

## JUVENILE SELECTION IN PROGENIES FROM CONTROLLED AND OPEN-POLLINATIONS OF NEW GENERATION CLONES OF *HEVEA BRASILIENSIS*

T. Gireesh and M. Pravitha

Rubber Research Institute of India, Kottayam - 686 009, Kerala, India

---

Gireesh, T. and Pravitha, M. (2009). Juvenile selection in progenies from controlled and open-pollinations of new generation clones of *Hevea brasiliensis*. *Natural Rubber Research*, 22 (1 & 2): 81-92.

Juvenile evaluation of recombinants ( $F_1$  generation) is the first stage of evaluation in the breeding and selection cycle of *Hevea brasiliensis*. Six full-sib families and three half-sib families consisting of 465 seedlings were subjected to detailed evaluation. Seedling progenies exhibited wide variability in terms of growth, test tap yield and other morphological characters. Thirtyfive progenies were selected based on growth and vigour in the early stage for further evaluation. Selection of medium to high-growth seedlings could maximize genetic gain. The present study could also identify potential parents for repeated recombination to generate more productive progenies. Recovery of high frequency of elite progenies from the half-sib progeny evaluation underlines the importance of this approach which can be repeated over the years to consolidate productive seedlings. Half-sib progeny evaluation is found to be a relatively inexpensive way of developing new productive clones in *Hevea*.

**Keywords:** Full-sibs, Half-sibs, *Hevea* breeding, Juvenile selection.

---

### INTRODUCTION

The Para rubber tree [*Hevea brasiliensis* (Willd. ex Adr. de Juss.) Muell. Arg.] is one of the most recently domesticated crop species. The genetic gain obtained during the last few decades in *H. brasiliensis* in terms of rubber yield is noteworthy. In India, genetic improvement efforts on the base material revolutionised rubber production during the last 50 years, with a manifold improvement in productivity. Early generation seedling plantations with a marginal yield of about 250 kg/ha/year were replaced with improved hybrid clones. The present day cultivars have a yield potential of up to 3500 kg/ha/year (Licy *et al.*, 1997). Rubber breeding

procedures are often lengthy and laborious (Tan, 1987; Simmonds, 1989; Varghese and Mydin, 2000). Cyclic breeding and selection of elite genotypes have resulted in the generation of hybrids with high rubber yield. Nursery evaluation of progenies is one of the most crucial steps in this process.

In artificial pollinations, fruit set is generally low (3-5%), except in cases of higher level of female fecundity as in clones like PB 330 (Chandrasekhar *et al.*, 2004). It is expected that the repeated use of such clones would help to increase the recombination frequency and variability, facilitating efficient selection of high yielding and fast growing progenies from the population. In