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## Indicators of efficiency in operational crosses of *Eucalyptus dunnii* and hybrids in Montes del Plata: Current progress and challenges

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One of the main goals of a tree breeding program is to increase forest productivity, adaptation and profitability of forest plantations. *Eucalyptus dunnii* is a main species used for pulp production in Uruguay. Montes del Plata (MdP) is one of the largest forest companies in Uruguay and has been focused on the development, testing and deployment of *E. dunnii* clones to establish commercial plantations in Uruguay. This poster refers to the generation of control-pollinated families, as the starting point of MdP clonal strategy. Control pollination (CP) is a tool in genetic breeding programs that enables to recombine selected genotypes with desired traits to maximize gain in the medium to long term. The selection trait for pulpwood objective is tons of cellulose per tree (ADt); consequently, growth, frost tolerance, health, and wood properties are relevant for parent selection. Ongoing work shows a fruitfully performance of *E. dunnii*. In the south-east region of Uruguay the species have one flowering period per year, with an average flowering time occurring between the last fortnight of February and the first half of May. Developed protocols for pollen harvesting and methods for crossing are used. The survival of pollinated flowers resulting in fruits has shown to vary with parental species. Average survival rates are 20 to 35%. The main loss of crop happens during the first 4 months after pollinating, weighting—in average—a loss of 40% of the pollinated flowers. The species fruit crop occurs one year after CP. The number of seed per fruit varies with the parental species. *E. dunnii* × *E. dunnii* crosses yield in average 6.4 seeds per fruit. However, we have seen a reduction in seeds per fruit in hybrid crosses, where *E. dunnii* is pollinated with another species, mostly *E. globulus*, *E. grandis* and *E. dorrigoensis*. Seed crops are sown in the nursery and start an individual clonal selection based on rooting protocols. Clones that fulfill the rooting constraints go to field trials. This is presented in another poster proposal. Main challenges for the future are to maintain a wide genetic diversity in the breeding population, early flowering, and continuous improvement on CP techniques.

