Press Briefing

Government to Publish the Final Results of the Farm Scale Evaluations of Genetically Modified Crops: Winter Oilseed Rape

On the 21st of March, the Government will publish the results of its field scale trials of genetically modified (GM) winter oilseed rape. These are the final results from the Government's Farm Scale Evaluations (FSE) of genetically modified (GM) herbicide tolerant crops. This short briefing, by Friends of the Earth, the GM Freeze Campaign and GeneWatch UK, covers many of the key questions the results are likely to raise.

What are the farm scale evaluations?

The farm scale evaluations of genetically modified herbicide tolerant (GMHT) crops were launched by the Government in 1998, with the first GM crops being planted in 1999. They were a response to concerns that growing GMHT crops would further reduce food and habitat for farmland birds and insects, by eradicating all weeds in the crop. The four years of trials looked at GMHT maize, spring and winter oilseed rape and beet crops, and involved field scale plantings (around 10 hectares each, about the size of 20 football pitches) of GM and conventional crops grown side by side. Between sixty and seventy trials were grown for each crop, at a cost of £5.1 million by 2002.

The farm scale evaluations **were not** a comprehensive assessment of the risks of growing GM crops. The trials only looked at the impacts on farmland wildlife of the different herbicides used on GM versus conventional non-GM crops. Many issues were not addressed, such as: contamination of non-GM crops; cross pollination with wild plants; the economic, social and consumer choice implications of growing GM crops.

What results from the FSEs have already been published?

In October 2003, the results for the spring-sown crops - maize, sugar and fodder beet, spring oilseed rape - were published by the Royal Society[1]. In the case of beet crops and spring oilseed rape, it was concluded that the management of the GM crops led to a reduction of food and habitats for farmland wildlife, compared to the conventionally grown crops. In the case of maize, the opposite was found. But the GM maize trials were flawed because the conventional maize in the trials was grown using the extremely damaging weedkiller, atrazine, which has since been banned.

How did the Government respond?

In March 2004, the Government announced that, on the basis of the FSE results, GM beet and spring oilseed rape should not be grown in the UK. It did give conditional approval for GM maize to be grown, but shortly afterwards the biotech company Bayer announced it was not going to proceed with the commercialisation of this crop.

Why does farmland biodiversity matter?

Around 70% of the UK land area is farmland and much of our wildlife is found here. Farmland biodiversity in the UK has been in catastrophic decline for the last thirty years. For example, since 1970, skylark populations have fallen by 54%, grey partridges by 86%, corn buntings by 89% and tree sparrows by 94%[2]. Similar fates have been met by mammals, such as the brown hare, as well as insects and farmland plants, many of which are now endangered species. There is overwhelming evidence that these declines are related to the reduction of food and habitats available within agricultural areas, which have been lost as farming systems have intensified. In its Strategy for Sustainable Farming and Food the Government has committed to reversing the decline in farmland wildlife[3].

If the results aren't 'statistically significant' does this mean no harm occurred?

Not necessarily. Researchers have calculated that the farm scale evaluations can only detect differences of between 50 - 100% in changes to wildlife population sizes[4]. Therefore, if smaller differences occurred between the GM and non-GM crops during the trials, they might not show up in the results because the trials were not sensitive enough to detect them with any certainty.

In the case of the spring sown crops, the effects on biodiversity were very clear and surprisingly large. However, uncertain results for winter oilseed rape do not necessarily mean that no harm has occurred. In fact, evidence shows that differences as low as 13 per cent may be ecologically important for wildlife[5].

Do the FSEs address all the environmental questions about GM crops?

No. The FSEs only looked at one of the problems associated with the cultivation of the GM crop. They did not consider issues such as the development of herbicide tolerant oilseed rape volunteers and weeds, impacts on wider soil ecology, contamination of non-GM crops, or cross pollination with wild plants. In any case, both conventional and GM winter oilseed rape are heavily dependent on other pesticides (insecticides and fungicides) and artificial fertilisers, as well as herbicides, all of which can damage wildlife and the environment. In other words, the farm scale evaluations compared GM crop management to conventional systems which are themselves known to be harmful to wildlife and the environment. GM crops were not compared to organic farming, which has been shown to improve wildlife in the field.

What about recent claims that GM crops will not harm wildlife?

In November 2004, the results of the BRIGHT project were published, accompanied by headlines that "*GM crops are no more harmful to the environment than conventional plant varieties*"[6]. But the project, jointly funded by Government and industry, looked mainly at the practical issues for farmers of growing GM crops, not the effects on wildlife. In fact, the only environmental measurement included in the study was the number and species of seeds in the soil, and even these results are not conclusive. A new review of this research conducted by the Institute of Organic Research for GeneWatch UK, the GM Freeze Campaign and Friends of the Earth,

has concluded that "*Environmental (botanical) impacts could not be extensively investigated in the trials which were designed to meet a primarily agronomic objective".*[7] It can be downloaded from the websites listed at the end of this briefing.

Recent biotech industry-funded research has also suggested that it might be possible to grow GMHT sugar beet with the aim of protecting food supplies for birds, by altering the timing and way in which the weedkiller is applied[8]. However, to gain the benefits claimed by the researchers, farmers would have to use two different methods of applying the weedkiller, and there is no evidence that this complicated approach would actually be followed by farmers, particularly as it would add to costs.

Finally, it has been suggested that agri-environment measures on the farm, such as leaving winter stubbles (which provide food for birds and insects), could be used as 'compensation' for the harmful biodiversity impacts of the GM crops. But, in the light of the need to reverse the massive declines in our farmland wildlife, it is vital that agri-environment measures are only used to improve conditions for our wildlife, so that populations rise, not to compensate for the additional harm caused by the introduction of GM crops.

What about contamination of non-GM crops?

This is one of the many areas the farm scale evaluations did not examine. Research projects and field data from around the world, where GM oilseed rape has been grown commercially or experimentally, support the view that containing the GM traits within GM oilseed rape will be impossible. The area devoted to winter oilseed rape in the UK (7.8% of arable land[9] - 387,000 hectares in 2004[10]) would make contamination inevitable if GM oilseed rape were to be grown on a large scale. In the UK, small scale experiments have already found GM contamination of non-GM crops at levels of nearly 1.5% at 100 metres[11] from the GM crop[12]. When varieties bred to rely heavily on cross pollination (rather than self-pollination) were examined ('Varietal Associations'), GM contamination rates of over 7% were found at 90 metres[13]. Cross pollination by insects from GM crops has been found to occur at distances of 26 km[14].

In Canada, there have been such serious problems with GM contamination that both organic oilseed rape and conventional oilseed rape for seed production have been abandoned. In spring 2000, farmers across Europe, including the UK, planted more than 6,000 hectares of imported Canadian seed contaminated with up to 2.8% GM material[15]. 600 acres of UK oilseed rape had to be destroyed[16]. In evidence to the House of Commons Agriculture Committee, Advanta Seeds stated that the seed crops had been grown with a four kilometre separation distance[17]. The proposed separation distance for GM oilseed rape in the UK is currently 200m.

What will happen to non-GM farmers if GM oilseed rape is grown here?

If GM oilseed rape is grown widely in the UK, it will mean that non-GM crops will inevitably be contaminated (often above the 0.9% threshold beyond which a product has to be labelled as containing GM material), as will honey. Farmers could struggle to sell their crops as most supermarkets and food manufacturers demand that foods are GM-free down to the limit of detection, currently 0.1%. The main oilseed rape crusher, ADM, has warned that it may not be possible to provide separate facilities for GM and non-GM crops and that, if GM was grown, non-GM oilseed rape growers would lose their 20 Euro/tonne premium for the crop.[18] These are crucial issues for the forthcoming coexistence and liability legislation which has been promised by the Government.

If GM oilseed rape is grown, will it cross to wild species?

Oilseed rape is related to several wild plants that grow in the UK, including wild turnip. GM oilseed rape can cross with some of these plants and transfer GM genes into the wild gene pool. Research in the UK has shown that 32,000 hybrids between oilseed rape and the waterside form of wild turnip occur each year and 17,000 with the weedy populations that occur in and around fields in Humberside[19]. Wild turnip is an established arable weed[20]. During the farm scale evaluations, wild turnip producing GM seeds was found growing in the crop [21]. This could have unpredictable effects on biodiversity, and farmers could end up using more damaging herbicides to control weedy, herbicide resistant wild plants.

Will there be any benefits from growing GM oilseed rape?

It is hard to envisage any benefits for consumers or the environment from growing GM oilseed rape. Benefits for farmers are also limited because the herbicide tolerance trait was introduced purely to provide linked weed killer sales for the biotech company. Farmers using GM herbicide tolerant oilseed rape may get short-term benefits from reduced herbicide bills, but these could quickly evaporate when herbicide tolerant volunteer plants and weeds develop, making weed control more complex and costly.

Huge quantities of oilseed rape seeds are dropped during harvest, and these often remain in the soil and grow as weeds in other crops – called volunteers. Research has shown that weedy GM oilseed rape could act as a source of contamination, at levels over one per cent, for up to 16 years if not properly managed[22]. Even if volunteers were rigorously controlled, it would still take five years for contamination levels to fall below one per cent. A study by English Nature[23] revealed that volunteer oilseed rape plants resistant to more than one herbicide have become widespread in Canada, following the growing of two GMHT oilseed rape varieties, and one developed conventionally. Toxic chemicals such as 2,4-D are now being used to control the new weeds.

Are there any benefits from NOT growing GM crops here?

A decision not to allow GM oilseed rape to be grown in the UK would prevent the environmental, legal and economic problems identified above developing. Additionally, it would maintain or open up markets for UK farmers in providing GM free vegetable oil, animal feed and seeds for the rest of the world as well as for home consumption. It could also reduce the compliance costs for the GM traceability and labelling regulations for the UK food industry sourcing vegetable oil and animal feed.

What will happen next if the government gives the all clear? When might GM oilseed rape be grown in Britain?

Three applications for approval to grow GM oilseed rape are pending with the European Union. Before commercial growing is allowed, GM varieties would also have to be approved for inclusion on the plant varieties list in the UK or the EU's Common Catalogue. The UK Pesticide Safety Directorate would also have to give approval for the use of the herbicide on the GM crop. If all these approvals happened quickly, GM crops could be grown in autumn 2006 - but 2008 is more likely. The UK Government has said it will ensure co-existence and liability rules are in place before planting is allowed. However, the GM oilseed rape could be grown in other European countries much sooner.

If the Government decides to reject growing GM oilseed rape altogether, it is unlikely that it will be grown here in the foreseeable future. However, this cannot be

guaranteed because the UK could be out-voted by other EU member states or the European Commission during decision-making on approvals.

CONTACTS:

Friends of the Earth	**GM Freeze Campaign**	**GeneWatch UK**
www.foe.co.uk/campaigns/real_food/	www.fiveyearfreeze.org/	www.genewatch.org/
Clare Oxborrow 020 7566 1716 07712 843211	Pete Riley 07903 341065	Sue Mayer 01298 871898

---

[1] Philosophical Transactions of the Royal Society. Series B. Vol. 358 no. 1439 pages 1773-1913

[2] RSPB, BTO & WWT (2003) *The state of the UK's birds* RSPB, Sandy, UK

[3] http://www.defra.gov.uk/farm/sustain/newstrategy/strategy.pdf

[4] Perry JN *et al* (2003) Design, analysis and statistical power of the farm scale evaluations of genetically modified herbicide tolerant crops. *Journal of Applied Ecology* 40: 17-31

[5] e.g. Ewald JA & Aebischer NJ (1999) *pesticide use, avian food resources and bird densities in Sussex* JNCC Report No 296

[6] BBC News, 29th November 2004

[7] Turner, R.J., Bond, W. & Pearce, B.D. (2005) An analysis of the findings of the BRIGHT trials with GM herbicide tolerant crops in relation to environmental impact. A report for GeneWatch UK, the Five Year Freeze and Friends of the Earth. Available at: www.genewatch.org

[8] May MJ, Champion GT, Dewar AM, Qi A & Pidgeon JD (2005) Management of genetically modified herbicide-tolerant sugar beet for spring and autumn environmental benefit *Proceedings of the Royal Society B* 272 (1559): 111-119

[9] Defra , 2002, Annual Farm Census

[10] Defra, 2004 Harvest statistics oilseed rape. http://statistics.defra.gov.uk/esg/statnot/osrsur.pdf

[11] http://www.defra.gov.uk/environment/gm/research/pdf/epg_1-5-84_screen.pdf

[12] http://www.hgca.com/publications/documents/cropresearch/BRIGHT__6_.pdf

[13] http://www.hgca.com/publications/documents/cropresearch/BRIGHT__6_.pdf

[14] http://www.defra.gov.uk/environment/gm/research/pdf/epg_rg0216.pdf

[15] Canadian Food Inspection Agency, 2002.*Trace Amounts of Genetically Modified Materials in Canola Seed Exported to Europe*

[16] House of Commons Agriculture Committee, 2000. Eighth Report Genetically Modified Organisms and Seed Segregation July 2000.

[17] House of Commons Agriculture Committee, 2000. *Eighth Report Genetically Modified Organisms and Seed Segregation* July 2000

[18] GM rape dilemma for crusher Farmers Weekly Interactive. 6 February 2004. http://www.fwi.co.uk/article.asp?con=13735&sec=2&hier=66&style=

[19] Wilkinson MJ, *et al* (2003) *Hybridization between* Brassica napa *and* B. rapa *on a national scale in the United Kingdom. Science.* 302:401-403.

[20] http://www.defra.gov.uk/environment/gm/research/pdf/epg_1-5-84_screen.pdf

[21] http://www.defra.gov.uk/environment/gm/research/pdf/epg_1-5-84_screen.pdf

[22] Squire, G.R. & Askew, A. (2003) Final Report - DEFRA project RG0114: *The potential for oilseed rape feral (volunteer) weeds to cause impurities in later oilseed rape crops.*

[23] Orson, J. (2002) Gene stacking in herbicide tolerant oilseed rape: lessons from the North American experience. English Nature Research Report No. 443. English Nature: Peterborough.