

Notes S1 – Literature search methods for biodiversity and social impacts

For biodiversity impact searches, we queried the Web of Science database, supplemented by Google Scholar searches, for relevant peer-reviewed articles during January-May 2016. Searches were supplemented by papers gathered from reference lists in published articles and from colleagues and books on plant biotechnology (e.g., Kirakosyan & Kaufman, 2009; Vettori *et al.*, 2016). Although we did not restrict the publication date of our results, Web of Science (the primary database used) only includes studies published since 1965.

To guide our literature review, we generated hypotheses and predictions of the potential impacts of tree reproductive modification on various organisms and ecological processes, and then translated our predictions into search terms (Online Resource 2). Hence, to identify organisms and ecological processes that could potentially be impacted by GE tree reproductive modification, we broadened our search to include all possible known natural (i.e., not restricted to plantations) organismal associations with, and ecological services provided by, the reproductive structures and products of our focal tree genera. Our broadened search included the same search terms described above while omitting terms pertaining to GE. This substantially broadened search yielded >5,000 potentially relevant articles. We reviewed the titles and abstracts of all results and selected ~1,658 that directly pertained to our research question (e.g., focal tree genera ecology and reproduction, dispersal/predation, biogeochemical cycles). Of these, 1,410 were available for download (in either English or French) and subsequently reviewed and organized according to key themes such as our focal tree genera, reproduction method, reproductive structures/products, and biodiversity.

For analysis of social science contributions, we used search platforms including Google Scholar, Academic Search Premier, Web of Science, and CAB Abstracts to search the GE agriculture / crop, forestry, and broader related literature (e.g., perceptions toward emerging technologies) using search terms and combinations / variations of these terms. Examples of conceptual terms searched included: "attitudes," "risk perceptions," "perceived risks," "concerns," "perceived benefits," "public acceptance," "knowledge," "ethics," and "trust." Examples of technological and contextual search terms included: "biotechnology," "forest

biotech," "genetic engineering," "genetic modification," "transgenic," "cisgenic," "flowering modification," "reproductive modification," "sterility," "GMO(s)," "forestry," "tree(s)," "food(s)," "agriculture," and "crop(s)." As our initial search specifically focusing on perceptions of tree flowering modification / sterility was not fruitful, we expanded our search to analogous lines of GE research (e.g., broader forestry uses, agricultural uses), which was more abundant.

References

Kirakosyan A, Cseke LJ, Kaufman PB (Eds.). 2009. The Use of Plant Cell Biotechnology for the Production of Phytochemicals. Recent Advances in Plant Biotechnology. Boston, MA: Springer US, 15–33.

Vettori C, Gallardo F, Häggman H, Kazana V, Migliacci F, Pilate G, Fladung M (Eds.). 2016. *Biosafety of Forest Transgenic Trees*. Dordrecht: Springer Netherlands.