

Letters

GM or non-GM?

I was most disappointed by the Science & Society article in your September issue [1]. By focusing only on the European Union's (EU) oversight of transgenic plants, (that is, those modified by recombinant DNA techniques and containing heterologous DNA), the authors ignored the scientific consensus about the continuum, and essential equivalence with respect to risk considerations, between conventional and recombinant DNA-mediated genetic modification.

By omitting any reference to the EU's flawed choice of scope for its regulatory scheme, which is limited to recombinant organisms, the authors perform a disservice, not unlike discussing the mechanical aspects of what is alleged to be a perpetual-motion machine, while ignoring the thermodynamic considerations.

As *Nature* editorialized in 1992 [2], 'The same physical and biological laws govern the response of organisms modified by modern molecular and cellular methods and those produced by classical methods,' and therefore, 'no conceptual distinction exists between genetic modification of plants and microorganisms by classical methods or by molecular techniques that modify DNA and transfer genes.' And consider that by that time, the consensus about old versus new biotechnology already had gone even further, 'in favour' of recombinant DNA. An authoritative 1989 analysis of the new biotechnology by the United States National Research Council had observed that, 'With classical techniques of gene transfer, a variable number of genes can be transferred, the number depending on the mechanism of transfer; but predicting the precise number or the traits that have been transferred is difficult, and we cannot always predict the phenotype that will result. With organisms modified by molecular methods, we are in a better, if not perfect, position to predict the phenotype.' [3]

This view should be regarded in scientific circles, and elsewhere, as a given, in future discourse.

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References

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- 2 Editorial (1992) US Biotechnology Policy. *Nature* 356, 1–2
- 3 Committee on Scientific Evaluation of the Introduction of Genetically Modified Microorganisms and Plants into the Environment (1989) *Field Testing Genetically Modified Organisms: Framework for Decisions*. Washington DC: US National Research Council/National Academy Press

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Response from Bernhard Jank and Helmut Gaugitsch

In our article [1] we compared methods for environmental impact assessment (EIA) of certain projects and environmental risk assessment (ERA) of transgenic plants. Site-specific considerations pertaining to the environmental sensitivity of geographical areas as well as the assessment of potential indirect and long-term effects associated with agricultural management were discussed. The underlying principle of appropriate management is the ecosystem approach endorsed by the Conference of the Parties to the Convention on Biological Diversity. Clearly, the scope of specific EU legislation – in this case Directive 2001/18/EC on the deliberate release into the environment of genetically modified organisms – is a separate issue and was not the central topic of our publication.

Farm-scale trials of genetically modified (GM) crops currently undertaken in Britain are the first attempt to investigate on an appropriate scale the ecological effects of an important change in farming methods in advance of its widespread introduction [2]. This unique study is comparing biodiversity in fields of herbicide tolerant GM beet, maize and oilseed rape with that in comparable plots of equivalent non-GM varieties. The researchers hope to pave the way for similar studies on other factors, such as pesticide use and tilling practices. The farm-scale trials of GM crops could be the blueprint for future experiments investigating the influence on biodiversity of current and proposed farming practices in general.

Furthermore, at a workshop on risk assessment methods for genetically modified plants organized by the European Science Foundation and held in Ceske Budejovice, Czech Republic, 13–15 September 2001, it was suggested that monitoring programmes should not be limited to the agro-ecosystem and GM crops (<http://www.umbr.cas.cz/wsaigm/>). No discrimination should be made, for example, between traditionally bred herbicide tolerant crops and those obtained by genetic modification. (Note that for placing on the market in particular, the objective, general principles and design of monitoring plans have been laid down in the directive mentioned above. Supplementary guidance notes will be completed by October 2002.)

Conclusions on the potential impact from the release or placing on the market take into account the specific cultivation, management and harvesting techniques used for transgenic plants where these are different from those used for non-transgenic plants [1]. From our point of view, this implies the assessment of herbicides or pesticides in combination with the transgenic plant and the comparison with existing systems as a baseline [3]. The implementation of the new directive will be carried out in close liaison with the implementation of Directive 91/414/EEC concerning the placing of plant protection products on the market. Under both directives systematic comparisons should be considered in decision making.

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