

## Royal Society submission to the Government's GM Science Review

### Genetically modified plants and the environment

The genetic modification of plants raises important issues for science and the public, and the Royal Society encourages debate, informed by sound science, about the potential benefits and risks of this technology. We have been offering policy-makers advice on GM plants during the development of this branch of science and we have published a number of reports during the last five years. Further details and the latest information of the Society's work can be found at <http://www.royalsoc.ac.uk/gmplants/>.

In 1998 and 1999 we published 'Genetically modified plants for food use' and 'GMOs and the environment', respectively. In these reports we considered the scientific evidence concerning the risk of transfer of genes from GM crop plants to wild-species and non-GM crops and the current state of the regulatory system.

The two main issues are:-

(i) the transfer of the introduced genes to wild plants and non-GM crops

We found that the risk of problems arising from gene transfer is small and we reviewed a number of ways to minimize the risk of gene transfer, which are presented in Section 3 of the 1998 statement.

(ii) the indirect effects of the GM crops themselves on the local environment (e.g. effects on non-target insect and weed populations, and the possible development of resistant insects and weeds).

This was reviewed in Section 4 of the 1998 statement. Any potential negative effects identified for a particular GM crop should be considered in relation to the conventional crop or treatment that the GM crop is intended to replace. Indirect environmental consequences require strict monitoring and if such consequences are found, the necessity of statutory restrictions on GM crops should be considered.

As the Royal Society has not published a report on the environmental issues of GM crops since 1998, we thought it would be useful to organise a scientific discussion meeting around some of these issues. The meeting was held on 11 February 2003 and examined the possible environmental risks and benefits of GM crops in the context of modern agricultural practices. This meeting examined the basis for the differing positions on GM crops and their role in modern agriculture and impacts on the environment.

At the meeting, speakers gave details of the impact modern agricultural practices have had on the British countryside in the last three decades, including the decline in wildflowers, invertebrates and farmland birds. This helped to establish a baseline against which GM agriculture can be compared. Evidence was presented about the likelihood of the spread of GM pollen into wild populations, the risk of superweeds being produced, the impact GM introductions might have on the colonies of micro organisms living in the soil and how such risks can be assessed and analysed. Finally, the potential of GM crops to promote environmentally sustainable agriculture was outlined as well as the potential of GM to deliver new industrial

products and to provide increased yields. Participants were in general agreement that the basic question that needs to be answered is what do we want agriculture to deliver? What kind of biodiversity do we want? Only then will it be possible to devise farming systems that deliver our expectations.

A summary report of the meeting and the full transcript of the meeting can be found on the Society's website at

<http://www.royalsoc.ac.uk/templates/statements/StatementDetails.cfm?statementid=222>

<http://www.royalsoc.ac.uk/policy/transcript11FebGMCrops.pdf>

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**References:**

Genetically modified plants for food use, The Royal Society, September 1998

<http://www.royalsoc.ac.uk/templates/statements/statementDetails.cfm?StatementID=56>

GMOs and the environment, The Royal Society, May 1999

<http://www.royalsoc.ac.uk/templates/statements/statementDetails.cfm?StatementID=37>