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Comment on Ervin and Welsh: Environmental effects of genetically modified crops: differentiated risk assessment and management

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The main statement of this paper is the plea to use genetic distance between donor and receiver as criterion for assessing the novelty of the genetic changes and thus the potential risk of such a modification. This so-called differentiated approach leads the authors to the conclusion that species-foreign and synthetic genes potentially pose more risk to the environment compared to genes coming from the same species. This point of view is debatable because of a number of observations:

1. Small changes in genes can lead to major changes in phenotype and possible effects on the environment. An example is the presence of an active or inactive pathogen-resistance gene.
2. Introduction of modified transcription factors of the same species may result in changing whole sets of genes, which may result in the production of a plethora of unexpected metabolites that may harm the environment.
3. After 6 years of growing crops in the US that contain the bacterial *Bt*-toxin gene, *Bt*-resistant insects have not been detected in the fields in which those crops grow.
4. Plant genes conferring resistance to pathogens are often present in multiple copies in selected regions of the genome. In certain cases it has been shown that those multiple copies have risen by recombination between two of these genes, resulting in novel additional genes sometimes having an effect on a different plant pathogen.

Thus, a decrease in genetic distance does not necessarily decrease the potential risk. A case-by-case approach is preferable, bearing in mind that by doing so a knowledge database can be built containing data of crop–transgene combinations that can be used to formulate efficiently the right questions to determine the potential risk of each new introduction of a genetically modified crop into the environment. The experience gained may be used to set up transparent assessment procedures.

The authors suggest that information on the ecological risks of the introduction of a certain transgenic crop can be obtained by a step-by-step approach. This is a good approach except that it will be very difficult to determine how many steps have to be taken for how many years and in how many fields with how many different types of soils and under how many different conditions. Current practices used for registration of new plant varieties may be of help here. Also the input of knowledge of breeders and farmers in addition to that of ecologists is essential.

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