



## Greenpeace UK Briefing: GM FARM SCALE TRIALS

January 2003

In spring 1999, following widespread calls for a halt to the development of genetically modified (GM) crops in the UK, the Government launched a four-year programme of **farm scale trials** (see glossary). The trials have been designed primarily to answer criticisms from English Nature and others concerned about the environmental impact of GM crops, particularly the secondary effects on biodiversity. According to the Government, the farm scale trials will *'allow researchers to see what effect, if any, the growing and management of GM crops might have on farmland wildlife, compared with non-GM crops.'*<sup>1</sup> The Government believes that GM crops *'do not themselves present any direct threat to the environment'*<sup>2</sup> and so the GM farm scale trials have not been designed to consider the direct impact of GM crops on the environment. They have been designed only to compare the impact of two different herbicide regimes, one used in the management of GM crops and the other in the management of conventional crops, on farmland wildlife.

### What crops are being tested?

Farm scale trials are being conducted with five GM crops, all of which have been modified to be tolerant to **broad-spectrum herbicides**:

- Spring oil seed rape tolerant to the herbicide glufosinate ('Liberty') (Bayer)
- Winter oilseed rape tolerant to glufosinate (Bayer)
- Fodder maize tolerant to glufosinate (Bayer)
- Sugar beet resistant to glyphosate ('Roundup')(Monsanto).
- Fodder beet resistant to glyphosate (Monsanto).

Application of the broad-spectrum herbicide will destroy all plants except the GM crop designed to resist it. Therefore

farmers will be able to spray GM crops with the relevant herbicide to remove weeds, but the GM crop will be unharmed.

### How are the trials organised?

The trials are a joint project between the Government and the industry body **SCIMAC** (Supply Chain Initiative on Modified Agricultural Crops). The trials will run for four years from 1999-2003. The expected total cost to the taxpayer will be £5.53m.

The research contract to monitor the trials has been awarded to a consortium led by the Institute of Terrestrial Ecology. A Scientific Steering Committee (**SSC**) has been appointed by the Government to oversee the research.

### Where and when are the GM farm scale trials taking place?

In 1999, a total of 10 GM farm scale trials were planted with GM spring and winter sown oil seed rape and GM maize.

In 2000, the Government's Scientific Steering Committee, which oversees the GM farm scale trials, planned for up to 80 trials in spring 2000 – 25 sites each of spring GM oil seed rape and GM maize and a total of 30 sites for the two GM beet. However, the GM industry struggled to find enough farmers to take part, despite large financial incentives. Seven farmers abandoned the programme and of the 48 sites remaining, the crop at one site failed to flourish and environmental protesters significantly damaged ten sites.

In August 2000, the Government announced a further 25 sites for the winter oil seed rape trials and in February 2001 they announced that the SSC had recommended that a further 96 sites be sown in spring 2001<sup>3</sup>. The Government subsequently announced the locations of 27 GM spring oil seed rape trials, 26 GM beet trials and 25 GM maize trials to be planted in spring 2001<sup>4</sup>.

In January this year (2002) the Government announced that GM crops are to be planted at 80 new locations around the UK. Oilseed rape is to be sown

<sup>1</sup> DETR press release 17.03.00

<sup>2</sup> Meacher letter to MPs 17.03.00

<sup>3</sup> DETR 7.2.01

<sup>4</sup> DETR 28.2.01

at 27 sites, Maize at 35 sites and GM fodder and sugar beet is to be planted at a further 18 sites.

The locations of all GM releases, including farm scale trials, can be found on the internet at [www.defra.gov.uk](http://www.defra.gov.uk)

### **What are the trials meant to discover?**

The farm scale trials are intended to address concerns about the potential impact of growing **herbicide resistant** crops on the agricultural environment and on wildlife. The use of herbicides has already been associated with the decline of farmland bird species and there are concerns, for example from the RSPB, that GM crops may increase dependency on chemicals in agriculture and thereby reduce available food sources for wildlife.

The purpose of the GM farm scale trials is to compare the effects of two different herbicide regimes on farmland wildlife and biodiversity. Researchers will take samples of insects, weeds and seeds in the soil and make comparisons between the GM crop and an adjacent non-GM crop. This data will then be extrapolated to determine whether any wider effects on birds and other farmland wildlife are likely to occur.

### **What will the trials miss?**

The Government claims the trials will answer concerns about the safety of GM crops. However there are many areas of concern that the research will not address:

- *Unpredictable nature of GM technology* - the trials will only look at one GM trait (herbicide tolerance). GM crops engineered for different purposes -e.g. changed nutritional content will not be studied.
- *Whether GM crops are safe for humans and farm animals to eat.*
- *Impacts of GM crops on soil ecology* - according to soil scientists, GM crops could have 'long term adverse and unexpected effects on soil microorganisms or their functioning and could prove to be the greatest

major hazard for the environment'.<sup>5</sup> This impact could either be from herbicide usage or from the genetic material itself.

- *Contamination of neighbouring crops* - in the wake of the Advanta contamination, the Government ordered a review of separation distances of GM crops from conventional crops in the farm scale trials.<sup>6</sup> This review has not yet been completed satisfactorily. In the meantime, despite concerns about cross pollination, the farm scale trials are continuing with increased but still inadequate separation distances between the GM crops and neighbouring non GM crops (100m for oilseed rape, 80 m for maize).
- *Impact of GM crops on bees* - no studies on bees will be carried out during the trials, yet bees are extremely important to the pollination of commercial crops in the UK.
- *Comparison of GM crops with organic farming systems* - the environmental impact of GM crops in comparison with sustainable farming systems such as organic or low impact systems will not be studied. The GM crop is only being compared with a conventional chemical intensive farming system.
- *Incremental effects of growing GM crops over time* - the GM trial crop will only be grown on each field for one year. In commercial use GM crops are likely to be grown in rotation, the same crop returning every three to four years to a particular field, or in the case of maize, it may be grown in the same field year after year.
- *Effects of widespread growing of GM crops* - impacts on biodiversity that might manifest themselves only when GM crops are used widely in the UK are not being studied.
- *The social and economic impact of GM agriculture* - see below for details of likely impacts of GM crops on farmer's livelihoods.

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<sup>5</sup> GM on trial, Greenpeace, 2000

<sup>6</sup> DETR press release 23.08.00

- *Trials "not sufficient" evidence for deciding on GM commercialisation* - one of the Government's GM advisory bodies, the AEBC, clearly stated in the "Crops on Trial" report that the FSTs "are not a sufficient condition"<sup>7</sup> for deciding on GM commercialisation. The Government subsequently agreed that the results of the trials "are only one part of the decision-making framework."<sup>8</sup>

In fact the farm scale trials cannot answer a whole range of uncertainties concerning the growing of GM crops and food.

### What are the risks from the farm scale trials?

The trials pose a clear threat to the environment. GM crops are a form of living pollution, which can readily reproduce itself. Once released GM crops cannot be controlled and will contaminate other non-GM crops, the soil, and the food chain through the spread of pollen and seed. A report by the John Innes Centre for MAFF confirms this: 'Once GM crops are released they, like all crops, cannot be completely contained.'<sup>9</sup> The consequences for the wider environment and society are serious:

- *GM superweeds and increased herbicide use* - Cross-pollination with wild related plants may cause herbicide resistant weeds (**superweeds**) to develop. Research by English Nature in Canada has revealed that plants grown from spilled GM seeds have become resistant to several commonly used broad-spectrum herbicides, in effect becoming superweeds.<sup>10</sup>
- *Soil contamination* - Genetic material from GM sugar beet has been detected in soil samples two years after harvest.<sup>11</sup> Yet when the trials are completed, the Government's planting consents allow the GM plant material

to be ploughed into the soil, leaving potential GM pollution in the field.

- *Contamination of honey* - Honey may become contaminated as a result of bees foraging on the GM crop. The National Pollen Research Institute found GM pollen in hives up to 4.5km from a GM farm scale trial.<sup>12</sup> The British Beekeepers Association has been forced to recommend that hives be at least six miles from the trial sites in order to minimise the risk of contamination.
- *Loss of livelihood* - Neighbouring farmer's livelihoods may be affected by GM contamination - e.g. from cross-pollination, shared farm machinery or spills in transportation of GM seed. These risks cannot currently be insured and neither the Government nor the biotech industry will accept liability.
- *Loss of organic status* - Organic standards require zero contamination and many organic farmers risk losing their certification as organic growers because of contamination by GM crops. Yet, organic is the only thriving sector in UK agriculture and consumer demand for organic fruit and vegetables currently outstrips supply by about 300%.<sup>13</sup>
- *Loss of land value* - The Royal Institute of Chartered Surveyors warn that growing GM crops may reduce land values. The European Society of Chartered Surveyors has recommended setting up a register of land where GM crops have been grown. The European Union has decided to set up a land register for land on which GM crops have been grown.
- *Loss of GM free status* - Tuscany and other parts of Italy, Wales and Switzerland all see 'GM Free' as a positive selling point.
- *Contamination of groundwater* - The herbicide glufosinate does not have full clearance from the Pesticides

<sup>7</sup> <http://www.aebc.gov.uk/aebc/crops.pdf>

<sup>8</sup> <http://www.defra.gov.uk/environment/fse/croptrial/index.htm>

<sup>9</sup> John Innes Centre, report for MAFF, 06.99

<sup>10</sup> <http://www.english-nature.org/news/story.asp?ID=335>

<sup>11</sup> Gebhard, F. and Smalla, K. (1999) FEMS Microbiology Ecology 28:261-272

<sup>12</sup> FoE press release 29.09.99

<sup>13</sup> Soil Association figures show that we import 80% of our organic fruit and vegetables, mostly from other EU countries.

Safety Directorate for winter use because of concerns about contamination of groundwater, but Aventis have been granted an experimental approval for its use in the farm-scale trials. However no account appears to have been taken of the location of aquifers used for drinking water when locating the winter farm scale trials.

- *Pollution of the food chain* - Although the Government has reached an agreement with the biotech industry that there will be no commercial growing of GM crops whilst the farm scale trials take place, it has also said that the produce from the farm scale trials may enter the food/feed chain, if the appropriate approvals for marketing are granted in Europe<sup>14</sup>

### **Are the farm scale trials democratic?**

The GM farm scale trials are an example of Government and industry priorities riding roughshod over the democratic wishes of the public. Despite mass opposition to the GM trials, there is no public local consultation prior to planting, so local people who might be affected have no democratic opportunity to halt trials in their area.

In spring 2000, Michael Meacher, the UK environment minister, announced that there would be a series of public meetings in England, but these are merely an opportunity to *inform* people about the trials, not an opportunity for people to object because of the potential impact on their livelihoods for instance.

West Lindsey District Council in Lincolnshire has already had two unwanted GM farm scale trials in 1999, and passed a motion in 2000 saying they did not want any further trials within the district. Despite this, at least seven GM farm scale trials have been announced in the area since then.

Nine County Councils have now banned GM crops on land they own, but are powerless to affect what is planted on other land within their county.

A Mori poll from June 1999 revealed that more than three-quarters of the British public oppose field trials of GM crops.

### **Farm scale trials and farmers**

*'GM crops are not the solution to feeding the world. As a farmer, I am an environmental manager and do not see the need to start tinkering with nature when the outcome could have very serious long-term risks... We have pushed the land to the limit and GM is supposed to be the solution. This isn't true.'*

Henry Birkbeck, one of Norfolk's biggest landowners, farming 8,500 acres

*'GM is a step too far. It's the last flowering of a discredited form of agriculture.'*

Donald Morton, Norfolk farmer farming 730 acres

It is a myth that all farmers in the UK favour the introduction of GM technology or that it represents any kind of agricultural solution to the problems they face either here or in the developing world. Evidence from the US and Canada suggests that GM will aggravate the problems faced by small farmers. This and other evidence suggests that future problems for UK farmers growing GM crops could include:

- No market for GM produce
- No decrease in herbicide use
- No improvement in crop yield
- Fall in land values
- Liability for damage to neighbouring property, neighbour's loss of livelihood
- Increased corporate control of agriculture

*'GMOs have become an albatross around the neck of farmers on issues of trade, labelling, testing, certification, segregation, market availability and agribusiness concentration ... it is best for production agriculture to examine alternatives to planting GMOs.'*

Gary Goldberg, American Corn Growers Association

### **No Market Exists for GM crops**

Consumer rejection of GM is so strong that there is virtually no market for GM crops in the UK. All the major food retailers and some food processors have eliminated GM ingredients from their food

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<sup>14</sup> DETR press release 05.11.99

products. Concerns over the use of GM crops in animal feed has also led fast food chains McDonalds, Kentucky Fried Chicken and Burger King and major supermarkets including Iceland, Marks & Spencer, Tesco, Sainsbury's and Asda to make a commitment to source GM-free animal feed. British sugar has also told DETR and MAFF that "...there are no prospects of commercial GM beet varieties being required." It seems that there will soon be no demand for GM animal feed in the UK, yet the majority of the crop varieties being tested in the farm scale trials are destined for animal feed use.

### **Farm scale trials and feeding the world**

*'If anyone tells you that GM is going to feed the world, tell them that it is not...To feed the world takes political and financial will, its not about production and distribution. GM will not feed the world, don't let anyone tell you that it is.'*

Steve Smith, SCIMAC and Novartis, Tittleshall Village Hall public meeting on proposed local GM farm scale trial 29.03.00

Feeding the world is an argument often used to justify the continued development of GM crops. Monsanto has claimed that *'slowing its acceptance is a luxury our hungry world cannot afford'*. However, the root cause of hunger is poverty: 80% of those who go hungry live in countries with food surpluses. Solutions lie in social change and shifts toward sustainable diverse farming methods in which GM has no role. UK based trials of GM crops largely destined for home use in animal feed are of course completely irrelevant to this serious issue.

*'We strongly object that the image of the poor and hungry from our countries is being used by giant multinational corporations to push a technology that is neither safe, environmentally friendly nor economically beneficial to us. On the contrary, we think it will destroy the diversity, the local knowledge and the sustainable agricultural systems that our farmers have developed for millenia and that it will thus undermine our capacity to feed ourselves.'*

Ethiopian delegate to the UN

### **Conclusion**

Greenpeace calls for the farm scale trials to be abandoned immediately, and research redirected into the advancement of genuinely sustainable farming methods such as organic.

The farm scale trials are a cynical misuse of science by the UK Government and the biotech industry. Like scientific whaling, this 'scientific research' is no more than a charade that barely conceals the underlying aim of commercialisation of GM crops as fast as possible - a technology for which there is no UK market demand. Biotech companies are also incapable of properly running the trials, as seen by the contamination of the Bayer oilseed rape trials with an unapproved GM variety.

In short, the GM farm scale trial research itself will not answer the majority of concerns about GM technology, is a waste of public money best spent developing sustainable agricultural solutions, and an unacceptable environmental and economic threat to the local communities surrounding the trials.

#### **Greenpeace UK**

**Tel - 020 7865 8100**

**Fax - 020 7865 8200**

**info@uk.greenpeace.org**

**www.greenpeace.org.uk**

## Glossary

**Broad spectrum herbicides** - weedkillers designed to kill most plants rather than targeting a specific weed species.

**Farm scale trial** - trials covering large areas of land (up to 10 hectares) designed to imitate the large-scale commercial production of a crop

**Herbicide resistant** - plants that can survive being sprayed with a particular weedkiller

**Superweeds** - weeds that have grown resistant to one or more weedkiller

## Who are the key players?

**Bayer:** A biotech company that has developed some of the GM crops and Liberty herbicides that will be used in the trials. Bayer is part of the group responsible for finding farms to host the GM farm scale trials. It provides farmers with the GM seeds and the herbicide and pays the farmers a fee for taking part in the trials.

**DETR:** (Department of Environment, Transport and the Regions) responsible for managing the £4.4m budget for funding the farm scale trial research. Issues release consents for the trials and deals with applications for marketing consent. They also participate in the farm scale trial Scientific Steering Committee meetings.

**Monsanto:** a biotech company that has developed GM sugar and fodder beet and the Roundup herbicide used in the GM farm scale trials. Monsanto is part of the group responsible for finding farms to host the GM farm scale trials. It provides farmers with the GM seeds and the herbicide and pays the farmers a fee for taking part in the trials.

**The Research Contractors:** A consortium of research organisations: Centre for Ecology and Hydrology (formerly the Institute of Terrestrial Ecology); Scottish Crop Research Council and the Institute of Arable Crop Research carries out the research on the farm scale trial sites. Essentially they are studying the differences in the numbers and types of weeds and insects in the GM crop as compared with a neighbouring non GM crop.

**Scientific Steering Committee:** The Government-appointed committee charged with overseeing the GM farm scale trials. The committee is responsible for deciding the experimental design and methods to be used in the trials and interpreting the results. Members come from the Institute of Grassland and Environmental Research, English Nature, Game Conservancy Trust, Morley Research Centre, Imperial College, and the Royal Society for the Protection of Birds.

<http://www.environment.detr.gov.uk/fse/index.htm>

**SCIMAC** - The Supply Chain Initiative on Modified Agricultural Crops. SCIMAC is an industry body made up of representatives of the biotech industry (Bayer, Monsanto, Novartis) and the agriculture industry (National Union of Farmers). SCIMAC is responsible for finding farmers who will take part in the GM farm scale trials. They have also drawn up Guidelines and a Code of Practice for farmers involved in the growing of GM crop.