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Title: GENETIC VARIATION AND EXPECTED SELECTION GAIN FOR GROWTH TRAITS IN *Grevillea robusta* Cunn. PROGENIES

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Thema: 2. Producing for development

Subtheme: 2.2 Planted forests

Abstract of the paper: *Grevillea* (*Grevillea robusta* Cunn.) is an Australian native tree species that has shown good adaptation in Southern and Southeastern Brazil. Breeding efforts to improve its growth traits in Brazil started in 1993 as one of Brazilian Agriculture research and Corporation (Embrapa)- Forest Center program. The first objective was to estimate genetic parameters and to perform individual selections in a progeny trial established at Ponta Grossa, in the State of Paraná, Brazil. The trial was established with 59 half-sib families from 18 original Australian provenances and one control. These were planted in a randomized complete block design with seven replications of five-tree linear plots in a 3 m x 3 m spacing. Fourteen years after planting, measurements were taken for total height and diameter breast height. Software SELEGEN-REML/BLUP was used to estimate variance components, to predict breeding values and to perform deviance analysis. Significant genetic variation was detected both among and within progenies for all traits. The estimate of narrow sense individual heritability for stem volume was 0.36. At this magnitude, it indicates that reasonable genetic gains can be obtained by combining selections among and within progenies for the considered traits. The expected genetic gains were estimated in the range of 2.4 % to 21.0 % when only 40 % of the largest stem volume trees were kept for breeding. Given the potential for genetic improvement and the broad genetic variability in the trial population, this will be transformed into a seedling seed orchard to generate improved seeds. The genetic gains assumed selection based just on one sex. Subsequent generations of selection will include other traits of economic importance for gradual genetic improvement of the species as a source of timber for general use. As an alternative to hasten selection results, clonal seed orchards (selection on both sexes) will be established at several sites.

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Full paper: -