Motivated by the Brazilian Ministry of Agriculture, Farming and Supply, we created in 2009 the “Collaborating Center in Agriculture Defense Relative to the Biosafety of Genetically Engineered Eucalypts” in order to collect information and conduct research to assess the biosafety of GE eucalypts in the Brazilian context. The Normative Resolution Nr. 5 of the National Biosafety Technical Commission is the official document presenting all the information needed to propose the commercial release of GMOs in Brazil. Based on this document and along with the personnel of FuturaGene Ltd., we conducted a series of experiments with GE eucalypts planted in a test field in the state of São Paulo to start collecting the necessary information. Two independent groups of transgenic plants, harboring two different transgene constructs along with non-GE plants were assayed. Each group of plants was represented by four independent events in triplicates (2 groups x 4 events x 3 clonal trees + 3 non-GE clonal trees), therefore totaling 27 individuals under analysis. Samples were identified by random numbers and all assays were conducted in a simple-blind or a double-blind method. The analysis included (i) the detection of transgene regulatory sequences in purified DNA samples by conventional PCR and RT-qPCR, confirming the expected sampling conducted; (ii) chemical characterization and analysis of antifungal effects of essential oils extracted from leaves; (iii) pollen germination; (iv) flower morphology; (v) seed production; (vi) initial seedling development; (vii) leaf allelopathy; (viii) total phenolic compounds; (ix) effects of leaf extracts on the viability of human colon cells; (x) chemical, nutritional and biological analysis of honey samples derived from bee hives located in fields of GE vs non-GE plants; (xi) bee larval development; and (xii) leaf proteomics. All results obtained revealed no statistical differences between GE- and non-GE-derived samples.

Keywords: Eucalyptus, biosafety, risk assessment, GE trees