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GM ANIMAL FEED: SNEAKING GM INTO THE FOOD CHAIN

"Supermarkets are becoming increasingly keen to ensure that livestock is fed GE free rations, threatening the multi-million dollar US soybean export trade with the UK"
US Department of Agriculture, internal report on soya exports, 2000

BACKGROUND

Over half the soya and a quarter of the maize grown in the United States is genetically modified (GM). While some of the crops are destined for human consumption, the majority are fed to the animals that provide our meat and dairy products. In fact, around 90% of world soya bean production is used for animal feed.[1]

The US soya and maize industry has previously claimed that it is impossible to segregate GM and non-GM crops before they are exported. This led the Ministry of Agriculture Food and Fisheries (MAFF) to state that, 'a substantial proportion' of the soya and maize imported to the UK 'could contain material derived from unsegregated GM varieties'.[2]

The UK imports approximately 3.5 million tonnes of soya and maize each year, mostly for use in animal feed.[3] Maize distillers' grains, maize gluten and soya are the main GM ingredients that are fed to livestock. As a result of UK consumer rejection of GM food and the industry's failure to segregate GM and non-GM varieties, imports to the UK have tailed off dramatically in the past three years. In fact the US Department of Agriculture predicts that in the year 2000, soya imports will be as low as 150,000 tonnes - down from 500,000 tonnes in 1998.[4] The Iolcos Grace, the GM carrier that was stopped en route to Liverpool by Greenpeace this February, carried about 75,000 tonnes of soya.

GM crops are transported from the US to European ports such as Rotterdam, Brest and Liverpool, in bulk shipments of between 20,000 and 100,000 tonnes. They are then moved to industrial crushing plants where they are processed. Oil extracted by the crushing is sold for human consumption. The remaining GM material is sold to farms and feed mills that produce animal feed for cows, pigs, turkeys, chickens and fish. The meat and dairy products from the livestock are then sold to supermarkets.

THE RISK

No one knows what effects genetically modified organisms (GMOs) will have on our future health or on our environment. This is because scientists do not fully understand what happens when the DNA of one organism is disrupted by the insertion of genes from another organism with which it would never naturally breed, such as an African claw toad gene that was added

[1] Farming News, 16th July 1999. US producers rule out GM-segregated EU soya.
[2] MAFF report, Food Contaminants D, 11 March 1999
[3] MAFF report, Food Contaminants D, 11 March 1999
[4] USDA Report on United Kingdom Oilseeds and Products, http://www.fas.usda.gov/gainfiles/200006/25677794.pdf

to a variety of potato.[5]

ENVIRONMENT

GMOs can have an unpredictable and undesirable impact on the environment. Laboratory experiments at Cornell University, published in 'Nature' in spring 1999, showed that monarch caterpillar larvae were unexpectedly killed by pollen from a variety of GM maize that produces its own insecticide[6]. Further research released by Iowa State University in the summer of 1999 confirmed these findings under field conditions.[7]

Agrochemical companies are playing with unpredictable, living organisms that self-replicate and are releasing them into the environment without any means to control their spread. In 1999 a UK Government funded study accepted that GM crops will 'inevitably' cross-pollinate with organic crops.[8]

Conventional farm crops are also at risk. In May 2000 Advanta admitted that GM oilseed rape developed by Monsanto had contaminated one of their non-GM varieties which was then planted across Europe. In the UK and elsewhere farmers were advised to plough up contaminated crops and have sought compensation from Advanta.

In the US, Kraft have been forced to recall thousands of "Tacos" made with maize found to be contaminated with Starlink GM maize, developed by Aventis – this maize does not have approval for human consumption. Aventis have since removed this maize from the market [9] and with the FDA, spent an estimated $90 million recalling tainted Tacos.[10] The final costs could be higher than $1 billion.[11]

Government research in the UK has confirmed that herbicide resistant GM weeds are being created even within small trial plots. On a larger scale "Land could become infested with herbicide tolerant weeds and volunteers to the extent that GM crops could no longer be exploited and conventional crop management would need to be modified."[12]

Whether GM crops are grown for human or animal consumption, the environmental risks associated with their release are the same.

HEALTH

There have been a number of recent food crises caused by contaminated animal feed. Adding animal carcasses to feed led to the BSE crisis, carcinogenic dioxins in the oil used in animal feed rendered Belgium chickens and dairy products unsafe for consumption. As the outrage in 1999 over the use of sewage in French animal feed shows, the public is extremely concerned about the links between contaminated animal feed and contaminated food.

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[5] Researched by The Institute for Crop and Food Research in New Zealand.
[6] .John E. Losey, Linda S. Rayor, Maureen E. Carter, Nature, 20th May 1999, page 214.
[7] Iowa State University research - Laura C. Hansen Jesse, John J. Obrycki. 2000. Field deposition of Bt transgenic corn pollen: lethal effects on the monarch butterfly. Oecologia, DOI 10.1007/s004420000502
[8] The John Innes Centre, Organic farming and GeneTransfer from Genetically Modified Crops, June 1999
[9] Associated press, Washington, 26.09.00
[10] Reported by Alan Guebert,Farm and Food File for the week beginning Sunday, Oct. 15, 2000
[11] Reuters report, Washington, November 29th 2000
[12] Botanical and Rotational Implications of Genetically modified Herbicide Tolerance : Progress Report, BRIGHT 03.00

With GM, evidence shows that gene changes in food can create unexpected allergies in humans. For example a soyabean was genetically modified with a gene from a brazil nut, then tests on blood taken from individuals allergic to brazil nuts unexpectedly revealed that they had a similar allergic reaction to the GM soybean.[13] In cases where the genes are not from recognised foodstuffs (where we can identify known groups of allergic individuals) these kinds of tests are not available. For example, no one knows whether eating toad proteins will cause allergic reactions in humans.

GM soya, maize and their by-products (e.g. maize gluten or maize by-products from breweries and distilleries) account for more than 20 per cent of raw materials used in animal feed in the UK.[14] Animals, therefore, consume much larger and more concentrated amount of GM material than would be found in an average human diet. In 1992, the US Food and Drug Administration (FDA) asked the US Center for Veterinary Medicine (CVM) for comment on proposed regulations for GM foods. The Center responded:

" animal feeds derived from genetically modified plants present unique animal and food safety concerns."

It went on -

"…animal feed derived from a single plant [maize or soya] may constitute a significant proportion of the animal diet. […] Therefore, a change in nutrient or toxicant composition that is considered insignificant for human consumption may be a very significant change in the animal diet."[15]

The FDA ignored these concerns in its policy statement on GM foods.

In the UK, the UK National Dairy Council has stated "There **is no scientific evidence** *(their emphasis)* to suggest that genetically modified material survives animal feed processing, crosses the gut wall of a cow, enters the bloodstream and then becomes incorporated into milk".[16]

However, the same mistake that was made at the beginning of the BSE crisis – that *no evidence* can be interpreted as meaning there is *evidence of absence* – may be being made again. Indeed, where research has been undertaken some of the above assumptions have already been proved unexpectedly wrong. MAFF research discussed by the Advisory Committee on Animal Feeds (ACAF) on 27th June 2000 shows that "DNA fragments large enough to contain potentially functional genes survived processing in many of the samples studied…. The committee expressed surprise that so much DNA survived processing but considered that the key issue was what effect these fragments of DNA had on animals fed on them."[17]

Incredibly, despite GM feed being used commercially in the UK since 1996 such studies have not yet been completed.

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[13] Nordlee, J.D., Taylor S.L., Townsend, J.A., Thomas, L.A., and Bush R.K., 1996. Identification of a Brazil nut Allergen in Transgenic Soybeans, New England Journal of Medicine, Vol. 334 (11) p. 688.
[14] MAFF report, Food Contaminants D, 11 March 1999
[15] memo from Director of CVM to Biotechnology co-ordinator at FDA, 5.2.92
[16] National Dairy Council Statement, 13 July 2000
[17] ACAF minutes, 27th June 2000. http://www.foodstandards.gov.uk/committees/acaf/min00003.htm

If GM DNA can survive processing then this has quite profound implications for the possible spread of antibiotic resistance, due to the common use of antibiotic resistance marker genes in GM crops.

Preliminary studies undertaken in Germany have shown that GM DNA can cross the species barrier from oilseed rape pollen to bacteria in the guts of bees.[18]

Data of feed experiments with GM ("Roundup Ready") soya beans, submitted by Monsanto in 1996, indicate that these beans do not have the same feeding properties as conventional beans. Only last year, four years after commercialisation, Monsanto notified government authorities that these GMOs actually contained two additional inserts of foreign DNA, not previously identified.[19]

In November 2000, at a hearing regarding adding GM maize ("Aventis Chardon LL") to the UK National seed list, it was revealed that chickens experimentally fed with this GM Maize variety had a significantly higher death rate than the control group[20]. At the same hearing Professor Bob Orskov, director of the International Feed Resource Unit in Aberdeen, Scotland, said: " I wouldn't drink milk from cows fed GM maize with the present state of knowledge."[21] The government has now postponed the approval process of Aventis Chardon LL.

NO CHOICE

Greenpeace believes the failure of the US grain industry, particularly the large players such as the grain trader Cargill, to segregate conventional and GM crops undermines democratic and ethical principles and denies the public the right to make choices about their environment and health.

The UK public has made it clear that it does not want to take the risks associated with GM food and are making it increasingly clear that they do not want to eat the products of animals raised on GM feed. A recent poll by NOP for Greenpeace showed that 67% of consumers wanted an end to the practice of feeding GM crops to animals. Ninety percent thought that products from animals raised on GM crops should be labelled.[22]

There is currently no requirement for suppliers to label GM animal feeds or for food retailers to label meat and dairy products that come from livestock reared on GM crops. This issue has been discussed in the UK and at European level for some time. A House of Commons Agricultural Select Committee report on the segregation of GM foods released in March calls for “a workable and transparent labelling regime for meat and dairy products derived from animals fed on GM materials”.[23] At an EU level agreement on a novel feed directive is expected before the end of 2000. It currently seems unlikely that labelling of meat and dairy

[18] Research undertaken by Professor Hans-Heinrich Kaatz of University of Jena's Bee Institute, reported in The Independent, 28.5.00
[19] Reported in the Guardian, May 31st 2000
[20] Critique of AgrEvo studies in to chickens fed on T25 maize, conducted by Dr Steve Kestin, B.Sc. (Agriculture), Ph.D. and Dr Toby Knowles, B.Sc. (Agriculture), M.Sc. (Applied Statistics), Ph.D. Department of Clinical Veterinary Science, University of Bristol, presented in evidence at Chardon LL seed listings, November 2000, UK.
[21] Reported in the Independent, November 19th 2000
[22] NOP polling 1st-3rd September 2000
[23] The Segregation of Genetically Modified foods, Agriculture Select Committee paragraph 34, March 2000

products will be included in this directive, continuing to deny consumers real choice.

The UK Government admitted in November 1999 that GM crops from farm scale experiments might be added to animal feed. Somewhat ironically, given the current situation with imported GM crops, the Government argues that the public have a right to know if they are eating food produced from animals fed on the GM trial crops and would insist that restaurants label such products.[24] The Government has yet to adequately explain why food products from livestock fed on the GM trial crops will be labelled but those from livestock reared on imported GM crops will not.

CARGILL – THE MAIN UK IMPORTER OF GM CROPS

Cargill is the world's largest privately owned company with a turnover of over $51 billion[25] and is best known as a grain trader. Following its acquisition of Continental, the world's third largest grain company, Cargill is now estimated to carry 45% of world grain exports[26], including GM soya.

Cargill has a long held interest in GM food, testing their own GM varieties in the US, Thailand[27], Argentina[28], Chile and elsewhere[29]. Cargill chairman and CEO Ernst Micek outlined Cargill's view for the future of agriculture as 'we are going to need high-intensive farming and genetically modified plants'.[30] In 1997, Cargill formed a joint venture with Monsanto known as Renessen 'to create markets and market products improved through biotechnology for the grain processing and animal feed markets', and they are 'exploring opportunities to expand their partnership into other areas of agriculture and food'.[31]

In the US, Linda Tharne of Cargill has been appointed as a director with the Council for Biotechnology Information, a $50 million a year pro-biotech public relations initiative.

In the UK Cargill is a member of United Kingdom Agricultural Supply Trade Association, the body representing the animal feed industry. Cargill also owns the major soya crushing facility in the UK, based at Seaforth, Liverpool.

FOOD RETAILERS

"Governments in Britain, the US, and Canada have approved a list of growers and suppliers of non-GM soya which should enable livestock farmers to meet the requirements of food retailers." [32]

Greenpeace has conducted a comprehensive survey in to the use of GM crops by retailers and food producers for our "Shopper's Guide to GM" including the use of GM crops for animals

[24] As reported in The Daily Mail, 6th November 1999
[25] See Forbes top 500 companies www.forbes.com 1999
[26] Leland Swenson , President of US National Farmers Union, Agricultural concentration including a special report by Dr Wm. Heffernan, university of Missouri presented to the House Agriculture Committee 11.02.99 p8
[27] Bangkok Post, Activists decry weak Bio-safety controls 28.09.99
[28] Isabelle Meister and Dr Sue Mayer, Genetically Engineered Plants: Releases and impacts on less developed countries - A Greenpeace inventory, Greenpeace 11.94
[29] Maria Isabel Manzur, The Situation of Transgenic Crops and Foods in Chile Programa Chile Sustentable, 05.08.99: Cargill planted 607ha of transgenic crops in 1998
[30] Ken Spence, Food Fight, West Virginia Farm Bureau http://wvfarm.org/0699gmfood
[31] Reuters Monsanto to buy Cargill foreign seed business 29.06.98
[32] Nick Brown, UK Agriculture Minister, quoted in Farming News, 10th September 1999

that provide meat and dairy products. This can be found online at www.greenpeace.org.uk/gm.htm

Iceland, Tesco, Sainsbury, Asda, CWS and Marks and Spencer have all committed to the removal of GM from animal feed,[33] a goal that is becoming more achievable as more and more US farmers segregate GM from non-GM crops.[34] Elsewhere Carrefour, the world's largest supermarket chain has also committed to non-GM animal feed. However the commitments by UK retailers in many instances have not translated into action. Consequently GM is still being sneaked into the food chain.

Iceland have come the furthest in removing GM animal feed - since the 1st October 2000 all animals used in its primary meat production will have been fed on non-GM diets.

THE SOLUTION

Only 150,000 tonnes of potentially GM soya will be imported in to the UK direct from the US during 2000. There is no justification for these imports to continue when GM has been so overwhelmingly rejected by the UK public and by food retailers.

Greenpeace calls for

- **All supermarkets to stop selling products from animals fed on GM crops as soon as is practically feasible.**
- **The segregation at source of all GM and non-GM crops until a full ban on GM is in place.**
- **A ban on all GM releases into the environment.**

For further information please contact the Greenpeace press office on 0207 865 8255/6/7/8 or out of hours pager 01399 787076

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[33] Statements available from Greenpeace UK press office
[34] see for example recent survey by American Corn Growers foundation, reported at http://www.cropchoice.com/leadstry.asp?RecID=180