



postnote

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GM CROPS IN THE UK

The government is expected to set out its policy on genetically modified (GM) crops in early 2004. To inform this it has commissioned a scientific review, a costs and benefits study and a public debate, each of which has now reported its findings. Its policy will also be informed by the results of the farm-scale evaluations (FSEs) of GM crops. Since 1998 the EU has had a moratorium on GM crops and products. This led the US and others to file a case against the EU with the World Trade Organisation (WTO). This briefing summarises the results of these strands, describes recent international developments, and analyses the main options for the future of GM crops in the UK.

Background

Most current GM crops have been modified to resist certain pests or to tolerate a particular herbicide. They are already grown in the US, Canada, Argentina and China. In the EU, six GM crops have marketing approval for import and processing and three GM crops, all maize, have marketing approval for cultivation. But GM crops are currently only being grown on a small scale in Spain. No GM crop has the full range of authorisations needed for cultivation in the UK. In July 2002 the government announced a national dialogue on GM issues consisting of three main strands:

- science – assessing the state of current scientific knowledge on GM crops and foods;
- economics - an evaluation of the potential costs and benefits of GM crops in the UK;
- a nationwide public debate – to find out what people really think about GM.

Science

The GM science review

This was carried out by a 26-member panel chaired by the government's Chief Scientific Adviser. It considered peer-reviewed published scientific literature and was focused on science-based issues identified by the public and the scientific community. In July 2003 the panel concluded that for current GM crops and GM food:¹

- the risk to human health is very low;

- these crops are unlikely to invade the countryside and become problematic plants;
- it is unlikely that these crops, if consumed, would be toxic to wildlife;
- there is insufficient information to predict the long-term impact of the herbicide regimes associated with herbicide-tolerant GM crops on wildlife;
- the balance of risks and benefits will vary for each GM crop, therefore case-by case regulation is appropriate.

The panel also highlighted areas of scientific uncertainty, such as how readily GM plants might invade new habitats, where more research is needed. While the report has been widely accepted by the science community, the conclusions have been questioned by some organic and environmental NGOs.² The panel has reconvened and will report again in January 2004, taking account of comments on its July report, the results of the FSEs (see below) and the results of major new research.

Farm-scale evaluations

In 1999, the FSEs were set up to investigate whether farming using GM herbicide-tolerant crops is any more harmful to plants and animals than conventional farming.³ Four crops of potential interest to UK farmers were studied: spring oilseed rape, beet, maize and winter oilseed rape. The GM crop varieties have been modified to tolerate broad-spectrum herbicides that kill most plants, including conventional crops. This enables farmers to use new weed control strategies. Results for the first three of these were published in October 2003 and their implications are now being discussed.⁴ Data from the winter oilseed rape trials is being collated and will be published in 2004. In general, the FSEs found:

- Growing GM beet and spring rape was worse for many groups of wildlife than growing conventional beet and spring rape. The herbicide used on the GM crops controlled weeds more effectively so there were fewer weeds, with fewer insects and less weed seeds (which are important in the diets of birds).
- Growing GM maize was better for many groups of wildlife than conventional maize. Around GM maize

crops there were more weeds, more butterflies and bees at certain times of year and more weed seeds.

- The differences arise because these GM crops gave the farmers new options for weed control, allowing them to use different herbicides and apply them differently.

The study concluded that growing such GM crops could impact on wider farmland biodiversity, but that other factors (e.g. the amount of land cultivated, how it is cultivated and how crop rotations are managed) will also be important in determining the overall environmental impact of GM crops. Some NGOs have criticised the design of the FSEs, questioning the scope of the measures used to assess biodiversity, the lack of yield assessments, and the herbicide regimes used. The government's Advisory Committee on Releases to the Environment (ACRE) will advise the government on the implications of the FSEs for any releases of GM crops in January 2004. The design and operation of the trials is currently the subject of scrutiny by the House of Commons Environmental Audit Select Committee.

Economics

An evaluation of the costs and benefits of the possible commercial cultivation of GM crops in the UK over the next 10-15 years was conducted by the Prime Minister's Strategy Unit (SU).⁵ The review concluded that although existing GM crops could offer some advantages to UK farmers, at least in the short-term, any economic benefit is likely to be limited by negative public attitudes and retailer policies. Over the next 10-15 years, the SU considered that there is significant potential for benefits from future developments in GM crop technology as well as potential for impacts on wider science and industry. The key conclusion of the study was that the future of GM crops will depend on the nature of the regulatory system and public attitudes.

GM Nation? The public debate

A public debate, organised by a steering board independent of government, took place in summer 2003. Over 37,000 people provided feedback from a range of activities including more than 600 regional, county and local meetings and visiting the *GM Nation?* website. The aim was to promote a programme of debate on GM issues, framed by the public, against the background of the possible cultivation of GM crops in the UK. Key messages emerging from the debate include:⁶

- people are generally uneasy about GM crops;
- there is little support for early commercialisation;
- there is a widespread mistrust of government and multi-national companies;
- there is a broad desire to know more and for further research to be done;
- the debate was welcomed and valued.

Many groups, including a formal evaluator, are studying the conduct of the public debate. One of these, the House of Commons Environmental, Food and Rural Affairs Committee has reported and concluded that while the debate was worthwhile, overall it was an opportunity missed.⁷ It considered that (exacerbated by the

government's constraints on timing, duration and budget) the debate did not engage many people beyond a self-selecting group, which already held views about GM. Similar concerns have been voiced by the industry's Agricultural Biotechnology Council. But the outcomes of the debate are consistent with other exercises that have also shown that many members of the public harbour deep-seated reservations about GM crops and foods.⁸ The government will make a written response indicating what lessons can be learned.

EU regulatory developments

Current use of GM crops

Although the debate has been widely presented as being a matter for the UK government, the UK acts within a wider EU regulatory framework (box 1). Various regulatory approvals are required for GM crops including GM marketing approval, approval for use in food, and national/EU seed and pesticides approval (see box 1). To date, a total of three GM crops and 15 GM foods or food ingredients already have EU marketing approval. But the UK government has a voluntary agreement with industry that no GM crops would be grown commercially in the UK, until the completion of the FSEs. The variety of herbicide tolerant maize used in the FSEs is the closest to commercial planting. It has marketing approval but is awaiting approval for the national seed list and herbicide use. It is unlikely that these will be in place in time for farmers to plant the crop in 2004.

Box 1 The current EU regulatory process

Directive 2001/18/EC together with the EU Novel Foods Regulation (258/97) provide the framework to approve and market GM crops and GM foods in the EU. Companies must first submit an application to a Member State. This must include a scientific assessment of the impact on human, animal and plant health and the environment. If satisfied that the GM crop complies with all the regulatory criteria, the Member State will forward the dossier to the European Commission (EC). The dossier is then assessed by the scientific experts on the EC's scientific committees. If a favourable review is obtained the EC circulates the dossier to the other Member States for their comments. Based on these Member States can adopt or reject an EC proposal for GM authorisation by qualified majority voting at competent authority or ministerial level. From April 2004 aspects of 2001/18 and 258/97 will be replaced with the new GM foods and feed regulations which will provide a single system for consideration of GM crops or food for import, growing and consumption.

GM products may also have to satisfy other non-GM regulatory procedures. For example any new GM variety, like new conventional varieties, must register for the UK or EU seed lists. Seed lists guarantee to buyers that new varieties are distinct, uniform and stable. Any use of pesticides on GM crops also has to be approved by the relevant authority.

The moratorium on new approvals

No new GM crops or products have been approved in Europe since October 1998, creating a *de facto* moratorium. This situation has arisen because a number of Member States have made it clear they would oppose new authorisations until rules on labelling and traceability were adopted.

New EC regulations on GM

New EU legislation, intended to open the way to ending the moratorium, will come into effect in April 2004.⁹ It will introduce the following major changes:

- all GM crops and ingredients derived from them will have to be labelled, whether or not GM material is present in the final product e.g. rapeseed oil;
- GM products should be traceable at all stages "from farm to the supermarket shelves";
- non-GM foods will have to be labelled as containing GM if they have a GM content of 0.9% or more;
- only a single application will be needed to obtain approval for the cultivation of GM crops and their use in food and feed, simplifying current procedure (box 1);
- the regulatory process will be centralised, with the risk assessments being co-ordinated by the newly established European Food Safety Authority.

World trade perspective

The WTO case

In August 2003, the US, Canada and Argentina brought a case against the EU to the WTO. These countries claim that the unofficial EU moratorium is an illegal barrier to trade. The US estimates it has lost \$300 million of agricultural sales to Europe annually. The WTO is now appointing a dispute settlement panel; once the panel is in place, cases typically take 12-18 months.

Although the adoption of the new EU traceability and labelling regulations should allow the moratorium to be lifted, it is unclear whether this will resolve the WTO case. The US and Canada have expressed concerns over the new regulations, suggesting that they are not based on sound science and will be difficult to implement. Whereas the existing EU labelling regime is based on the physical detection of GM material in products, the new regime is based on a paper audit trail, linking products back to GM crops. Indeed, the US has signalled that it may challenge these regulations in a new case through the WTO. Whether or not this happens may depend on the outcome of a number of forthcoming regulatory decisions facing the EU once the moratorium is lifted.

Forthcoming EU regulatory decisions

A backlog of new applications for import and cultivation of GM crops has built up since 1998. Some of these are at an advanced stage of examination and the UK, along with other Member States, will have to make decisions on these in the coming months. One GM product awaiting approval is a GM sweetcorn, which is being considered for import and use in food only. Final EU decisions on new applications for cultivation of GM crops are unlikely until late 2004. Of particular interest will be the assessment of the GM crops (oilseed rape, two types of sugar beet and a fodder beet) grown in the FSEs. The lead authorities - Belgium, Germany and Denmark - will have to decide whether or not to recommend marketing approval for the cultivation of these crops. To do this they will consider if the FSE results indicate an unacceptable risk to the environment.

Coexistence

Widespread cultivation of GM crops will almost inevitably lead to non-GM products containing some GM material. This could occur in a number of ways including cross-pollination and mixing during harvesting, transport and processing. In such circumstances, GM crops would need to coexist with existing farming in a way that continued to allow consumer choice. Issues around coexistence have recently been considered by the Agriculture and Environment Biotechnology Commission (AEBC) (see box 2),¹⁰ a body that provides strategic advice to government.

Box 2 AEBC report on coexistence and liability

In November 2003, the AEBC recommended that:¹⁰

- government policy must facilitate consumer choice while allowing UK farmers to respond to demand;
- if GM crops are grown, GM farmers should follow legally enforceable protocols to ensure that the level of GM material in non-GM crops is kept below the EU's 0.9% threshold;
- for an introductory period, intensive monitoring and auditing would be necessary to test the practicality of coexistence measures;
- there should be special arrangements for compensation of farmers until an insurance market develops;
- the government (or a regulator) should deal with any environmental effects of GM crops.

Thresholds

In July, the EC issued guidelines that Member States must introduce measures to enable non-GM crops to be produced within existing EC labelling thresholds or purity standards. They recommended that such measures must not be so stringent as to prevent GM crops from being grown. If GM crops are grown, some presence of GM material in non-GM crops is inevitable. Therefore, the challenge for the regulatory system is to define acceptable thresholds for GM content of non-GM products. The new EU legislation requires food products to be labelled as containing GM if they have an unintended GM content of 0.9% or more (this includes products made from GM crops e.g. refined oils where no GM material is detectable in the final product). Organic certification bodies would like their products to be GM-free and are very concerned about the threat commercial growing of GM crops may pose to organic agriculture.

Organic

EU Regulation 2092/91 prescribes that organic farmers are not allowed to use GM organisms and product derivatives in organic production. The EU has not set a threshold for the inadvertent presence of GM material in organic produce above which the product could not be certified as organic. However, UK and most European organic certification bodies work to the limit of detection – that is a GM content of 0.1% or above. If there is widespread cultivation of GM crops, the Soil Association is worried that producers will not be able to meet this standard. It is concerned about having a legally defined threshold without adequate co-existence measures and a liability framework in place.

Seed purity

Non-GM seed purity will be an important determinant of the GM content of non-GM products. Draft EU standards propose seed purity levels that are crop-dependent (in the range of 0.3 -0.7% GM content) and are based on achieving the statutory 0.9% threshold for GM labelling. Many farming and environmental NGOs are concerned that this will prevent the production of GM free food and argue for levels to be based on detection limits. However, even achieving the draft EU seed purity levels could be challenging to the seed industry. Purity standards in current seed regulations allow 1-2% of seed from other varieties depending on the crop species.

Box 3 Views of some major stakeholder groups

- The **National Farmer's Union** advocates thorough safety assessments of GM crops by regulators and continued monitoring after approval. It believes growers must be able to follow their chosen production method and protocols should be developed to ensure this.
- The industry's **Agricultural Biotechnology Council** believes that GM technology offers benefits and that none of the studies published this year support a ban on GM crops. It believes it is time to introduce GM crops to the UK on a case-by-case basis.
- **Greenpeace** opposes the release of GM crops into the environment. It considers that GM crops are unpredictable, unreliable and unnecessary and any release poses an inherent risk to the environment.
- The **Soil Association** would like to ban GM crops. It considers there is insufficient scientific data about the long term effects of GM crops on human health and the environment and that GM crops will prevent consumer choice of GM free food.
- **British Retail Consortium** members do not currently stock own brand foods sourced from GM ingredients. Retailers will consider selling GM foods where there is consumer demand (and regulatory approval).
- The **Consumers' Association** believes that while future GM foods have the potential to offer benefit, issues raised by GM have yet to be adequately addressed. It says that consumer opinion should be at the heart of UK policy on GM food.

Separation of GM and non-GM crops

Cross-pollination of non-GM crops by GM crops may be reduced by physical separation. The distances required will be dependent on a number of factors including the threshold level set, the crop and the local environment. In general, the more stringent a threshold, the greater the separation distance needed. One way of meeting very low thresholds could be to isolate seed, organic and other non-GM production in areas where no GM crops can be grown. It is not yet clear whether such GM-free zones would be lawful within the EU. Although the first application by an EU region, Upper Austria, to set up such a zone was not allowed, future attempts may have more success if they apply under a different part of EU law. Further regions, including Wales, have recently notified the EC of their intention to become GM-free zones.

The government's position

The government has said that it will use the results of the GM dialogue to inform the overall direction of its policy

towards GM crops. In addition, the government and other EU Member States will have to take decisions on the backlog of GM applications. Moreover, following advice from the AEBC (see box 2), the government will need to consider national coexistence measures.

Wider considerations

The government has said it will decide its policy based on an assessment of all the available information. In so doing, it will also have to balance the diversity of views of a wide range of stakeholders (see box 3). Its decision will affect not just GM agriculture but may also impact upon the use of GM technology in other sectors (e.g. pharmaceuticals) and the UK's biotechnology industry and the UK science base. The government will also have to consider the cultivation of GM crops in the context of the changing face of UK farming. The Curry report on the future of food and farming,¹¹ as well as recommending that agriculture should take more account of consumers, focused attention on farming for different goals, not just for production but also for environmental stewardship. Reform of the Common Agriculture Policy may change the types of subsidy available affecting whether certain GM crops become more or less economically attractive.

Overview

- The potential environmental impact of GM crops was the key issue arising from the science review.
- The FSEs suggest GM crops can control weeds more effectively than non-GM crops. This may be good for farmers, but in farm-scale field trials led to a reduction in local biodiversity in two out of three GM crops.
- The economics review concluded that, in the short-term, negative public attitudes and retailer policies will limit any economic benefit from GM crops.
- The *GM Nation?* debate found widespread public unease over GM crops and little support for early commercialisation.
- The government will need to consider stakeholders views and balance a range of policy considerations.

Endnotes

- 1 www.gmsciencedebate.org.uk/report/pdf/gmsci-report1-pt1.pdf
- 2 <http://www.gmsciencedebate.org.uk/report/comment/pdf/0054.pdf>
- 3 see POSTnote 150, *GM farm trials*, February 2001
- 4 www.defra.gov.uk/environment/gm/fse/results/fse-summary.pdf
- 5 www.number-10.gov.uk/su/gm/index.htm
- 6 www.gmnation.org.uk/docs/GMNation_FinalReport.pdf
- 7 *Conduct of the GM public debate*, HC 1220, 2003
- 8 <http://www.number-10.gov.uk/su/gm/02.htm#03>
- 9 see POSTnote 172, *Labelling GM foods*, February 2002
- 10 http://www.aebc.gov.uk?aebc/coexistence_liability.shtml
- 11 <http://www.defra.gov.uk/farm/sustain/recs.htm>

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