

PRESS MEDIA PACK

Embargoed until 15th July 2013

GENETICALLY MODIFIED (GM) FOODS: CLAIMS AND COUNTER-CLAIMS

This media pack is divided into three sections, each concerning claims and counter-claims that may of use by the press:

- The role of GM crops in tackling world hunger
- Potential human health effects of GM crops
- Potential environmental effects of GM crops.

This pack is intended to provide evidence that may be used in press articles to demonstrate the lack of consensus on many of the key issues facing increased adoption of GM crops — and the consequent need for a public debate on the subject.

THE ROLE OF GM CROPS IN TACKLING WORLD HUNGER

Pro-GM claims

"The case for genetically modified (GM) food is getting stronger because of its importance as a tool to feed a growing global population, according to the Government's new chief scientific advisor [Mark Walport]"

The Independent, April 2013

<http://www.independent.co.uk/news/science/genetically-modified-crops-needed-to-feed-the-world-says-governments-chief-scientific-advisor-mark-walport-8578952.html>

and

"Biotechnology must be viewed as one of the critical tools for providing food security for the poor"

From *"Common Position Statement on Biotechnology"*, adopted in 1998 with the facilitation of the Genetic Resources Policy Committee (GRPC) of the CGIAR (CGIAR System-wide Genetic Resources Programme [SGRP], 2008)

<http://www.agbioforum.org/v12n1/v12n1a07-okusu.htm>

"Promoting natural and sustainable healthcare through the use of good science and good law"

Counter argument 1

"In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability"

Executive Summary of the Synthesis Report, International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), 2009

http://www.unep.org/dewa/agassessment/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads_Executive%20Summary%20of%20the%20Synthesis%20Report%20%28English%29.pdf

Counter argument 2

"Evidence presented in this report indicates that GM crops...cannot solve the problem of world hunger but distract from its real causes – poverty, lack of access to food and, increasingly, lack of access to land to grow it on"

Genetic engineers Michael Antoniou PhD, of King's College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Counter argument 3

"Conventional plant breeding —for example, in the production of hybrid maize and rice —has contributed a great deal to food security over the past 150 years. It still has much to offer and will remain a mainstay of breeding for the foreseeable future"

"Farmers throughout the developing world are already adapting to climate change"

"There is concern that the technology [GM] has been captured by large, multinational corporations and is consequently exploitive"

"Biotechnology is not a magic bullet..."

Gordon Conway, author of "One Billion Hungry Can We Feed the World?" Cornell University Press ISBN 978-0-8014-7802-4

<http://www.canwefeedtheworld.org/>

Counter argument 4

"They [Jules Pretty et al] found that such interventions [286 (non-GM), sustainable agroecological projects] increased productivity on 12.6 millions [sic] farms (in developing countries), with an average crop increase of 79 per cent"

Evidence from De Schutter's: *Agroecology and the Right to Food*

<http://www2.ohchr.org/english/issues/food/docs/A-HRC-16-49.pdf>

Counter argument 5

"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"

Steve Smith, head of GM company Novartis Seeds UK (now Syngenta), public meeting on proposed local GM farm scale trial, Tittleshall, Norfolk, UK, 29 March 2000

<http://earthopensource.org/index.php/7-feeding-the-world/7-1-myth-gm-crops-are-needed-to-feed-the-world-s-growing-population#sthash.VLsYlk4z.dpuf>

Counter argument 6

"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. We do not believe that such companies or gene technologies will help our farmers to produce the food that is needed in the 21st century. On the contrary, we think it will destroy the diversity, the local knowledge and the sustainable agricultural systems that our farmers have developed for millennia, and that it will thus undermine our capacity to feed ourselves."

Statement signed by 24 delegates from 18 African countries to the United Nations Food and Agricultural Organization, 1998 <http://earthopensource.org/index.php/7-feeding-the-world/7-1-myth-gm-crops-are-needed-to-feed-the-world-s-growing-population#sthash.VLsYlk4z.dpuf>

POTENTIAL HUMAN HEALTH EFFECTS OF GM CROPS

Pro-GM claim

"Food derived from authorized genetically-modified (GM) crops is as safe as conventional (non-GM-derived) food"

Monsanto website

<http://www.monsanto.com/newsviews/Pages/food-safety.aspx>

Counter argument 1

"In 2009, the American Academy of Environmental Medicine (AAEM) stated that, "Several animal studies indicate serious health risks associated with genetically modified (GM) food," including infertility, immune problems, accelerated aging, faulty insulin regulation, and changes in major organs and the gastrointestinal system. The AAEM has asked physicians to advise all patients to avoid GM foods"

From Genetic Roulette: The Documented Health Risk of Genetically Engineered Foods, by Jeffrey M. Smith. © Copyright 2010. Institute for Responsible Technology.

<http://www.responsibletechnology.org/health-risks#2>

Counter argument 2

"In one of the trial designs the number of litters and of offspring in continuous breeding of the GMO feed group [GMO corn NK603 X MON810] decreased more than in the control group. According to Prof. Jürgen Zentek, a validation of these preliminary results by further studies is urgently necessary"

Press release accompanying a study by Professor Jürgen Zentek (Veterinary University of Vienna, Austria), commissioned by the Austrian Federal Ministry of Health, Family and Youth Affairs, and presented in 2008 during an expert conference to AGES, the Austrian Agency for Health and Food Safety

http://www.organicconsumers.org/articles/article_15588.cfm

Counter argument 3

"MON810 maize induced alterations in the percentage of [immune component] subpopulations of weaning and old mice fed for 30 or 90 days, respectively, at the gut and peripheral sites. These results suggest the importance of the gut and peripheral immune response to GM crop ingestion as well as the age of the consumer in the GMO safety evaluation"

Italian government study by Alberto Finamore et al, Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione, Rome, Italy

<http://pubs.acs.org/doi/abs/10.1021/jf802059w?prevSearch=Finamore&searchHistoryKey>

Pro-GM claim

"Biotech crops undergo more testing and oversight before commercialization than any other agricultural products"

Monsanto website

<http://www.monsanto.com/newsviews/Pages/biotech-safety-gmo-advantages.aspx>

Counter argument:

"There are no independent scientific studies published in any reputed scientific journal in the world...the GMO companies forbid such tests!"

Scientific American editorial August 2009

<http://www.globalresearch.ca/gmo-scandal-the-long-term-effects-of-genetically-modified-food-on-humans/14570>

Pro-GM claim

"I am convinced that the EU has the most robust and comprehensive safety system for GMOs in the world...we have access to independent scientists in the European Food Safety Authority"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument:

"[EFSA] failed to fulfil the procedural obligations emanating from the applicable rules," and did not, "Acknowledge its failure to observe the relevant procedural rules and to carry out a sufficiently thorough assessment of the potential conflict of interests (...)." Furthermore, "EFSA unduly restricted the scope of what might amount to a possible conflict of interest (...)."

EU Ombudsman May 2013

<http://www.testbiotech.org/en/node/803>

Pro-GM claim

"The use of such products [GM feed used in the production of eggs and poultry] in no way constitutes a food safety issue"

The Rt Hon Owen Patterson

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument:

"Results showed that small DNA fragments can be detected in milk but also in kids organs when mothers are fed GM soybean"

Tudisco R *et al.* Fate of transgenic DNA and evaluation of metabolic effects in goats fed genetically modified soybean and in their offsprings. *Animal* 2010;4(10):1662-1671.

http://stopogm.net/webfm_send/278

Pro-GM claim

"There is no substantiated case of any adverse impact on human health, animal health or environmental health"

European Commission's Chief Scientist Professor Anne Glover

<http://www.euractiv.com/innovation-enterprise/commission-science-supremo-endor-news-514072>

Counter argument:

"GMOs have been linked to toxic and allergic reactions in humans, sick, sterile, and dead livestock, and damage to virtually every organ studied in lab animals. GMOs are unsafe"

The Institute for Responsible Technology

<http://www.responsibletechnology.org/posts/obamas-team-includes-dangerous-biotech-yes-men/>

Pro-GM claim

"The use of more precise technology and the greater regulatory scrutiny probably makes GMOs even safer than conventional plants and food"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument:

"Evidence presented in this report indicates that GM crops...are not adequately regulated to ensure safety"

Genetic engineers Michael Antoniou PhD, of King's College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Pro-GM claim

"The agency is not aware of any information showing that foods derived by these new methods differ from other foods in any meaningful or uniform way"

The US Food Drug Administration (FDA) 1992 GMO policy

<http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Biotechnology/ucm096095.htm>

Counter argument:

"References to the unintended negative effects [of genetic engineering] were progressively deleted from drafts of the [FDA] policy statement [in spite of scientists' protests]"

Public interest attorney Steven Druker

<http://www.responsibletechnology.org/posts/obamas-team-includes-dangerous-biotech-yes-men/>

Pro-GM claim

"GM cotton is a real success story"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument:

"Cotton farmers are in a deep crisis since shifting to Bt cotton. The spate of farmer suicides in 2011-12 has been particularly severe among Bt cotton farmers"

An internal advisory by the agricultural ministry of India in January 2012, about the cotton-growing states in India

<http://www.globalresearch.ca/the-seeds-of-suicide-how-monsanto-destroys-farming/5329947>

POTENTIAL ENVIRONMENTAL EFFECTS OF GM CROPS

Pro-GM claim

“OK, we know that cross-pollination will occur but we’ve got thirty years of experience to say we know how far pollen will travel. And therefore what we’ve done is we’ll grow a GM crop at a distance away from a non-GM crop, so the people that want non-GM can buy non-GM, and the people that want GM can buy GM. The two will not get mixed up. Everybody will have the right to choose”

Paul Rylott, seed manager for Aventis CropScience (now Bayer). Matter of Fact [television broadcast]. BBC2 Eastern Region. 12 October 2000.

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Counter argument

““Coexistence” rapidly results in widespread contamination of non-GM crops, resulting in lost markets. Contamination occurs through cross-pollination, spread of GM seed by farm machinery, and inadvertent mixing during storage. Farmers are gradually forced to grow GM crops or have their non-GM crops contaminated. Scientific studies confirm that GM contamination is unavoidable once GM crops are grown in a region”

Genetic engineers Michael Antoniou PhD, of King’s College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Pro-GM claim

“Applications for GM products must undergo a comprehensive case-by-case scientific risk assessment. This is undertaken by independent scientists in the European Food Safety Authority”

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument:

“[EFSA] failed to fulfil the procedural obligations emanating from the applicable rules,” and did not, “Acknowledge its failure to observe the relevant procedural rules and to carry out a sufficiently thorough assessment of the potential conflict of interests (...).” Furthermore, “EFSA unduly restricted the scope of what might amount to a possible conflict of interest (...)”

EU Ombudsman, May 2013

<http://www.testbiotech.org/en/node/803>

Pro-GM claim

"The truth is that [GM] products are subject to extensive testing and development in tightly controlled conditions – progressing from laboratory, to glasshouse, to field trials only when it's safe to do so"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"Pigs fed a GMO diet exhibited heavier uteri and a higher rate of severe stomach inflammation than pigs fed a comparable non-GMO diet. Given the widespread use of GMO feed for livestock as well as humans this is a cause for concern. The results indicate that it would be prudent for GM crops that are destined for human food and animal feed, including stacked GM crops, to undergo long-term animal feeding studies preferably before commercial planting, particularly for toxicological and reproductive effects"

Conclusion of study by Judy A Carman et al of the Institute of Health and Environmental Research, Kensington Park, SA, Australia,

Carman JA et al. A long-term toxicology study on pigs fed a combined genetically modified (GM) soy and GM maize diet. Journal of Organic Systems 2013;8(1):38-54.

<http://www.organic-systems.org/journal/81/8106.pdf>

Pro-GM claim

"GM has the potential to reduce fertilizer and chemical use"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"Evidence presented in this report indicates that GM crops...do not reduce pesticide use but increase it, harm soil quality, disrupt ecosystems, and reduce biodiversity"

Genetic engineers Michael Antoniou PhD, of King's College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Pro-GM claim

"Governments wouldn't license these [GM] technologies if they didn't recognise the economic, environmental and public benefits"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"The U.S. Department of State is selling seeds instead of democracy...This report provides a chilling snapshot of how a handful of giant biotechnology companies are unduly influencing U.S. foreign policy and undermining our diplomatic efforts to promote security, international development and transparency worldwide. This report is a call to action for Americans because public policy should not be for sale to the highest bidder"

Wenonah Hauter, executive director of Food & Water Watch and author of the book *Foodopoly: The Battle Over the Future of Food and Farming in America*, which looks at corporations' growing influence over food policy, launching in Europe May 2013

<http://www.foodandwaterwatch.org/pressreleases/biotech-ambassadors-diplomacy-or-marketing/>

Pro-GM claim

"Farmers wouldn't grow these [GM] crops if they didn't benefit from doing so"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"Why do US farmers continue to grow GM crops if they are not fit for purpose? Two reasons. Unavailability of non-GM seed, as most seed breeding is controlled by the GM companies. The second is fear, because the GM traits are patented so if a farmer has not paid the "tech fee" for the right to grow GM crops and the crop is found to contain GM traits, it is deemed that the grower has stolen the technology and is using it illegally and they will be taken to court"

Michael Hart, UK farmer who has visited and talked to GM farmers in the US over a number of years, recording these visits and conversations in a landmark film called *"GM crops: Farmer to Farmer"*

<http://www.gmeducation.org/farming/p210514-gmos%20in%20the%20usa%3A%20us%20farmers%20spill%20the%20beans%20.html>

Pro-GM claim

"The current range of GM crops was designed to offer farmers easier, quicker and cheaper control over pests or weeds. Evidence demonstrates that they have delivered on this"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"Evidence presented in this report indicates that GM crops...create serious problems for farmers, including herbicide-tolerant "superweeds", compromised soil quality, and increased disease susceptibility in crops"

Genetic engineers Michael Antoniou PhD, of King's College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Pro-GM claim

"Thanks to biotechnology, farmers around the world have been able to protect yields, prevent damage from insects and pests and reduce farming's impact on the environment"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument 1

"Conventional plant breeding....continues to outperform GM in producing high-yield, drought-tolerant, and pest- and disease-resistant crops that can meet our present and future food needs"

Genetic engineers Michael Antoniou PhD, of King's College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

http://earthopensource.org/files/pdfs/GMO_Myths_and_Truths/GMO_Myths_and_Truths_1.1.pdf

Counter Argument 2

"Dropping bird counts indicate serious environmental imbalance, a trend which the UK Government has committed to reverse by 2020. Thus, when the largest environmental study of genetically modified (GM) crops indicated that farmland bird populations would plummet even further if the crops were widely planted, the Independent described it as a nail "hammered into the coffin of the GM food industry," which, "sealed the fate of GM in the UK"

Jeffrey M. Smith, author of *Seeds of Deception*

<http://www.responsibletechnology.org/fraud/faulty-regulations/Genetically-Engineered-Crops-Damage-Wildlife-March-2005> (study showing that GM winter oilseed rape reduced by two-thirds the level of broad-leaved weeds, a major part of the birds' diet: Bohan DA *et al.* Effects on weed and invertebrate abundance and diversity of herbicide management in genetically modified herbicide-tolerant winter-sown oilseed rape. *Proceedings of the Royal Society B* 2005;272(1562): 463-474. <http://rspb.royalsocietypublishing.org/content/272/1562/463.full>)

Pro-GM claim

"There was no scientific evidence associating GMOs with higher risks for the environment or for food and feed safety than conventional plants and organisms"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"People who look into safety issues and pollination and contamination issues get seriously harassed"

David Schubert, cell biologist at the Salk Institute in La Jolla, California, who found himself at the sharp end of an attack after publishing a commentary on GM food

http://www.nature.com/news/2009/090902/full/461027a.html?s=news_rss

Pro-GM claim

"GM crops offer a genuine prospect of high-yielding, low-or no-chemical agricultural production"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"The spread of glyphosate-resistant weeds in herbicide-resistant weed management systems has brought about substantial increases in the number and volume of herbicides applied"

Benbrook CM. Impacts of genetically engineered crops on pesticide use in the US – the first sixteen years. *Environmental Sciences Europe* 2012;24: 24

<http://www.enveurope.com/content/24/1/24/abstract>

Pro-GM claim

"Biotech cotton contains a protein taken from a bacterium known as Bacillus thuringiensis or Bt. Bt is a natural insecticide that has been used in spray or powder form for many years, especially by organic farmers. When it is introduced into the cotton plant through biotechnology, it provides effective protection against insects such as bollworms and budworms, which Bt effectively targets"

Council for Biotechnology Information, Frequently Asked Questions about biotech cotton

http://www.whypiotech.com/resources/faqs_cotton.asp#2

Counter argument 1

"Because of effective suppression of Bt-sensitive lepidopteran herbivores, Bt cotton contains reduced levels of induced terpenoids...changes in the overall level of these defensive secondary metabolites are associated with improved performance of a Bt-insensitive herbivore, the cotton aphid, under glasshouse conditions"

Hagenbucher S *et al.* Pest trade-offs in technology: reduced damage by caterpillars in Bt cotton benefits aphids. *Proceedings of the Royal Society B* 2013;280(1758).

<http://rspb.royalsocietypublishing.org/content/280/1758/20130042.abstract>

Counter argument 2

"Reduced efficacy of Bt crops caused by field-evolved resistance has been reported now for some populations of 5 of 13 major pest species examined, compared with resistant populations of only one pest species in 2005"

Tabashnik BE *et al.* Insect resistance to Bt crops: lessons from the first billion acres. *Nature Biotechnology* 2013;31:510–521.

<http://www.nature.com/nbt/journal/v31/n6/full/nbt.2597.html>

Pro-GM claim

"There is also evidence which points to GM crops delivering further environmental benefits such as reduced soil erosion and reduced use of fuel and chemicals"

The Rt Hon Owen Paterson MP, June 2013

<https://www.gov.uk/government/speeches/rt-hon-owen-paterson-mp-speech-to-rothamsted-research>

Counter argument

"Evidence presented in this report indicates that GM crops...harm soil quality, disrupt ecosystems, and reduce biodiversity, do not offer effective solutions to climate change, are as energy-hungry as any other chemically-farmed crops"

Genetic engineers Michael Antoniou PhD, of King's College London School of Medicine in the UK, and John Fagan PhD, a leading sustainability expert in food system, biosafety, and GMO testing, together with Claire Robinson, MPhil, research director at Earth Open Source: *GMO Myths and Truths*

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