

# RECOVERY OF HIGH YIELDING PROGENIES OF PARA RUBBER TREE (*HEVEA BRASILIENSIS*) THROUGH POLYCROSS BREEDING

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Received: 08 November 2023

Accepted: 01 December 2023

Narayanan, C. and Mydin, K.K. (2023). Recovery of high yielding progenies of Para rubber tree (*Hevea brasiliensis*) through polycross breeding. *Rubber Science*, 36(2): 186-193.

Progenies collected from nine clones growing in a polyclonal seed garden (Karnataka, India) of *Hevea brasiliensis* were evaluated for their long-term growth and yield performance along with RR11 105 as check clone. Polycross progenies recorded high tappable girth (71%) in the opening year and it was sustained in later years. After 15 years of planting, the progenies attained very high girth than RR11 105 with high range and CV. Family of PB 217 had the highest CV (23%) indicating good scope for selection. Progenies of Ch 26 recorded the highest girth (mean, 92 cm) followed by AVT 73 (mean, 89 cm). Dry rubber yield of progenies ranged from 11 to 99 g t<sup>-1</sup> t<sup>-1</sup> (mean yield, 40 g t<sup>-1</sup> t<sup>-1</sup>; CV, 42%). Families of PB 242, PB 217 and PB 215 (mean yield, 43 g t<sup>-1</sup> t<sup>-1</sup>) followed by Ch 26 (mean yield, 42 g t<sup>-1</sup> t<sup>-1</sup>) recorded high yield. Families of PB 242 and PB 217 with high CV (>40%) also comprised of very high yielding progenies (>90 g t<sup>-1</sup> t<sup>-1</sup>) indicating a good scope for selection. Clone RR11 105 exhibited high variability for yield (range, 12 to 71 g t<sup>-1</sup> t<sup>-1</sup>; CV, 27%). There was no correlation between girth and yield in the polycross and clonal population. Initially, selection based on population mean yield identified 69 progenies. After applying a more rigorous criterion, 23 selections with more than 60 g t<sup>-1</sup> t<sup>-1</sup> were identified. Top yielders of each family having 70 g t<sup>-1</sup> t<sup>-1</sup> and above yield, based on yield of the top performing ramete of clone RR11 105, were identified as priority selections for further clone evaluation studies. These six top polycross selections had maximum yield potential of 99 g t<sup>-1</sup> t<sup>-1</sup> and maximum girth of 127 cm, based on long-term data, which offer good scope for inclusion in Category 3 of planting recommendations and for further long term clonal evaluation and selection.

**Keywords:** Growth, *Hevea brasiliensis*, Polycross breeding, Yield

## INTRODUCTION

*Hevea brasiliensis*, or the Para rubber tree with nativity in the Amazonia, has a domestication history of less than 100 years (Raman and Narayanan, 2017). Crop improvement strategies in the tree started with recognition of superior performers in assorted seedling populations (designated as "ortets" or superior mother trees) resulting

in primary clones, along with intermittent introduction of exotic clones. Subsequently, rapid progression in yield improvement was achieved through hybridization using selected parental clones (Mydin, 2014). In many rubber growing countries including India, hybrids (indigenous or exotic) constitute majority of the recommended clones. Hybridization or controlled