

Evidence of ecotypic differentiation between populations of the tree species *Parapiptadenia rigida* due to flooding

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Genet. Mol. Res. 9 (2): 797-810 (2010)
Received January 11, 2010
Accepted February 8, 2010
Published May 4, 2010
DOI 10.4238/vol9-2gmr736

ABSTRACT. The tree species *Parapiptadenia rigida*, native to southern South America, is frequently used in reforestation of riverbanks in Brazil. This tree is also a source of gums, tannins and essential oils, and it has some medicinal uses. We investigated flooding tolerance and genetic diversity in two populations of *P. rigida*; one of them was naturally exposed to flooding. Plants derived from seeds collected from each population were submitted to variable periods of experimental waterlogging and submergence. Waterlogging promoted a decrease in biomass and structural adjustments, such as superficial roots with aerenchyma and hypertrophied lenticels, that contribute to increase atmospheric oxygen intake. Plants that were submerged had an even greater reduction in biomass and a high mortality

rate (40%). The two populations varied significantly in their RAPD marker profiles, in their ability to produce aerenchyma when waterlogged and to survive when submerged, suggesting ecotypic differentiation between them. Hence, the seasonal flooding that has been challenging the tropical riparian forest appears to be genetically modifying the *P. rigida* populations exposed to it by selecting individuals with increased ability to live under this condition.

Key words: Waterlogging; Submergence; *Parapiptadenia rigida*; Genetic diversity; RAPD; Local adaptation