

## MORPHOLOGICAL SYMPTOMS AND ANATOMICAL EXPLANATIONS FOR STOCK-SCION INCOMPATIBILITY IN *HEVEA BRASILIENSIS*

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Rubber (*Hevea brasiliensis*) is clonally propagated through bud grafting. Rough and corky surface of the graft area on the budded stump was observed as a clear symptom of incompatibility of stock and scion. The anatomical consequences of this is the development of a deflected type of vascular connection between stock and scion and an impeded type of vasculature. Though the morphological expression could be a consequence of structural incompatibility, all structural incompatibilities are not morphologically expressed. An undulating surface topography of the scion bark is another symptom indicating a differential cambial activity at the tangential plane of mutual contact which may lead to a weak connection of vascular tissue leading to reduced strength at the union part. The impeded vascular tissue may lead to a reduced translocation of metabolites from scion to stock and changes in carbohydrate level and starch distribution in scion tissue, as reported in other crops. Dissimilarities of the graft partners for growth potential may be one of the factors influencing incompatibility.

Key words: Anatomy, Bud graft, *Hevea brasiliensis*, Incompatibility, Morphology.

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### INTRODUCTION

For clonal propagation through bud grafting in *Hevea*, assorted seeds are used as stock seedlings. Preparation of polybag plants using green budded stumps is widely adopted. Green budding is the method of using scion bud collected from six to eight week old scion sticks for budding on 2 to 4 months old seedlings (Marattukalam and Mercykutty, 2000). Very good budding success is usually observed in commercial budding. Hence not much attention was given for studying the effect of using assorted seeds as root stock source. Some reports available on intracloonal variations in the growth (Premakumari *et al.*, 2002), physiology (Krishnakumar *et al.*, 1992) and tree yield

(Chandrasekhar *et al.*, 1997) do not provide any clue to the visual characteristics of incompatibility or any basic explanation for its impact on further growth and physiology of the plant. The present paper is aimed at exploring the incompatibility in bud grafts of rubber, with emphasis on the symptoms, magnitude and the structural basis of possible delayed physiological impact.

### MATERIALS AND METHODS

For the experiment, stock seedlings were raised at the Central Nursery of Rubber Board at Karikkattoor, Kerala, India. Four types of seeds were used: assorted and monocolonal types of three popular clones, collected from Kanyakumari region of South