

## Follow up to Analysis of "Public Acceptance" Survey on Genetically Engineered Trees

As a "Distinguished Professor of Mathematics" at the City University of New York, three years ago I was asked by an environmental organization to evaluate from the viewpoint of statistics a brochure about the public acceptance of GE trees. ("Forest Health Biotechnologies: What are the Drivers of Public Acceptance?" by Mark Needham. The presentation going with this brochure is in the docket.) As the problem is of supreme importance, I have been following developments since then.

First about what I found concerning the brochure. Purely technically, the first thing to notice is the extremely small sample sizes. The next is the table of margins of error; in the case of multiple testing (as here) it is far from clear what is meant by "margin of error" at a significance level. In any case, a good statistical analysis would not only talk about significance but also about power and the effect of multiple testing on power. I could go on. There are further purely technical flaws in the methods used and the conclusions drawn.

A still more important matter with the brochure is the design of the study. The title talks about "public acceptance". By p. 6 it is "the public and experts", and the experts are coming from business, industry, NGOs and academia. We don't know who selected them. We also find out that "experts" were framing the questions. With its built-in bias and overconfident conclusions, with its largely irrelevant poetic landscapes, the result is an advertising brochure, not a serious statistical study.

Now to the main subject at hand: should the genetically engineered American chestnut tree be introduced or not? The answer is clearly NO. I know that gene manipulation is nothing new, it has been done e.g. to the potato I eat. Still, letting loose genetically engineered trees in the environment would mean crossing an important line. It would be an irreversible step, the potential harm could come only decades later and could be completely devastating. The blight that struck and devastated the American chestnut tree a while ago was a severe blow, but applying a remedy that might result in a thousand times greater devastation cannot be allowed.

--Adam Koranyi