

Anais do Simpósio Internacional sobre Biotecnologia Florestal para  
Agricultura Familiar

Foz do Iguaçu, PR, Brazil,  
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**MOLECULAR MARKERS APPLIED TO EVALUATION OF  
ENVIRONMENTAL SERVICES IN THE ARAUCARIA FOREST  
IN SOUTHERN BRAZIL**

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The evaluation of ecosystem services in natural forests is a conservationist approach that aims to motivate the preservation of natural biomes in private rural areas through monetary payments or establishment of fiscal incentives for landowners. In this approach one of the major hurdles is defining criteria to establish relevant areas, because protected areas need to be defined according biome characteristics and its key species. This study seeks to evaluate the genetic diversity of the *Araucaria angustifolia* species in different scenarios, to define scientific parameters to be used in conservation strategies of the Araucaria Forest. *A. angustifolia* seeds were collected in four sites with different conservation and land use history in and around the Embrapa Research Station in Caçador, Santa Catarina State, one of largest continuous areas with Araucaria Forest in Brazil. Genetic diversity was assessed using hypervariable microsatellite markers (10 loci). The paternity analysis showed a high number of pollen donors, despite different types of land use, a reflection of extensive pollen dispersion by wind. Additionally, the results demonstrate that larger forested areas

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with greater forest conservation result in higher levels of genetic diversity. The results for genetic diversity in seeds comparing different types of land use show that physically isolated forest remnants located 2 km from a continuous forest are able to maintain functional connectivity through gene flow, producing seeds with high levels of diversity and low endogamy. Moreover, remnants located 5 km from the continuous forest are not able to establish functional connectivity due to isolation by distance, but are able to achieve new diversity levels not present in the continuous forest. The results also show that to retain an effective population size of 150 unrelated individuals, it is necessary to collect seeds from 45 trees located near forest scenarios, or 56 trees located in isolated conditions. These results suggest that fragments located no more than 2 km from large continuous forests should be prioritized for ecosystem services programs in the Araucaria Forest biome, and seed sampling strategies for *A. angustifolia* species should be realized with a distance of at least 5 km between sampling sites

**Keywords:** Araucaria; genetic diversity; seed sampling.

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