

Genetically Modified Crops

take a closer look



The government has an open mind about GM crops, and is neither pro nor anti. Its first priority is to protect human health and the environment. The government is pro-science and pro-consumer choice, therefore it has set up research – Farm Scale Evaluations (FSEs) – to help people get more facts about GM crops.

Under a unique agreement with the farming and biotechnology industries, no GM crops will be grown commercially in the UK until the government is satisfied after the results of the FSEs are known that there will be no significant effects on the environment.



Why test GM Crops?

The government recognises that there is substantial public concern about the genetic changes to plants that science has made possible and about whether genetically modified (GM) crops should be planted in our fields.

The government understands these concerns but also recognises the potential benefits offered by genetic modification. That is why the UK adopts a cautious approach to this new technology, which scientists are continually developing. Carefully controlled and monitored tests of GM crops are essential in this process.

Our **Farm Scale Evaluations (FSEs)** are a three-year research programme that began in full in 2000, following a pilot scheme in 1999. They are designed to study the effects, if any, on wildlife of the way weed killers (herbicides) are used with herbicide tolerant GM crops* when compared with equivalent conventional crops.

Following years of thorough research in laboratories and on small plots of land, the GM crops now being grown in UK fields have already been confirmed as safe to human and animal health. Direct effects on the surrounding environment have also been assessed by independent experts on the government's advisory committees and confirmed as safe.

* Herbicide Tolerant GM crops – Crops which have been genetically modified to be resistant to a particular herbicide (weed-killer).

Farm Scale Evaluations –

What are they all about?

A total of around 60 to 75 fields for each crop over the three years will be needed for the programme. The crops involved in the study are:

- **Fodder maize**
- **Oil Seed Rape** – (both spring and autumn sown)
- **Beet** (both sugar beet and fodder beet)

The farmer looks after the crops in the normal way. Fields are selected and planted with a GM crop in half of the field of about 10 hectares (25 acres). The rest of the field is planted with an equivalent non-GM crop. The non-GM crop is treated with the usual range of weed and pest controls and the GM crop is treated with the weed killer to which it is designed to be tolerant (Glufosinate Ammonium for maize and oilseed rape and Glyphosate for the beet crops). The herbicides used in the Farm Scale Evaluations programme are already widely used in agriculture and in people's gardens and are available from garden centres and shops.

The scientists study and compare a range of vegetation and invertebrates (farmland biodiversity) in the GM and non-GM halves of the fields. Since the study compares the two halves of the field when growing the same crop there is no need to have pre-trial assessment of biodiversity in past crops. The previous crop might be different from that studied in the FSE and any differences in biodiversity might be due to the different crop rather than any effect of the different way of using herbicides.

The key indicators studied include seeds, weed vegetation, slugs & snails, caterpillars, beetles, bees, butterflies and earthworms.

A consortium of independent research institutions carries out the research. During the crop-growing season the researchers will count the number of weeds and insects in both the GM and the non-GM side of the field and in the field margins. The effects of any changes will be monitored closely. By doing this, the researchers will be able to tell whether there are any differences in farmland wildlife between the GM and non-GM crop sides of the field due to the different herbicides used. Researchers will also look at the pollen flow and cross-pollination from the GM crops to nearby non-GM crops of the same type.



Health and Safety

Independent scientists and experts on the Government's advisory committees have carefully assessed all the GM crops in the FSEs. Only crops that are considered to be safe to human and animal health and which do not pose any direct environmental risk are used in the FSEs.

The Advisory Committee on Releases to the Environment-ACRE, is an independent scientific committee whose members include leading academic scientists. ACRE is responsible for looking at the information about the GM crop submitted by the company from the laboratory tests and small scale trials which have preceded the Farm Scale Evaluations. Equivalent bodies in other European Union member states and both the Advisory Committee on Novel Foods and Processes and the Advisory Committee on Animal Feedstuffs have also considered this evidence, where relevant.

ACRE looks at issues like the allergenicity of the plant and its pollen or any possible risks it might pose to those who come into contact with or ingest the crop. ACRE has concluded that the FSEs do not present any significant risk to the environment or human and animal health. The risk assessment for the crops involved and ACRE's advice to Ministers is available from the Department for Environment, Food and Rural Affairs (DEFRA) office in London and the DEFRA web-site. www.defra.gov.uk/environment/acre/index.htm

FSE sites are strictly monitored both during the study and in subsequent years. Officials from

the GM Inspectorate at the Central Science Laboratory and the Scottish Agricultural Science Agency (SASA) inspect sites to ensure compliance with consents, including the disposal of the crop and removal of volunteers (plants that survive from seed in one growing season to the next).

At the end of the trial the crop is harvested in the usual way and disposed of by ploughing in, by landfill or incineration. Monitoring of the site will continue, as required by the release consent. None of the produce from the GM crops involved may enter the human food or animal feed chains, as it does not have the necessary approvals to do so.

Who picks where the sites are located?

An independent Scientific Steering Committee (SSC) of scientists from academia and research institutions, which is entirely independent of industry, oversees the running of the FSEs. SCIMAC (Supply Chain Initiative on Modified Agricultural Crops, a farming and biotechnology industry group) – identifies a number of sites from which the researchers who do the fieldwork select a shortlist.

Sites are chosen to get a range of different farming types and a spread of locations across Britain representative of where crops are normally grown. This is designed to help ensure that the results are representative of the range of agricultural habitats across the country. The SSC checks that the shortlist of sites selected by the researchers is representative of its strict scientific criteria. The government is not involved in the selection process for sites.



How can people find out the facts about the Farm Scale Evaluations programme?

The government believes that people have a right to know what is happening in their community and why. The government is committed to being open and transparent about the FSEs. Therefore:

- Locations of all Farm Scale Evaluation sites are available from the DEFRA web site www.defra.gov.uk/environment/fse/index.htm
- Releases of the oilseed rape and fodder/sugar beet crops are advertised in local papers.
- Copies of the consents for the GM crops involved are sent out to relevant parish councils along with information about the release before sowing takes place.
- DEFRA writes to all parish, district and county councils in England where an FSE is to take place with information about the programme.
- DEFRA officials attend meetings organised by parish councils whenever possible.

Once an applicant has satisfied the requirements set out in the European rules and the release has been found to pose no significant risks to the environment or human health then the applicant has the right to grow that crop. Consents and releases may only be prevented on valid safety grounds supported by sound scientific evidence. ACRE will consider any further evidence submitted by the public that has a bearing on the assessments ACRE has made.

Can I trust the research?


- The FSEs are being carried out by independent researchers, who will monitor the crops as they are being grown, and record and compile the results.
- At the end of the study the results and statistical analysis will be made public.
- Other independent scientists will be asked to check and review the results.



What steps are taken to minimise the impact of the Farm Scale Evaluations on non-GM, including organic, farmers?

To minimise any impact on neighbouring farms the FSEs are separated from conventional crops. The best information we have is that the distances between FSE crops and conventional crops of the same type will, in the large majority of cases help ensure that cross-pollination may well not exceed one per cent.

In the case of nearby organic crops of the same type these separation distances are increased, minimising any cross-pollination to even lower levels. Maize is the only crop in the FSEs that has a commercially equivalent organic variety, grown as sweetcorn. The beet crops are not allowed to flower and hence do not produce pollen. The government recognises the importance of the organic sector, and is encouraging dialogue at local level between FSE operators and organic growers to address their concerns. We are still considering whether the separation distances are adequate to protect nearby conventional or organic farms from any contamination which might affect their livelihood.





How can I find out more?

- Department for Environment, Food and Rural Affairs website: www.defra.gov.uk.

Or you can contact us direct at –

GM Crops Policy
Department for Environment,
Food & Rural Affairs - DEFRA
Zone 3/G9, Ashdown House
123 Victoria Street
London SW1E 6DE

Telephone: **020 7944 3409**

E-mail: **biotech@defra.gsi.gov.uk**

You can get access to the Internet at your local library.



**GM Crops Policy
Department for Environment,
Food & Rural Affairs - DEFRA
Zone 3/G9, Ashdown House
123 Victoria Street
London SW1E 6DE
Telephone 020 7944 3409
E-mail biotech@defra.gsi.gov.uk**

© Crown Copyright 2001
Copyright in the typographical arrangement and the design vests in the Crown. Extracts for reproduction should be made in writing to

The Copyright Unit,
Her Majesty's Stationery Office,
St Clements House,
1-16 Colegate,
Norwich NR3 1BQ.

If you would like further copies of this leaflet, please contact:
DEFRA Free Literature,
PO Box No 236, Wetherby, LS23 7NB.
Tel: 0870 122 6236
Fax: 0870 122 6237
Text phone: 0870 120 740
E-mail: defra@twoten.press.net

Printed in the UK September 2001 (01EP0726) on material containing 75% pre-consumer waste and 25% ECF pulp (cover) and 100% post-consumer waste (text).
Product code PB5976

Web site version updated 15.3.02