

HETEROSIS FOR YIELD AND GROWTH IN WICKHAM x AMAZONIAN HYBRIDS OF *HEVEA BRASILIENSIS* (Willd. ex A. Juss.) Muell. Arg.

L. Sankariammal, Kavitha K. Mydin, Vinoth Thomas and Y. Annamma Varghese

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

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The Rubber Research Institute of India has been making efforts on conservation, evaluation and utilization of wild germplasm received from the 1981 IRRDB expedition to Brazil. Accessions showing potential for important secondary traits such as girth, number of latex vessel rows, bark thickness and tolerance to biotic and abiotic stresses have been identified and used in breeding with popular Wickham clones since 1990. This is being done with the intention of broadening the narrow genetic base of cultivated rubber and also to develop location-specific clones for cultivation in the marginal and non-traditional areas in India. This paper summarizes the performance of 26 hybrid clones of *Hevea brasiliensis* resultant of the 1990 hybridization programme in which wild Amazonian germplasm was incorporated for the first time in breeding of *H.brasiliensis* in India.

The study revealed that seven clones, out of which five belonged to the cross RRII 105 x RO 142, were better in yield than the control clone RRII 105. Mean yield of the population ranged from 13.0 to 66.5 g/t. The hybrid clone 90/10 recorded the highest yield followed by 90/34. Mean girth at opening of the hybrid clones ranged from 42.3 to 66.2 cm, the highest being recorded in clone 90/29. Girth in the seventh year of tapping ranged from 62.2 to 88.3 cm with the same clone 90/29 recording the highest girth. Girth increment in the immature phase of hybrids ranged from 5.3 to 8.3 cm/year and in the mature phase from 1.9 to 4.8 cm/year. Twenty two clones attained an average girth greater than 50 cm at opening. Bark anatomical studies revealed significant clonal variation with regard to total bark thickness and number of latex vessel rows. Bark thickness and latex vessel rows were high in clone 90/25. Incidence of major diseases and wind damage in general was low.

Estimates of standard heterosis and heterobeltiosis were worked out in respect of the hybrid clones. Standard heterosis for yield ranged from 2.2 to 68.9% and for girth from 4.6 to 63.7%. Estimates of heterobeltiosis for yield ranged from 3.1 to 98.9% and for girth this ranged from 1.3 to 32.9%. Seven clones, viz. 90/10, 90/25, 90/29, 90/34, 90/241, 90/170 and 90/271, which showed better yield and other secondary attributes in this preliminary evaluation have been selected for the next phase of evaluation in participatory trials.

Keywords: Biotic/abiotic stresses, Conservation, Girth increment, Heterosis, *Hevea brasiliensis*, Hybrids, Wild germplasm

INTRODUCTION

The Rubber Research Institute of India (RRII) initiated research on genetic

improvement in rubber (*Hevea brasiliensis*) by breeding and selection in 1955. Popular Wickham clones were used as parents in