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**“RISK ASSESSMENT OF THE RELEASE OF  
GENETICALLY MODIFIED *Eucalyptus* IN THE  
ENVIRONMENT – A POSITIVE RESEARCH AGENDA  
FOR BRAZIL”**

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**ABSTRACT**

*Eucalyptus* species are extensively cultivated in Brazil mainly for the production of cellulose, paper and hard board. The plantation areas are located in south, southeast, central east and northeast of the country under several different climate, topographic and soil conditions. In the last decade forest improvement programs have been assisted in several aspects by the use of new biotechnology tools including forest genomic projects, which in the near future will be contributing with potential candidate genes for transformation. This paper discusses methodologies for risk assessment of the release in the environment of genetically modified *Eucalyptus* for lignin content and other modifications wood properties, with a focus on non-target effects in soil and organisms, gene flow, invasiveness and on selected elements of biodiversity. The total rotation cycle of *Eucalyptus* for cellulose and hard board could be up to 21 years, having harvesting cycles of 7 years. Besides the current concerns of using genetically modified crop species, the environmental release of transgenic trees poses additional challenges due to their long generation cycles, large sizes and their potential for long distance pollen and seed dispersals. This paper presents the baseline for comparative analysis of transgenic and non-transgenic management practices, from nursery to the industry gate. A decision making tool is provided considering different scenarios of lignin degradation, plant defense mechanisms against insects and potential non-target groups. Assessments of invasiveness were conducted in several plantation fields using non-transgenic trees and working hypothesis are suggested about transgenic *Eucalyptus* degree of invasiveness. The potential of pollen escape was estimated and the design of

isolation strategies for gene contention was developed based on gene flow studies using molecular markers. An overall framework for risk analysis of release of transgenic eucalypts in Brazil is suggested, including the identification of knowledge gaps and alternatives for policy design on this subject.