

EMBRYO RESCUE AND PLANT REGENERATION IN *HEVEA BRASILIENSIS*

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Genetic improvement of *Hevea brasiliensis* by conventional breeding is difficult due to its perennial nature, long breeding cycle, seasonal flowering and asynchronous flowering among clones. The major bottleneck in *Hevea* breeding through conventional methods is the low recovery of fruits after artificial pollination and fruit loss due to fungal diseases. The average fruit set after hand pollination is usually less than 5%. In this context, the present work was undertaken with an objective to develop a protocol for the rescue of immature embryos of *H. brasiliensis*, thereby improving the recovery of hybrid seeds. Open-pollinated fruits of different maturity (1-8 weeks) were collected from the field-grown trees and inoculated in nutrient medium. Different basal media, various combinations and concentrations of growth regulators and two sterilization techniques were tried. Embryos could be rescued from 5-week-old immature fruits in Nilsch basal medium supplemented with the growth regulators kinetin, zeatin and GA₃. The highest frequency of embryo recovery (42%) was obtained with 3.0 mg/L zeatin coupled with 1.0 mg/L GA₃. Plantlets were developed, hardened and established in the field.

Keywords: Embryo rescue, GA₃, *Hevea brasiliensis*, Kinetin, Zeatin

INTRODUCTION

The Para rubber tree, [*Hevea brasiliensis* (Willd. ex Ait. de Juss.) Muell. Arg.] belonging to the family *Euphorbiaceae*, is cultivated extensively in South East Asia as a source of natural rubber. The tree is monoecious with a strong out-breeding tendency. The long life span and lack of sufficient fruit set render crop improvement laborious and time consuming. Heterozygosity of parents necessitates screening of large families to achieve tangible results. Production of *Hevea* hybrids of desired genetic constitution through breeding involves controlled artificial cross-

pollination which is labour intensive. Even though *Hevea* tree produces flowers in abundance, hardly 3% of the female flowers develop into fruits (Maas, 1919). Under artificial pollination also, the fruit set and recovery of hybrid fruits are equally low. Several investigations have already been made to address the problem of low fruit set in *Hevea* (Warmke, 1951; Rao, 1961; Gandhimathi and Yeang, 1984). The low rate of recovery of fruits at the mature stage poses a serious hindrance to *Hevea* breeding efforts, necessitating considerably large number of hand pollinations every year (Mydin *et al.*, 1989). According to Loconte *et al.* (1984), use