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Comparison Between Open Pollinated Progenies and Hybrids Performance in *Eucalyptus grandis* and *Eucalyptus urophylla*

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Abstract

The cellulose industry in Brazil uses, mainly, hybrids between *Eucalyptus grandis* x *E. urophylla.* Not only the volume but also the wood density has great influence in the cellulose productivity, therefore a selection for both characteristics should be done as an alternative to increase the improvement program efficiency. The present work has been carried out with the objective of comparison between Open Pollinated progenies (OP) and hybrids performance in *E. grandis* and *E. urophylla.* To do so, 15 OP progenies of *E. grandis*, 15 OP progenies of *E. urophylla*, and 15 hybrids between *E. grandis* x *E. urophylla*, plus four controls were evaluated. The experiment was carried out from October to November 2001, in three sites, Aracruz and São Mateus, in the Espírito Santo State, and Caravelas, Bahia State, Brazil, in a 14 x 14 lattice design, involving the 49 treatments mentioned plus other progenies not considered in this article, with single tree plots and 40 replicates. Two years later the circumference at breast height (CBH) and the basic wood density (BWD) were evaluated. The hybrids performance for CBH was higher, an average, 38,7% than the OP progenies for both species. Part of the heterosis in relation to parental means could be attributed to the inbreeding depression due to selfing that occurred in the OP progenies and the dominance controlling this character. For the BWD the hybrids performance was the same of the OP progenies. Since there was divergence between the parents, it can be inferred that dominance has no importance for this trait. The negative correlation between the CBH and the BWD could impair the simultaneous selection for both traits, depending on the wood basic density range used by the industry.

Key words: reciprocal recurrent selection, half-sib progenies, full-sib progenies, wood basic density, genetic correlation, genetic variance, heterosis, *Eucalyptus.*