

What can we do?

We suggest the following actions you may wish to take:

- Ask your church, or local Churches Together, to host a debate on GM Crops and hear from both sides of the argument.
- Voice your opinion in any debate over growing GM crops in your own area.
- Support organisations which are calling for a precautionary approach to GM crops.
- Buy UK organic when you can. If the cost is high, buy a small amount regularly.
- Write to your MP (House of Commons, London SW1A 0AA). Demand that DfID consult small farmers in poor nations before

spending money developing GM crops for them. Demand proper liability and compensation legislation for GM contamination of food and crops.

- Over a million tonnes of GM soya for animal feed is entering the UK each year. If you eat meat, or dairy products, ask if the animals are being fed GM products.
- Grow organically in gardens, allotments and school grounds.
- Question why so few of the 358 farms on Church of England land are organic or in the process of being converted.
- Send your views on GM crops to CEL's Information Officer and we will pass them on to the appropriate people in your denomination. (CEL, 3 Bond Street, Lancaster LA1 3ER.)

Books

Luke Anderson, *Genetic Engineering, Food, and Our Environment: A Brief Guide*, Green Books, 1999.

Mae-Wan Ho, *Genetic Engineering: Dream or Nightmare? The Brave New World of Bad Science and Big Business*, Gateway Books, 1998.

Sean McDonagh, *Patenting Life? Stop! Is Corporate Greed forcing us to eat Genetically Engineered Food?*, Dominican Publications, 2003.

Helena Paul & Ricarda Steinbrecher, *Hungry Corporations: Transnational Companies Colonise the Food Chain*, Zed Books, 2003.

Andrew Simms, *Selling Suicide: Farming, False Promises and Genetic Engineering in Developing Countries*, Christian Aid, 1999.

Jeffrey M. Smith, *Seeds of Deception: Exposing Corporate and Government Lies About the Safety of Genetically Engineered Food*, Green Books, 2004.

Brian Tokar (ed.), *Redesigning Life? The Worldwide Challenge to Genetic Engineering*, Zed Books, 2001.

JOIN CHRISTIAN ECOLOGY LINK

Send £18 standard (low income £10) £28 joint/family/corporate, or a donation for church membership (recommended amount £25) to CEL, FREEPOST, SE 8672, 9 Nuthatch Drive, Earley, Reading RG6 5ZZ. Cheques payable to CEL. For more information contact CEL, 10 Beech Hall Road, London E4 9NX. Tel: 0845 459 8460. Email: info@christian-ecology.org.uk

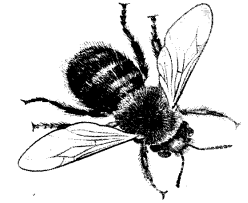
Send for copies of this leaflet to CEL Publications, 40 The Avenue, Roundhay, Leeds LS8 1JG. Please send a donation to cover cost of printing and postage, or at least an S.A.E.

You are welcome to photocopy it if you acknowledge CEL. May 2005/Jan 2010.

Registered Charity No. 328744. (www.christian-ecology.org.uk).



CHRISTIAN
ECOLOGY LINK



GM CROPS?

A Christian Response

Our approach to genetically modified (GM) crops is based on care for God's creation (Gen. 2.15), respect for the nature of God's creatures, and the 'precautionary principle'. The onus of proof is on the scientists and industrialists engaged in genetic engineering to show beyond reasonable doubt that their activities are not threatening to humans or wildlife. This approach is not anti-science.

The imminent threat of GM crops being grown in the UK has receded in the short term, as, although in 2004 the Government authorised the growing of GM maize, the industry has decided that it is not economically viable to do so. One problem is that it would be impossible to segregate GM crops from conventional and organic crops. Planting GM crops would affect other crops or wildlife in their vicinity and the effects could be permanent. Technological developments, intended to be beneficial, have often increased environmental threats. The introduction of GM crops might prove to have a similar outcome.

The leading aid agencies, such as Christian Aid, Oxfam and Action Aid, agree that GM crops will not solve world hunger. Indeed, there is a close association between the promotion of GM technology and the ambition of transnational corporations to control world trade thus undermining local growers and their markets. In short, the case for GM crops lacks credibility.

What are the risks?

- **We have to live with risk.** Few foods, however produced, are entirely risk-free. We have to balance the good to be gained against the risk of damage caused. Sometimes we get things wrong and suffer as a result.
- The sheer **scale and speed of the gene-transfer** by genetic engineering creates risks.
- Consuming GM food is unlikely to alter people's genes. However, what concerns many food and health scientists are possible **allergic reactions**; the use of **antibiotic resistance genes** that could transfer to gut bacteria and make them resistant to

'You can always intervene and change something in an ecosystem, but there's no way of knowing what all the downstream effects will be or how it might affect the environment. We have such a miserably poor understanding of how the organism develops from its DNA that I would be surprised if we don't get one rude shock after another.' Professor Richard Lewontin, Professor of Genetics, Harvard University.

antibiotics; and **viral promoter sequences** that could encourage viruses to multiply in humans.

- Any decision to introduce **GM technology is potentially irreversible.** Over-confidence in the ability to control a technological system can lead to dangerously insufficient safeguards. Total separation of GM and non-GM crops is impossible.
- **Cross pollination** has happened between GM crop plants and their wild relatives.
- The production of new organisms by transferring genes from other species, including from viruses and bacteria, can have **unpredictable effects** on crops to which they are transferred. Who will be liable if GM technology goes wrong?
- The **toxins** generated in some GM plants used to kill pests can also kill other creatures. Not enough is known of the effects of these toxins being ploughed or leached into the soil.
- Biotech companies have done very few **tests**, and these are too limited in scope. They have focused on how transferable are genes; what affects different species in different conditions; and what is toxic and to what groups of organisms. More independent research is needed.

ORGANISATIONS

All of these organisations can provide further information about GM food and farming.

Action Aid:

www.actionaid.org.uk
supporterservices@actionaid.org.uk
01460 - 238 000
FREEPOST BS4868, Chard,
Somerset, TA20 1BR.

CAFOD:

www.cafod.org.uk
cafod@cafod.org.uk
020 - 7733 7900
Romero Close, London SW9 9TY.

Christian Aid:

www.christianaid.org.uk
info@christian-aid.org
020 - 7620 4444
35 Lower Marsh, Waterloo,
London SE1 7RL.

Christian Ecology Link:

www.christian-ecology.org.uk
info@christian-ecology.org.uk
01524 - 33858
CEL Information Officer, 3 Bond Street,
Lancaster, LA1 3ER.

Corporate Watch:

www.corporatewatch.org.uk
mail@corporatewatch.org
01865 - 791 391
16b Cherwell Street, Oxford, OX4 1BG.

EcoNexus:

www.econexus.info
info@econexus.info
0845 - 456 932 or 01273 - 625 173
PO Box 3279, Brighton, East Sussex,
BN1 1TL.

Five Year Freeze:

www.fiveyearfreeze.org
enquiry@fiveyearfreeze.org
020 - 7837 0642
94 White Lion Street, London N1 9PF.

Friends of the Earth:

www.foe.co.uk/campaigns/real_food/
info@foe.co.uk
Freephone 0808 - 800 1111
26-28 Underwood Street,
London N1 7JQ.

Gene Watch UK:

www.genewatch.org
mail@genewatch.org
01298 - 871 898
The Mill House, Manchester Road,
Tideswell, Buxton, Derbyshire, SK17 8LN.

Genetic Engineering Network:

www.geneticsaction.org.uk
info@geneticsaction.org.uk
0845 - 456 9329 or 01723 - 37 55 33
c/o TOGG, PO Box 77, Totnes,
Devon, TQ9 5ZJ.

GM Watch:

www.gmwatch.org
ngin@gmwatch.org
01603 - 624 021
c/o 26 Pottergate, Norwich, NR2 1DX.

Greenpeace UK:

www.greenpeace.org.uk
info@uk.greenpeace.org
020 - 7865 8100
Canonbury Villas, London N1 2PN.

Institute of Science In Society:

www.i-sis.org.uk
sam@i-sis.org.uk
020 - 7272 5636
PO Box 32097, London NW1 0XR.

Primal Seeds:

www.primalseeds.org
mail@primalseeds.org

Soil Association:

www.soilassociation.org
info@soilassociation.org
0117 - 314 5000
Bristol House, 40-56 Victoria Street,
Bristol, BS1 6BY.

What are the churches saying about GM crops?

The **Church of England's** Ethical Investment Advisory Group published a report on 'Genetically Modified Organisms' in April 2000. This concluded that genetic modification is 'not beyond the range of acceptable human activities' but that a precautionary approach should be adopted. They advised that it was not yet appropriate to grant tenancies for crop trials on church land. The report highlighted the 'possibility of irreversible damage to natural life-support functions' and the 'principle of the good neighbour'.

The **Methodist Church** produced 'Making Our Genes Fit', a study guide on genetics, in Autumn 1999. They acknowledged that 'the speed of developments is frightening and it would be easy to react negatively seeking to ban research and withdraw funding from tests and development. However this would shun our responsibility for making moral decisions in a changing world.'

A working group from the **United Reformed Church** met and recommended use of the Methodist pack.

The **General Assembly of the Church of Scotland** stated in 1998 that 'Living organisms and genetic material of human origin are in themselves unpatentable as parts of God's creation'. A Report to the 2002 General Assembly supported integrated systems of agriculture which use GM crops to target specific

nutritional, health or environmental improvements.

The **Roman Catholic Church** has as yet issued no official statement. However, the Vatican's Pontifical Academy for Life has argued that, while it is wrong to change the human genetic code, modifying the genes of animals and plants for a proportionate reason may be theologically acceptable. The Catholic Institute for International Relations oppose GM (see their leaflet 'What's wrong with GM?') as do the Bishops' Conferences of South Africa, Philippines and Canada.

The **Baptist Union** has issued an environmental statement which does not mention GM crops.

The **Evangelical Alliance** did not agree with outright opposition to farm scale GM trials but they do advocate caution in evaluating the impact of particular trials. They produced a Policy Commission Report on GM technology: Donald Bruce & Don Horrocks (eds.) *Modifying Creation: GM Crops and Foods: A Christian Perspective*, Paternoster Press, 2001.

CEL Briefing Paper on GM Crops

This briefing paper goes into the subject in more detail and is available from CEL's Information Officer. It is also on the CEL website.

www.christian-ecology.org.uk

'Genetically engineered crops made resistant to weedkillers will be sprayed so that all other plants are killed. No plants, no insects, no birds. Genetically engineered crops could turn our agricultural land into a biological desert.' Simon Lyster, Director General, Wildlife Trusts.

- Where crops are genetically modified to resist insect attack, there is an increased probability that **insect populations may acquire resistance**, leading to the use of more powerful toxins to control them.
- Reduced diversity of crop varieties and more weed-free fields may cause further severe **decline in farmland birds**. The RSPB reached this conclusion on the basis of the Farm Scale Evaluations.
- GM crops are part of a more fundamental problem: **intensive agriculture** is unsustainable. Already biodiversity is shrinking.

- It is claimed that genetic modification could increase the range of locations, altitudes and soil types for crop production. This, in turn, would lead to the **destruction of currently uncultivated areas** that are important for wildlife.
- Worldwide, **GM tree trials** are rapidly multiplying, often without proper controls. GM trees are long-living, increasing the likelihood of genetic pollution and the risk of harmful impacts on forest ecosystems. Pine pollen can travel up to 600 kilometres!
- Most environmental organisations and many independent scientists are alarmed by the prospect of GM farming.

'Once the GM genie is out of the bottle there is no going back. This technology must only be used if we are confident that it will not have a negative impact on forests and the wildlife and people they support.' Francis Sullivan, WWF's Director of Programmes.

We all have genes, but what is genetic engineering?

A gene is a unit of hereditary information: its function appears to be to instruct a cell to make specific proteins such as insulin, blood-clotting factors and some hormones. Every cell of every organism—be it a salmon, beetle, tree or human being—has a full set of instructions on how to 'build' the cell and how to function as part of the whole organism. All this information (that is, all an organism's genes) is stored in a chemical called DNA (deoxyribonucleic acid) which consists of long helical molecules.

Orthodox genetic understanding holds that a gene—a section of DNA—is a distinct and independent unit which can be isolated from the DNA molecule, characterised as to its function and moved to the DNA molecules of other organisms while still carrying out its function.

Genetic engineering differs fundamentally from traditional plant breeding. Genetic engineering aims to transfer only specific genes between very different groups of species. All the

thousands of genes transferred by traditional breeding are already part of the gene pool of the species (or closely related species). Genetic engineering can transfer genetic material from an insect to a plant, or from a pig to a fish, or from a human being to bacteria.

In order to insert the gene with the desired trait into the organism, an *insertion package* is used which contains: *carrier genes*, taken from viruses and bacteria; *marker genes* to test if the insertion has been successful, *promoter genes* to stimulate the trait gene, and *barrier penetration* genes to promote penetration of the species barrier.

In theory, the receiving species will exhibit the characteristic of an entirely different species which the transgene encodes. In practice, however, it has been found that, far from remaining constant, a gene may behave differently according to its environment, its location on the chromosome and the presence of other genes. A gene for one characteristic in one species can give rise to a different characteristic in another species. The transfer can yield unpredictable and unstable characteristics.

A Christian and ethical response to GM crops.

• **Intrinsic value.** We challenge the utilitarian assumption that the only worthwhile living species are those which can be used by humans and that other flora and fauna are

expendable. Other species have intrinsic value and are not *merely* collections of genes and chemicals or resources for human use (Gen. 1.24-25).

- **Human 'dominion'.** Humans have responsibility for a 'garden' Earth which belongs to God. We have a duty of care for our fellow creatures which includes showing respect for the distinct nature of each. The commission to till and keep the garden is often given too managerial, manipulative a spin (Gen. 2.15).
- **Reficence.** Humans are clever but wisdom is found in respect for God's constraints (Job 28).
- **Getting the balance right.** The potential benefits of GM crops should not be ignored, but they need to be weighed very carefully against the risks. Before deciding whether to accept GM technology, we need objective scientific evidence from **independent** institutions, concerned only for public and environmental interest, to show how GM crops and food are different and yet at least as safe as those produced by other farming methods—both for those who eat them and for the countryside in which they are grown.
- Some church spokespeople seem inclined to place **too much trust in the GM industry** and technology, ignoring the serious questions that are increasingly being raised about the likely consequences of badly controlled releases into the environment.
- **Patenting living organisms** claims ownership of what was considered 'common property' and not owned by anyone. Biotech companies

currently have power and assert 'ownership' over certain living organisms, without accepting responsibility for them or for their effect upon the environment.

- **Christian social teaching** encourages a preferential option for the poor. Christian Aid, Cafod and the CIIR are among development agencies questioning GM crops. Far from ending starvation, applying GM technology could place too much power over food into too few hands and leave the poor more vulnerable. Fair distribution of food and land would have more effect.
- **World development.** GM foods are inextricably linked to what many believe to be an unsustainable global economic system and will encourage the further industrialisation of agriculture.
- **Christian ethical concerns** include environmental sustainability and dietary choice as well as the relief of poverty. People who take a principled precautionary stance against GM technology are entitled to products wholly free from GM ingredients.
- **The Christian 'good neighbour' principle** requires an evaluation of the potential indirect long-term effects of GM crops on the health, environment and society of others.
- **Justice.** Organic farmers will suffer injustice when they are no longer able to market their produce as organic because it is contaminated by nearby farms growing GM crops.