GM foods – the Government's record

Why we still need a moratorium

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on genetic engineering and patenting in food and farming

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Contents

1 Introduction

Background

The contentious issue of the genetic modification of crops for food use has given the Labour Government perhaps its biggest public relations headache since coming to power in 1997. For inexplicable reasons, both the Labour Government and its predecessor, and the agri-biotechnology industry, completely misjudged the response of the general public to the introduction of this new technology. Given that the country was still living with the spectre of BSE and other food crises, it was hardly surprising that people reacted with unease at discovering that 'genetically modified' (GM) food was appearing on our shelves virtually unannounced and certainly unlabelled from the mid '90s onwards.

A TV programme in August 1998, in which Professor Arpad Pusztai stated that a type of GM potato fed raw to rats induced adverse effects, further ignited public concern. The previous spring a GM test site was discovered within 200 metres of a well known Devonshire organic farm, which was consequently threatened with the loss of its organic status should contamination occur. The farmer took the Government to court unsuccessfully – the test site remained. Local activists pulled up the test crop, which gave birth to a visible and vocal local campaign that mirrored the lobbying of the environmental organisations such as Friends of the Earth and Greenpeace.

In February 1999 the Genetic Engineering Alliance (GEA) launched the Five Year Freeze campaign, offering a platform to the many organisations, public interest and commercial, who wished to register their concerns at the rapid introduction of GM food and crops. The alliance is calling for a minimum five year moratorium on:

- growing genetically modified plants and the production of genetically modified farm animals for any commercial purpose
- imports of genetically modified foods, plants, farm crops and farm animals, and produce from genetically modified plants and animals
- patenting genetic resources for food and farm crops

Two and a half years later, the alliance now numbers over 120 organisations (see inside back cover), representing over 4 million people. The breadth and diversity of support for the

call for a moratorium – illustrated by members of the alliance – indicates the extent of concern engendered by this issue in all areas of society – from consumer groups to gardening organisations, from development agencies to trade unions. These concerns are not limited to the environment or human health, but include the impact on small farmers both in the UK and globally, corporate control of the food chain, the threat to consumer choice, ethical dimensions, and the erosion of agricultural diversity. The complexity of the issue of genetic modification in food and farming and its potential to cause massive social, economic and environmental damage, drive the continued call for a moratorium. This is now being echoed around the world with campaigns in Brazil, Mexico, South Africa and India.

The purpose of this document

In the two and a half years since the campaign for a moratorium was launched, certain things have been achieved – a partial labelling regime, a strengthened EU directive on releasing GM organisms (GMOs) into the environment, an international Biosafety Protocol. However, many questions remain unanswered, serious omissions in the regulatory systems still exist, essential safety research is not being carried out and public information and consultation is minimal. The desire to consume GM foods is still as low as ever. Since coming to power in 1997, the Labour Government has failed to listen to the concerns of the public and both overtly and covertly appears to favour the interests of the industry over those of its citizens. Any action the Government has taken has been as much an attempt to allay fears as actually to investigate risks rigorously or to take potential problems seriously.

This document, organised according to the key areas of concern represented by the membership of the GEA, looks at the problems – and assesses the Government's record in each area. Demands for targets to be achieved in the course of the new term of Government have been laid out. Some of these targets are specific and easily achievable in the short term – others are over-arching and more complex, involving public debate and consultation. Either way, the recommendations reinforce the continued need for Government to introduce a statutory moratorium in order to address these outstanding issues.

The document also includes a section on the controversial issue of the farm scale trials, as this is the single most overt attempt of the Government to address public concerns about the environmental impact of GM crops. However, as we shall see, even this has failed to come close to answering any of the essential questions, whilst at the same time exposing the environment to risk of harm.

Inevitably, given the complexity of the issue, there are questions that do not fall neatly into the categories outlined but nevertheless lie at the heart of public concern in this area. Is the technology needed? Who stands to gain and lose from it? Do the benefits outweigh the risks? Will GM aid or hinder food security for the hungry? How are ethical issues considered? Why are alternatives not being researched? Problematic though it might be for a government to engage with its citizens on such issues, they nevertheless need to be addressed in the space provided by a moratorium. Given the nature of the technology of genetic modification, to avoid consideration of these issues is irresponsible. In the words of leading geneticist Steve Jones, 'a tiny accident, one gene leaking out, can have massive consequences'.

Concern over GM foods, following swiftly after BSE, *E.coli,* salmonella and other food crises reflects worries over industrial agriculture in general and the desire to develop more sustainable and safer food systems. This is most obvious when one looks at the massive rise in the consumption of organic foods, and interest in farmers markets. These trends have directly paralleled the GM debate. Post Foot and Mouth Disease, the Government has signalled its intention to carry out a strategic review of agriculture in the UK. We hope that this document will contribute to that process by ensuring that discussion of whether or not GM has a role to play in our agricultural system is not overlooked. The targets outlined in this document should contribute to any action plan that may arise out of this process, and the first and most obvious target is the introduction of a statutory moratorium.

A virtual moratorium?

Many people are under the impression that a moratorium already exists, both in the UK and across Europe. It is true that large scale commercial growing is not currently taking place in the UK, although crops with marketing consents are being

grown in small sites across the country. In 1999 a programme of farm scale trials was announced by the industry body, Supply Chain Initiative on Modified Agricultural Crops (SCIMAC), and the Government in response to public concerns, and it was agreed that until this was completed there would be no commercial growing in the UK. However at the time of this announcement Michael Meacher, Minister for the Environment, said himself that this was 'not a moratorium'.

At European level, a *de-facto* moratorium on granting marketing consents has existed for the last two years (1999/2000) while the then directive, 90/220/EEC, was being revised. In April of this year the new directive, 2001/18/EC, was agreed, and in theory new marketing consents will now be granted once again. However, several countries, including France, Italy and Greece, are concerned that the regulations are still not adequate and are intending to maintain the moratorium by blocking new consents until key issues such as traceability, labelling and liability are resolved.

The Genetic Engineering Alliance wants the Government to take the lead on this issue and introduce a legal* five year moratorium during which time the targets identified in this report must be reached.

The farm scale trials

Following concerns over the environmental effects of GM crops, the Government instigated a programme of farm scale trials to investigate the impact of herbicide tolerant crops on biodiversity. The trials focus narrowly on the evaluation of whether the planting and management of GM herbicide resistant oilseed rape, maize, sugar beet and fodder beet is damaging to a number of species of wildlife. These trials are due to finish in 2003, and on their results rests the Government's decision whether or not to proceed with the commercialisation of GM crops.

Many supporters of the Genetic Engineering Alliance do not think that these trials should be taking place at all. Others support such research *in principle*. However, many concerns

* for the legal justification surrounding a moratorium see *GMOs: The Case for a Moratorium*, Friends of the Earth, 1999.

surround these trials which bring into doubt their continuation, and most particularly their ability to address many of the questions that need to be answered before commercialisation begins in the UK. The most important question, and one which society as a whole must address, is whether *the need* for GM crops exists, and whether such a need justifies the potential risks their growing poses to the environment and to human and animal health.

Concerns include:

- The results of the trials will only provide limited data on some of the environmental effects of the specific GM crop studied, and will not provide a definitive assessment of environmental risk.

- The trials will not look at the impact on earthworms, soil fungi and bacteria essential to soil health, nor the impact on birdlife.

- No baseline studies examining existing biodiversity levels have been performed making it impossible to determine significant changes to species diversity. The trials will compare wildlife on the two halves of the field, GM and non-GM.

- The results will be based on one year's growth and will not consider the long-term effects of growing GM crops.

- Separation distances are still inadequate to avoid cross pollination and contamination of organic and non-GM crops.

- The trials make comparisons with already environmentally damaging systems. There is a lack of comparison with sustainable systems of farming.

- The guidelines for the trials are inadequate and were drawn up by SCIMAC, an industry body, without any statutory footing.

- No consultation with neighbouring farmers or beekeepers, especially organic farmers, has taken place. Neither has consultation taken place in the wider community where trials are sited.

- The trials are publicly funded, costing £4.4 million of taxpayers' money.

2 Preventing harm to human health

The use of genetically modified organisms in food and farming raises concerns about their safety for human health. Genetic modification may lead to unexpected changes in the composition of a food or the introduction of new allergens. It may also introduce new risks not found in natural breeding. However, very little research has been carried out to evaluate the short-term and long-term effects of GM crops on human health.

The Five Year Freeze is calling for far-reaching improvements to the GM food safety assessment system and for assessment and monitoring of the short and long-term effects of eating GM foods. This section reviews the potential risks of eating GM foods and considers how well these are being addressed in regulations.

The problems

The potential for new toxins or allergens to be produced

* Genetic modification of crops will change their chemical composition. Knowledge is limited about the effect of genetic modification on the chemical composition of crops/food beyond the intended change.

* New and unexpected substances and/or altered levels of existing components may arise and these could be toxic or allergenic.

* New or increased levels of allergens may be produced.

Antibiotic resistance

* Antibiotic resistance genes are used as 'markers' in genetic engineering to identify when an organism has been successfully genetically modified.

* Antibiotic resistant gene sequences could be spread to disease-causing bacteria in the intestines of animals or humans. This could compromise the effectiveness of antibiotic treatments.

* These gene sequences could also spread to soil micro-organisms from decomposing GM plant material, and from there to gut bacteria by ingestion.

* Antibiotic resistance genes present in GM crops grown commercially include kanamycin and ampicillin resistance. Both are important antibiotics used in medicine and the effectiveness of these could be compromised.

Animal feed

* The majority of GM crops grown at present are intended for animal consumption, yet little research has been carried out on their impact further along the food chain.

* Animals consuming GM food face similar potential risks from GM food as humans do – the presence of unintended toxins, allergens and antibiotic resistance.

Risk assessment

* GM food safety assessments rely on the concept of 'substantial equivalence', which compares the chemical composition of the GM plant to a non-GM equivalent.

* There is no standardised list of what chemical components have to be measured.

* No screening for unintended effects is required.

* The GM component of the crop (e.g. the Bt toxin in insect resistant GM crops), is tested in isolation from the whole crop and not as it would be eaten.

* Predicting allergenicity is difficult because knowledge about what makes a protein an allergen is limited.

* There is no system of monitoring for adverse effects of eating GM foods, such as long-term low-level toxicity.

* There are no regulations covering the safety of GM feed for animals.

The Government's record

* Government has allowed the sale of GM maize containing an ampicillin resistance gene in the UK, despite the advice from the Advisory Committee on Novel Foods and Processes (ACNFP) that it posed an unacceptable risk. Other countries in the EU have banned this Syngenta maize variety.

* Government has not followed up on research by Arpad Pusztai, which suggested that GM could have harmful effects on the mammalian gut.

* The ACNFP has been considering how monitoring for the health effects of eating GM food might be undertaken and has commissioned research, but no scheme is yet in place.

* The Medical Research Council has recognised that more research is needed on the safety of GM foods and has called for research proposals from scientists.

* Government hosted an OECD conference on food safety in Edinburgh in February 2000. Recommendations were that the concept of substantial equivalence should be re-examined and that an international scientific committee should be set up to decide on GM food safety.

* Government recommended Aventis' T25 maize to be placed on the National Seed List which would have made it commercially available.

* Government set up the Advisory Committee on Animal Feedstuffs (ACAF).

"The challenge for governments is to provide the highest level of protection for human health..."

Tony Blair, *Independent on Sunday*, Feb 2000

Verdict

Despite the Prime Minister's claims to be pro-health when it comes to GM foods, the Government has done very little to take a precautionary approach. No marketing consents have been refused or suspended. Commissioning more research and supporting an international scientific committee has been the extent of action taken.

Targets

The Government should make a commitment to ensuring the safety of GM foods by:

- Withdrawing the marketing consent for all GM foods until a thorough review of their safety has been undertaken.
- Ending the use of substantial equivalence as the principle underlying GM food safety testing.
- Banning the use of antibiotic resistance gene sequences in GM crops and foods.
- Introducing a robust monitoring scheme to determine the short and long-term effects of eating GM foods.
- Introducing safety regulations which cover feeding GM material to animals.
- Assessing secondary effects, such as the impact of metabolites and herbicide residues present in GM plants, on the chemical composition of the GM crop plant as well as on human and animal health when ingested.

3 Preventing genetic pollution and harm to the environment

Genetically modified crops have a unique capacity to contaminate the environment because of their ability to self-replicate. The long-term consequences of GM materials escaping into the environment by cross pollination and horizontal gene transfer are difficult to predict. Far greater understanding of the processes involved is needed before large-scale environmental releases of GM crops are allowed.

This section examines some of the problems involved in releasing novel genes into the environment and the Government's action on this issue.

The Problems

Cross-pollination between GM and non-GM crops

* All genetically modified crops will produce pollen unless physically prevented from doing so.

* Novel genes will be transferred through cross-pollination with plants of the same species or close relatives.

* Pollen is able to travel long distances.
GM pollen has been detected in the air at distances up to 475m and honey bees can fly up to 4.5km to collect pollen.

Horizontal gene transfer

* GM genes also have the potential to transfer horizontally i.e. by means other than sexual reproduction, to bacteria in soils and the guts of insects or animals.

Continued and potential increased use of herbicides

* 71% of GM crops under commercial development are engineered to be resistant to broad spectrum herbicides, such as glyphosate and glufosinate.

* The change in herbicide regime from specific to broad-spectrum use will threaten biodiversity by decreasing plant diversity and destroying habitat and food sources for wildlife, as well as damaging soil.

Impact of pest resistant crops

* The second major application of GM technology under commercial development is the insertion of the gene for Bt toxin in order to give crops, particularly cotton and maize, in-built insecticide properties.

* Over time, insect pests may develop resistance to GM crops expressing Bt toxins, rendering the crop, and use of Bt insecticide in organic regimes, useless.

* Bt toxins can leach into soil from GM crops – the effect of which on soil organisms has not yet been established.

* Beneficial insects may be harmed as the insecticide passes through the food chain.

The Government's Record

* Government has initiated a four year programme of farm scale trials to assess aspects of the environmental impact of GM crops. However these will not look at look at effects on soil microbes and earthworms.

* Government agreed to the SCIMAC guidelines despite widespread concern that they are inadequate.

* Government mounted the first successful prosecution of companies failing to operate the minimum protection against genetic pollution.

* Government carried out a consultation process into separation distances. However the action taken as a result of the consultation process is still inadequate and has not been placed on a statutory footing.

* Government failed to regulate the import of GM seeds. Current inspections of imported seeds are inadequate to guarantee GM-free seed.

"...there is no doubt that there is potential for harm in the diversity of our environment."

Tony Blair, *Independent on Sunday,* February 2000

Verdict

Despite continually stressing the importance of protecting the environment, the government has played down the significance of genetic pollution and defended its position by hiding behind the advice of the Advisory Committee on Releases into the Environment (ACRE) and their agreement with SCIMAC. Although the farm scale trial programme is an attempt to address concerns raised by environmental organisations, it will fail to provide many of the answers necessary for a full environmental impact assessment. The continued release of GMOs into the environment without essential baseline knowledge is unacceptable.

Targets

The Government should show a commitment to protecting the environment by:

- Suspending the current farm scale trials.
- Carrying out research only in contained conditions until there is an agreement on the need for GM crops. Only when all essential research has been carried out can the move to farm scale trials be made.
- Carrying out baseline studies prior to any further GM research.
- Carrying out a complete review of research needs and take action on the results.
- Increasing research on horizontal gene transfer.
- Examining the impact of changed patterns of pesticide use implied by GM crops.
- Increasing the separation distances between GM trial sites to prevent gene flow to wild relatives.
- Implementing the precautionary principle in relation to GM crops.

4 Right to choose products free of genetic modification

The Labour Government's belief in the 'right to choose' is reflected in many areas of public policy. In public statements it has consistently championed the right of the individual to choose whether or not to eat GM foods, yet has not addressed the issue that this choice may be removed as a result of contamination were GM crops to be commercially grown in the UK. Opinion polls indicate that the majority of the public wish to avoid GM foods. Exercising choice can be based on differing concerns such as health, environment, price, fair trade, animal welfare, ethics, religion and taste. All need to be respected and regarded as equally valid.

The Problems

Labelling

* According to current EU regulations any foods containing 1% or less GM material – currently only soya and maize – as a consequence of unintentional 'adventitious' contamination do not have to be labelled as containing GM material.

* The public have the right to know the method of production used in food products.

* If a product is derived from a GM source but no protein is present, as is the case in derivatives such as oils or lecithin, then it does not need to be labelled.

* GM animal feed does not have to be labelled as containing GM material, and nor does produce from animals reared on GM feed. Many consumers therefore indirectly consume GM material without realising it.

* The US is threatening to invoke World Trade Organisation powers, signalling a potential trade war with the EU, by claiming that labelling GM products is unfair discrimination against US goods.

Segregation, traceability and importation

* There is still no legal requirement that GM material entering the UK is either segregated or traceable. Without segregation there can be no consumer choice and without traceability adverse effects can not be traced back to the suspect crop.

Seed purity

* EU regulations allow seeds to be up to 0.5% contaminated before having to be labelled as containing GMOs. This removes the right of farmers to grow GM free crops.

Cross pollination

* If GM crops are grown in the open environment cross pollination/contamination of non-GM crops is inevitable. There is good evidence that pollen from genetically modified crops can be transported over considerable distances by wind and insects and cause contamination.

Separation distances

* The National Pollen Research Unit found that viable pollen can travel at least 3 – 6 km depending on the crop type, weather conditions and pollinators. However the UK Government has allowed the industry itself to set separation distances, resulting in a recommendation of between 50 – 600m as 'adequate' separation distances.

Organic foods

* More and more consumers are choosing to purchase organic products, many in order to avoid GM.

* Organic standards require zero tolerance contamination, which will be compromised by growing GM crops in the UK.

The Government's Record

* Although the Government has supported labelling regimes for GM produce it nevertheless allowed 1% thresholds to be introduced despite consumer desire to label at the lowest level of detection, 0.1%.

* Government has allowed separation distances that favour industry rather than protect consumer choice.

* Government has allowed GM materials into the country on the basis of paperwork rather than introducing independent verification through Identity Preservation systems and monitoring.

"It is false to pretend that there is any distance which is going to prevent some contamination. The question is how we can absolutely minimise that to a level which is acceptable to those buying the product, because it is they who buy the product who will have to determine what degree of GM in a non-GM food is acceptable to them."

Michael Meacher, Commons Question time, 13 June, 2000

Verdict

Despite claiming to be in favour of consumer choice, the Government has failed to ensure either choice or consumer protection. Currently there is no way to trace potentially hazardous GM ingredients back to their source, and the right of the consumer to eat a GM-free diet is hampered by high thresholds for contamination, weak labelling, poor enforcement standards, inadequate crop separation regulations and seed purity controls.

Targets

To guarantee consumers the right to choose not to eat GM foods or foods derived from a GM source, the government should:

- Agree to label all food based on the origin and method of production, including animal products produced using GM animal feed.
- Guarantee in law and enforce, the segregation, labelling and traceability of all GM imports and domestic products.
- Re-negotiate EU labelling regulations to set thresholds at the limit of detection (0.1%).
- Support the position that EU regulations should not allow for any contamination.
- Carry out an assessment of the compatibility of GM agricultural systems with non-GM or organic systems and the subsequent capacity to deliver consumer choice.

5 Public involvement, openness and transparency in the decision making process

Research has consistently revealed that members of the public feel they have no influence on the trajectory of GM technology and that GM foods have been imposed on them.

The Five Year Freeze campaign is calling for meaningful public involvement in the decisions about how, why and whether GM crops and foods are used in the UK and for the decision making processes to be open and transparent. The Government has made statements that it is committed to 'Open Government' and to taking public opinion into account in decisions about risk.

The Problems

Lack of public consultation

Testing GM crops

* Although the public is informed when trials are to take place in their locality and comments are invited, there is no statutory requirement for consultation, and comments are disregarded unless they are 'scientific'.

* Notice is only given in local newspapers, and as little as five days' notice may be given before planting, as was the case for the majority of farm scale trials in 2000.

* There is no requirement to consult neighbouring farmers or beekeepers.

* Local authorities or parish councils have no influence over the process.

* When crops have been granted commercial approval there is no register of where they are grown nor is there a requirement for local consultation.

Commercialisation

* There is no formal requirement in UK law for public consultation on the granting of consents to market GM crops in the UK, nor on consents for use in foods.

* Comments may be sent to the Government departments involved but there is no process for informing the public or any interested parties about pending decisions.

* Under seed listing regulations (applying to all seeds, not only GM) there is an opportunity to have a public hearing but this costs an individual £90, and a written objection costs £30.

* All procedures associated with the use of herbicides, relevant in the case of herbicide tolerant GM crops, are secret until after the decision has been made.

Scientific advisory committees

* The Advisory Committee on Releases to the Environment (ACRE). In 1999, ACRE was reconstituted to remove members with direct links to the biotechnology industry and to widen the expertise on the committee. However, there is no public interest group representative or lay person on ACRE, and it has had no open meetings. Minutes of meetings are now made available.

* The Advisory Committee on Novel Foods and Processes (ACNFP). The ACNFP has no members with direct links to the biotechnology industry and has one lay consumer representative and an ethicist. However, the nominee for a consumer representative in 1999 from the Consumers Association and others was not accepted.

Setting the public research agenda

* The most important public research bodies in this area are the Biotechnology and Biological Sciences Research Council (BBSRC), the Natural Environment Research Council (NERC) and the Medical Research Council (MRC). Government departments such as DEFRA, and the Food Standards Agency, also conduct research.

* The BBSRC had a Strategy Board with 15 members in 1999/00. Of these, 5 came from industry and the rest were scientists holding research posts. No lay or public interest group representatives are included in this or the other 11 BBSRC committees.

* The MRC does not have any lay members on its boards, which are made up of industry representatives and scientists. It does have an active public engagement programme and a Consumer Liaison Group.

* The NERC has no lay or public interest group representation, although industry and 'user groups' are represented. NERC has no apparent interest in any contribution from the public to its research programme.

The Government's Record

* The Agriculture and Environment Biotechnology Commission (AEBC) was created in 2000, to address wider concerns over GM crops and to give strategic advice to the Government about the development of biotechnology. The AEBC has wide representation, however it has no formal role and its advice may be disregarded by Ministers. By August 2001 no reports from the AEBC had been published.

* The Department of Trade and Industry recognised that lack of public trust was a problem and this contributed to the setting up of the AEBC.

* The ACNFP has held some open meetings of its sub-committee considering monitoring health effects, and minutes of meetings are available.

* The public register of sites of releases of GM crops is now on-line, improving access to information.

* Public meetings were held by the, then, Department of the Environment outlining the farm scale trials but these offered information rather than consultation.

* No approval for a test site has been revoked despite public protests.

* Although EU rules allow for public consultation to be included in UK law the government has taken no steps to do this.

* Industry bias has been reduced on advisory committees and openness has increased.

Verdict

There has been a gradual recognition that there has to be greater public involvement in decision making. However, this has yet to translate into any real impact on the policy process or outcome.

Targets

The government must reinforce public consultation, openness and transparency by:

- Carrying out a programme of gathering public opinion on whether there is a need for GM and developing methods to evaluate this against other options.
- Introducing statutory consultations on individual GM trial sites and decisions on the commercialisation of new products.
- Increasing public representation on relevant advisory committees.
- Opening up the pesticide application process to public scrutiny and consultation.
- Holding meetings of ACRE and ACNFP in public.
- Introducing public representation on research council boards.
- Committing to implement the outcomes of consultation and participation processes.
- Publishing a detailed public register of all releases of GMOs into the environment – whether commercial or experimental.
- Publishing a public register of the monitoring of GM contaminants in the food chain.

6 Strict liability for harm caused by GM crops and food

Those who stand to profit from GM crops and food have been quick to point out the potential benefits but less keen to face up to the uncertainties inherent in the technology. Despite clear evidence that GM can cause economic harm through contamination of non-GM crops and honey, and the possibility of harm to humans, farm animals or the environment, there is currently no liability legislation in place in the EU or UK.

The Five Year Freeze campaign is calling for such legislation to be implemented before GM crops and food can be considered for release into the environment or into the food chain.

This section examines the Government's position and action on this crucial issue for farmers, food and feed manufacturers, food retailers, consumers and the environment.

The Problems

* There is no proof that GM food or crops will not cause long-term harm to the environment, or human or animal health.

* GM contamination, unlike other forms of pollution, is self-replicating.

* Cross pollination between GM and non-GM crops is possible over considerable distances.

* Honey has been found to contain GM pollen.

* Insurance companies will not insure farmers against cross pollination.

* The Biosafety Protocol requires that liability issues be negotiated but this will take several years.

* EU law requires that 'the polluter should pay'. However, the EU's Product Liability Directive does not place strict liability on companies responsible for bringing products to the market.

* The draft EU Environmental Liability Directive does not recognise the unique nature of GM pollution and is too limited in scope to cover all possible harm.

The Government's Record

* The Government has failed to take a principled stance on GM liability despite firm evidence of the need for clear and unequivocal legislation, e.g. the GM contamination of Advanta Seeds UK's spring oilseed rape seed in May 2000.

* Government failed to support the GM Food and Producer Liability Bill when it was presented to the House of Commons in 1999 and 2000 by Alan Simpson MP.

* Government failed to insist that strict liability was included in the revision of the GMO Deliberate Release Directive (90/220/EEC) during 2000 and it was dropped from the final draft.

* Instead the UK accepted the EC proposal for a cross-cutting environmental liability provision which could take 'three to five years before it is made law'.

* Environment Minister Michael Meacher has admitted that the only legal recourse for injured parties in the UK is the common law, based on Victorian case law of Rylance and Fletcher, whilst also admitting that the issue was 'acutely pressing in this country.

Verdict

The Government has recognised the need to address GM liability but has missed several opportunities to do so and instead has put its support behind the weak Environmental Liability Directive proposals from the EC.

Targets

The Government should:

- Suspend all marketing and release consents and refuse future proposals until effective and strict liability legislation is in place.
- Introduce liability legislation in the UK to cover the period before EU legislation is in place to protect citizens, the environment and non-GM farmers.
- Ensure that the EU Environmental Liability Directive will include strict liability for all harm that may be caused by the release of GMOs.
- Ensure that liability legislation is quickly and clearly implemented as required under the Cartagena Protocol.

"The issue of environmental liability is an important one and the principle that those who damage the environment should pay for remedying the damage caused is one that I would strongly support."

Michael Meacher, written answers, Hansard, March 1999

7 Patents on genetic resources for food and farming

Patents on living organisms, their cells and genes, also known as "life patents", are now an issue of considerable and growing public concern in the UK. The extension of patents to living organisms is a critical issue of democracy, human rights and development which has never been properly debated in the UK. The Five Year Freeze campaign is calling for a moratorium on patents on genetic resources for food and farm crops, and the suspension of existing patents.

This section sets out the problems raised by patents on life and proposals for action.

The Problems

The impact of life patents

* Patents on living organisms and genes facilitate the development of GM by the biotechnology industry by providing commercial protection for their new technologies and products.

Life patents hinder the research agenda

Patents distort research in several ways, most notably by:

* Preventing the free and open exchange of information fundamental to good scientific research in the public interest.

* Promoting research in areas where patents are obtainable and likely to generate profits, rather than in areas where research is most needed.

* Making it more difficult to use new "inventions" for further development as permission needs to be obtained and royalties paid.

The impact of patents on Southern countries

* Patents on genetic resources restrict the rights of small farmers to save, exchange and sell protected varieties of seeds, thus weakening food security. Patents grant companies monopoly control so people's access and control over their resources is eroded.

* The World Trade Organisation through the Trade Related Aspects of Intellectual Property Rights (TRIPs) agreement makes it mandatory for all countries to provide patent protection for biotech processes and micro-organisms.

Biopiracy and the theft of knowledge

This is an international issue and the UK Government cannot act in isolation from the opinion of the rest of the world. There is serious concern in the South about:

* The impact of genetic engineering and patenting on food and agriculture on food security.

* Biopiracy – the appropriation of traditional knowledge and genetic resources for private profit through patenting.

The Government's Record

* The Government has consistently supported the EU Directive on the Protection of Biotechnological Inventions (98/44/EC) which explicitly allows patents on living organisms, their parts and genes, and the UK is one of only three EU member states to have implemented it.

* Apart from a one-day consultation which the Government was forced into by lobby pressure (July 97), there has been no Government effort to inform or consult with the public on patents.

* The UK Patent Office has no lay representation on any of its committees.

* Attempts at public consultation by the UK Patent Office have been ineffective – comments were only allowed on the drafting of the directive and not the substance.

* The UK Parliamentary Committee on Delegated Legislation debated the directive in July 2000 for a total of one hour and six minutes.

* In May 2001, after considerable lobbying from NGOs the Department for International Development established a Commission on the World Trade Organisation's Trade-Related Aspects of Intellectual Property Rights (TRIPs) agreement.

"The simple discovery that a gene sequence exists in nature, or of the information contained in such a sequence, will not be patentable as it is not if itself an invention."

Kim Howells, Third Standing Committee on Delegated Legislation, 20th July 2000

Verdict

The Government, despite setting up a Commission on Intellectual Property Rights, has not gone far enough in responding to public concerns about the granting of patents on life. Despite other EU member states, including France and Germany, expressing dissatisfaction with the Patent Directive, and the opposition of many Southern countries to patents on life, the Government has consistently supported and implemented it.

Targets

The Government should:

- Revoke the legislation to implement the EU Directive on the Protection of Biotechnological Inventions.
- Support the cancellation of the EU Directive.
- Re-examine and/or revoke all patents on food and farm crops granted to date by the UK Patent Office.
- Instruct the UK Patent Office to produce a plan by which to make itself more publicly accountable and to involve more public participation.
- Establish an Independent Commission for the Public Domain to examine all issues of importance in this area, including resources for food and farming.
- Undertake a full public debate on the implications of patents in food and agriculture.
- Carry out a full impact assessment of patents in food and farming including their effects on research and academic freedom in the UK.
- Present the results of these findings in international meetings.

8 The impact of GM crops on farmers

The first generation of GM crops, with herbicide tolerant or pest resistant traits, has focused primarily on increasing farm production, mainly in richer countries (though some are being developed for poorer countries). The biotechnology industry is heavily promoting their use to farmers on the basis of increased yields, reduced pesticide/herbicide use, and therefore increased profitability.

However, research into the performance of GM crops and the experience of farmers in the US and Canada, where GM crops have been grown for several years, is inconclusive. The Five Year Freeze campaign is calling for an independent assessment of the social and economic impact of genetically modified crops on farmers worldwide.

This section looks at the implications for farmers in the UK and other industrialised countries.

The Problems

Increased dependency

* Biotechnology firms have promoted GM crops with the concept of a 'technological package', selling both the GM technology/seed together with the crop protection product.

* A 'technological fee' paid by the seed companies is passed on to farmers, thereby increasing the cost of the seeds they buy.

* Farmers choosing to grow GM crops do so under contract to the biotechnology company which sold the product or package.

* The consolidation of the biotechnology industry with the tendency to both vertical and horizontal integration will lead to loss of choice in the purchase of seeds and associated products.

* The guidelines laid down by SCIMAC require increasingly complex management procedures, placing additional burdens on farmers.

Threat to conventional or organic farmers and beekeepers

* Organic farmers will face potential cross-pollination from GM crops in their vicinity, resulting in withdrawal of their certification and loss of livelihood.

* Farmers choosing to grow conventional crops will face similar threats to their financial viability.

* The businesses of beekeepers who keep bees in the vicinity of GM crops are also under threat. Bees travel long distances to fetch pollen and cannot distinguish GM crops from the conventional crops they visit.

Agronomic performance

* Results of studies of the performance of GM crops (largely from North America and Canada) have been highly variable with both higher and lower yields occurring. Such results make it impossible to determine at this point in time the potential profitability of GM crops for farmers.

* Farmers growing GM crops have experienced problems such as crop losses in high temperatures and failure of crops to grow properly.

* The biotechnology industry claims that the clearest benefit of herbicide tolerant crops is ease of weed control. However, resistance to herbicide is increasing rapidly in weeds and new types of weed problems are emerging, such as:

  - Gene transfer from the GM crops to related weed species making them herbicide tolerant

  - Volunteer weeds and crops resistant to more than one herbicide would be difficult and costly to manage.

Loss of markets

* Consumers both in the UK and internationally are increasingly rejecting GM foods, and products from animals reared on GM feed, shrinking the market for those farmers who choose to grow GM seeds.

Liability

* The lack of any liability regime at EU or national level exposes farmers to claims from neighbouring farmers and fails to protect non-GM farmers.

* Farmers are unable to take out insurance against such claims, as companies – including the NFU Mutual – are refusing to insure against the potential risks from growing GM crops.

Loss of land value

* There are indications throughout Europe that the value of land contaminated with GM would be reduced and the presence of GM crops would make the land harder to sell.

The Government's Record

* Government has under-funded research into alternative approaches. In 2000 only £2.1 million was spent on organic research compared with £4.4 million spent on the GM farm scale trials alone.

"I want to make it absolutely clear that my Ministry and the DETR will be working with the farming community and representatives of organic farming to ensure that the expansion of organic farming is not compromised by the introduction of genetically modified crops."

Jeff Rooker, 30th July 1998

Verdict

At a time when the future of UK agriculture is at stake the Government has consistently supported the biotechnology industry and those farmers participating in GM trials over the interests of organic or non-GM farmers. Very little independent research has been carried out into the economic effects of growing GM crops for UK farmers.

Targets

To protect the interests of UK farmers the government must:

- Include GM agriculture in any review of the future of farming in the UK.
- Introduce statutory requirements to consult with and obtain consent from neighbouring farmers and beekeepers within a 6km radius of growing GM crops.
- Introduce adequate statutory separation distances to prevent cross-pollination.
- Abandon the SCIMAC code of practice and replace it with statutory controls.
- Carry out a review of the impact of the biotechnology industry on consolidation of the seed market and on agricultural biodiversity.
- Carry out a thorough independent assessment of the socio-economic impact on farmers and the agricultural industry of growing GM crops.

9 The global food supply

Genetically modified food and crops have been hailed by their advocates as the answer to the problem of feeding a growing world population. Currently nearly 800 million people do not have enough food to eat. The ability of GM crops to feed the world is an attractive and compelling claim. However, complex political, social and economic forces underlie the issue of global food security. Current applications of GM crops are unlikely to address them, and may well distract from providing real solutions.

The Five Year Freeze's call for a moratorium on growing, importing and patenting GM crops is now being echoed in many Southern countries as concern grows throughout the world.

The Problems

Poverty

* Hunger is inextricably linked with poverty – of the world's 6 billion people 2.8 billion live on less than $2 a day and 1.2 billion on less than one dollar. Lack of purchasing power means that any potential benefits of GM crops would be out of reach of the world's poor.

* The world's small farmers will similarly find the cost of GM seeds and other inputs unaffordable.

Unfair terms of trade

* Southern countries are encouraged to divert resources to the production of export crops to compete on the global market rather than feeding their hungry populations. But this is a false promise as markets in the North often remain closed to Southern products.

* There is suspicion that surplus GM crops are being dumped on Southern countries as Northern markets reject them. Flooding markets with cheap, subsidised imports depresses prices and can force local growers out of the market altogether.

* For farmers in Southern countries, export markets could be destroyed by the substitution of GM processes and products in the North, replacing the production of traditional products such as palm oil and vanilla.

Seed saving

* 1.4 billion people world-wide rely on saved seed. Monsanto's contract with farmers prohibits saving and storing of their GM seeds for use the following year.

* The development of Terminator and Traitor technologies inhibit the seed's ability to reproduce or require the addition of chemicals for the seeds to function, threatening the capacity to use saved seed and forcing farmers into buying expensive new seed or chemicals each season. Moreover, Terminator traits may spread into the environment.

Loss of biodiversity

* The continued growth of agriculture based on monocultures, which the use of GM encourages, will threaten the biodiversity of Southern countries, many of which are centres of origin for many of our staple food crops.

* The loss of plant species and cultivation of monocultures restricts the diversification of diets in Southern countries thus worsening the problems of malnutrition.

* Corporate consolidation of seed companies, the abandonment of varieties and the introduction of statutory seed lists, decreases the diversity of seed available to farmers.

Research into GM development does not address the needs of the hungry in poorer countries

* Research into the development of GM crops is driven largely by the commercial interests of Northern companies.

* The major GM crops currently grown – oilseed rape (canola), maize, soya and cotton are designed to support the food and textile industries in the North. Little research is carried out into the staple crops of Southern countries.

* Control of the research agenda by corporate funding means comparatively little research is being carried out into sustainable alternatives to industrial intensive agriculture.

* Costly research into functional applications, such as vitamin A enhanced rice, ignore more readily available and cheaper solutions which are known to be effective.

The Government's Record

* The Government has signed up to poverty reduction targets including a commitment to halve global poverty by 2015.

* The Government supported the introduction of the Cartagena Protocol which allows protection against the transboundary movements of GMOs.

* At the Seattle WTO trade talks Minister Michael Meacher rejected the regulation of GM under WTO rules arguing they should be dealt with under the Cartagena Protocol on Biosafety.

* Many NGOs are critical that the Department for International Development (DFID) funding in this area supports the development of GM over alternative, more sustainable approaches.

* DFID has commissioned two three year research projects on intellectual property rights, regulatory frameworks and participation in decision making on GM.

* ACRE has said that Terminator technology is a means to minimise genetic pollution, while ignoring the social and economic implications.

Verdict

The Government's support of the biotechnology industry over the interests of farmers worldwide has ignored the legitimate concerns being voiced by Southern countries.

Targets

Government should:

- Ban Terminator and Traitor technology and deny requests to field test other Genetic Use Restriction Technologies (GURTs) until comprehensive impact assessments have been conducted.
- Ratify the Cartagena Protocol on Biosafety.
- Support Southern countries in developing and implementating systems to regulate GM technology.
- Support the development of farmer-led research in Southern countries.
- Support public information and involvement in the need for and regulation of GM crops in Southern countries
- Carry out an independent assessment of the potential of GM crops to contribute to global food security measuring them against alternative solutions.
- Present these assessments at international meetings.

"The honest answer is that we do not need GM foods."

Michael Meacher, Commons debate, 15th June 1999

10 Genetically modified animals

The use of genetic modification in animals raises concern about their welfare and about environmental risks should they escape from confinement. No GM animals are yet sold for food consumption and their use, to date, is solely experimental.

The Five Year Freeze campaign is calling for animal welfare and environmental protection to be given top priority when decisions are being made about genetic modification of animals for use in food and farming. This includes food species such as cattle, sheep, pigs and fish and also the use of insects in the biological control of pests.

This section asks to what extent animal welfare and environmental protection are being addressed.

The Problems

Animal welfare

* The genetic modification of animals frequently involves suffering if there are unexpected outcomes or if animals are made to be models of disease for other animals. The production of GM animals often involves surgery on animals to obtain eggs, to implant GM embryos in surrogates and to perform caesarean sections.

* Cloning will be the preferred method for disseminating 'successful' GM farm animals. Cloning results in high rates of foetal abnormalities, excessive birth weights and perinatal mortality.

* The number of genetically modified animals used in experiments increased to 511,607 in 1999. Most of these involved mice but there were 3,052 procedures on GM pigs, 608 on GM sheep, 6 on GM chickens and 1,921 on GM fish.

Environmental protection

* If GM animals escape from captivity, they could either cause damage to natural species directly (if an insect escapes that is designed to kill another species) or may cross and transfer genes to wild related species (farmed salmon could escape and interbreed with wild salmon, for example).

* The coupling of genetic engineering with cloning may lead to significant loss of farm animal species diversity when many breeds are already at risk.

* The use of GM organisms in laboratories is regulated under the EU Contained Use Directive which was recently revised and implemented in UK law in 2000.

* Laboratories using GM animals have to be registered with the Health and Safety Executive but do not have to inform any authority if they undertake experiments with GM animals (or plants) which pose increased risks to the environment. It is only if the risk to human health increases that the HSE has to be informed.

* Experiments may be taking place in UK laboratories which could be environmentally damaging, with no external scrutiny.

The Government's Record

* The use of all animals in experiments has to be licensed by the Home Office which is advised by the Animals Procedures Committee.

* The Animal Procedures Committee is currently preparing a report on the animal welfare implications of genetic modification.

* The Agriculture and Environment Biotechnology Commission is also examining the issue of animal biotechnology.

* Whilst implementing new regulations on the contained use of GM animals and plants, the Government did not take the opportunity to close the loophole in the law which allows experiments that may harm the environment to take place without external scrutiny.

"...we recognise that animals are sentient beings – not merely commodities."

Department for Environment, Food and Rural Affairs website, 24th September 2001

Verdict

The Government's advisors have recognised the potential for animal welfare to be compromised as a result of genetic modification and, to a lesser extent, environmental concerns. However, no action has been taken to suspend activities until studies and assessments are completed.

Targets

The government should protect animal welfare and the environment by:

- Suspending the licensing of genetic modification experiments on animals for use in food and farming.
- Placing a moratorium on allowing GM animals or their products into the human food chain. (This should include a moratorium on the 'failure' animals which result from GM procedures.)
- Follow the advice of the Farm Animal Welfare Council by placing a moratorium on the use of cloning in agriculture until the problems of oversized offspring and wastage of life have been resolved. It should also introduce legislation to avoid the loss of genetic diversity or introduction of deleterious genes into the gene pool via genetic modification and cloning.

The supporters of the Five Year Freeze are:

In supporting the Five Year Freeze each member organisation is indicating its formal support in those areas where it has specific competence. Each also acknowledges the expertise of the other supporters of the Five Year Freeze in their respective fields in relation to the campaign. Each organisation supports the overall call for a Five Year Freeze.

The Five Year Freeze is also supported by over 45 local authorities and 200 wholefood shops, restaurants and other local businesses.

ActionAid
Action Against Allergy
Additives Survivors' Network
Agricultural Christian Fellowship
Baby Milk Action
Bakers, Food and Allied Workers Union
Biodynamic Agricultural Association
Black Environmental Network
Body Shop International Plc
British Allergy Foundation
British Association of Fair Trade Shops
British Association of Nature Conservation
British Naturopathic Association
Caduceus
Catholic Institute of International Relations
Centre for Alternative Technology
Chartered Institute of Environmental Health
Christian Aid
Christian Ecology Link
Communities Against Toxics
Compassion In World Farming
Council for the Protection of Rural England
Culpepers
Ecologist
Ecology Building Society
Elm Farm Research Centre
Ethical Consumer
Econexus
Farm-A-Round Ltd
Farming and Livestock Concern
Federation of City Farms and Community Gardens
Find Your Feet
Food Commission
Food for Health Network
Food Poverty Network
Forum for the Future
Fresh Food Company
Freshlands UK
Friends of the Earth
Friends of the Earth Scotland
Gaia Foundation
Gardeners GMO Group
GE Free Forests
Genetic Food Alert
Genetics Forum
Genetix Snowball
GeneWatch UK
GMO Campaign
Good Gardeners Association
Green & Blacks
Green Books
Green Network
Green Party
Greenpeace
Guild of Fine Food Retailers
Guild of Food Writers
Harvest Help
HDRA: the organic association
Health Food Manufacturer's Association
HIPPO
Hyperactive Children's Support Group
Iceland Foods
Institute for Science in Society
Intermediate Technology Development Group
International Society for Ecology and Culture
Islamic Concern
Islamic Foundation for Ecology and Environmental Sciences
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New Economics Foundation
New Internationalist
Noah Project
Organic Farm Foods Wales
Organic Gardening
Organic Shop
Organics Direct
Oxfam
People & Planet
Permaculture Association UK
Permaculture Magazine
Permanent Publications
Pesticides Action Network UK
Plamil Food
Planet Organic
Positive News
Pret A Manger
Resurgence
Scientists for Global Responsibility
Scottish Consumers Association for Natural Food
Small Farms Association
Soil Association
Student Environment Network
TGWU
The Harbour
Townswomen's Guilds
Traidcraft Plc
Triodos Bank
Unison
Vegan Society
Vegetarian Society
Vetwork UK
Vinceremos Wines & Spirits Ltd
Whole Earth Foods Ltd
Wholesome Food Association
Wildlife Trusts
Womankind Worldwide
Women's Environmental Network
Woodland Trust
World Development Movement
World Wide Fund for Nature