cold injury symptoms like wilting and withering of leaves, black discoloration of bark with occasional oozing of latex and dieback of shoots were observed by the end of the cold season (February). Clonal differences were observed with significantly higher number of cold injured plants in RRIC 100 followed by RRII 422. The clone RRII 429, a selection from a cross of RRII 105 and RRIC 100 did not show any injury. Other clones showed a low intensity of cold injury. In the experimental area, the plants were exposed to sub optimal temperatures of below 10°C for 8 to 9 hours daily for 9 to 10 weeks. Leaf photosynthesis was low during the cold seasm, which resulted in poor biomass increment and relative growth rate during the winter. Cold susceptible and resistant clones differed mainly in their photosynthetic activity and growth under sub optimal temperatures. However, there were some exceptions like RRII 105 and PB 217, which failed to show such relations.

Key words: Biomass, Cold injury, *Hevea brasiliensis*, Photosynthesis

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INTRODUCTION

Rubber (*Hevea brasiliensis*) is indigenous to the Amazon basin situated within 5° latitude of the equator and below 200 m altitude. Hence the species has developed an ecological preference for wet, equatorial type, warm, bright, humid climate and fertile soil characteristic of the region. The optimum climatic requirement for rubber includes a maximum temperature of about 29 – 34° C, minimum temperature of about 20° C or more and bright sunshine of about 2000 hours annually at a rate of nearly 6 hours per day in all the months (Rao and Vijayakumar, 1992). Northern part of West Bengal has been identified as one of the non-traditional areas suitable for rubber cultivation in India. This region receives an average rainfall of 3200 mm. During winter the minimum temperature goes down to as low as 5°C for 3-4 weeks. Hence this region is classified as hydro-thermally marginally suitable for rubber cultivation (Rao *et al.*, 1993). Rubber plants suffer from cold stress when exposed to low winter temperature during the early stages of establishment (Ailiang, 1984). Cold injury during the early stage of establishment of *Hevea* has been reported from the northern West Bengal (Meenattoor *et al.*, 2000). The present paper is an attempt to study cold injury in *Hevea* clones under the agro-climatic conditions observed in the northern part of West Bengal.

MATERIALS AND METHODS

The study was taken up at the Regional Experiment Station of Rubber Research Institute of India, located at Nagrakata, northern West Bengal (26° N, 88° E and 69 m above msl) with the objective of studying the response of different clones to the cold weather