

# DIVERSITY AND HETEROSIS BY RECOMBINATION BREEDING OF *HEVEA BRASILIENSIS* IN INDIA

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In a recombination breeding programme, 52 hybrids evolved from three cross combinations of *Hevea* clones were evaluated along with parents for yield and its components under small scale evaluation in Central Kerala, India over six years of tapping. The components of variation and genetic distances among the progeny and parents were estimated based on analysis of 23 attributes. Rubber yield was reiterated as a highly heritable trait. Parent clones RRII 105 and RRII 118 proved to be genetically very divergent and a high recovery of eight heterotic hybrids was obtained from the progeny of this biparental cross. The pedigree of parent clones was found to contribute to diversity and heterosis.

Clonal selection based on yield, girth, yield components and secondary traits led to the identification of eight promising hybrids that exhibited heterobeltiosis for yield to the tune of 43-65 per cent. These were clones 95/323, 95/297, 95/348, 95/351, 95/353, 95/362, 95/442 and 95/448, of which seven were of the parentage RRII 105 × RRII 118. High yielding clones with potential to perform well under drought situations were identified based on yield and its components in the stress period. The low incidence of tapping panel dryness and pink disease in clones 95/297, 95/442 and 95/448 and the steadily increasing trend in yield of 95/448 deserve special mention. The results of this study indicate further scope for exploitation of heterosis in crosses between parent clones with Malaysian and Sri Lankan lineage.

**Keywords:** Genetic divergence, Heritability, Heterosis, Recombination breeding, Yield components

## INTRODUCTION

*Hevea brasiliensis*, the Para rubber tree is cultivated in India across a wide range of environments, none resembling the ideal sub tropics where this crop originated. Still India is credited with achieving very high productivity of rubber for the last many years. The locally evolved clones adaptable to the traditional rubber growing regions are in a large way responsible for this success. With little scope for expansion of area under rubber in the traditional region, cultivation

has extended to the non-traditional areas. Moisture stress in summer and drought compounded with high light intensities limit rubber production in the states of Maharashtra, Odisha and Chattisgarh. North Kerala and South Karnataka in the traditional tract also face such limiting situations in the summer months. Hence, evolving drought tolerant clones is a felt need.

An effort to combine high yield with intrinsic drought tolerance attributes by hybridization resulted in the production of