What is involved in the Genetically Modified Food debate?

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Hardly a week goes by in Britain without headlines related to genetically modified (GM) food, usually opposed to it. This week the Church of England decided that growing GM products in field tests on its land was unethical. Last week the aristocrat leader of Greenpeace, Lord Melchett, was arrested and jailed over night for leading a group who trashed a field full of GM crops which was part of government field tests. Britain was the one country where the big corporations manufacturing GM seeds, Monsanto, Novartis, etc., had hoped for a favourable response to give them a lead into the rest of Europe.

Instead of public opposition to GM food remaining at a mere 20 or 30 percent as it was a year ago, it has swung to 80 percent—the same level as in Germany. Repeated concerns over food safety in Britain, particularly that over BSE (Mad Cow Disease), made it easy for a vocal lobby against GM crops to swing public opinion. Establishment figures like Prince Charles, with backing from much of the media, have denounced genetically engineered products. The Labour government has become increasingly embarrassed, having worked closely with the biotech companies to win acceptance for GM, after the companies spent millions of pounds in advertising and lobbying politicians. Most of the big supermarkets now either refuse to stock food containing GM products imported from the United States or at least insist that they are clearly labelled.

Britain is not the only country targeted by the biotech corporations for GM crops. Brazil is the world's second largest exporter of soya. The biggest exporter, the US, and the third largest, Argentina, have rapidly gone over to GM production, leaving Brazil exporting unmodified soya to European supermarkets opposed to GM. Environmental groups in Brazil won a court injunction in June forcing Monsanto to carry out an "environmental impact study" before selling their seeds. Although the Brazilian agriculture ministry has supported Monsanto the government is divided over the issue with the environment ministry opposing it.

In India, where 700 million people are directly dependent on farming, biotech companies are desperate to get GM crops accepted. Monsanto has spent $20 million on India's most advanced genetic engineering research centre and an estimated $4 billion buying up seed producing and related companies. Pressure from environmentalists has led the Supreme Court to ban test plantings for the time being pending a judicial review. In Karnataka state protesting farmers cut down and burnt the cotton on two of Monsanto's test sites. The biggest fear in India is over the introduction of so-called Terminator technology. Although this is still under development, GM seeds could yield a plant that produced infertile seeds, making it unnecessary to stop farmers from collecting seeds and replanting them next year—guaranteeing control by the seed companies.

Although the Terminator issue was hyped up in the media, it relates directly to the problem with much of the GM crops under commercial production. Modifying the genes of plants or animals for mankind's benefit is hardly new—crossing and breeding goes back hundreds, if not thousands of years. What has become available in the last decades, following the revolution in molecular biology, goes well beyond traditional breeding and hybridising. A gene from any species whatsoever can, by complex techniques now available, be introduced into the cells of the plant (or bacteria or animal) which is to be modified. Just one out of the hundreds of examples under development illustrates the point:

A GM potato has been developed by scientists at Edinburgh University that glows green when it needs watering. A gene taken from a jellyfish, which produces a fluorescent protein, has been added to the potato. Fortunately the green glow is only visible to a special electronic device. The scientists hope to persuade agribusiness to finance four years of research and testing to make the potato commercially available.

What has given rise to the controversy though is that commercially available GM crops—the product of billions of dollars of investment—are in most cases, like the Terminator technology, manifestly designed to give the biotech companies control over the farmers and to dominate agriculture as a whole. In most cases of GM production, crops are made to be resistant to a herbicide or pesticide which is promoted by the company selling the seeds. Probably the best known are Monsanto's Roundup Ready crops which are resistant to the company's Roundup herbicide.

In such a controversial area great care has to be taken over assessing the claims and counter-claims made by scientists and environmentalists over the potential risks from genetically modified organisms. There has been no scientific objection to the use of genetic modification in the production of antibiotics and other medical products. Much of the concern over GM crops is over whether their novel genes could transfer over time to neighbouring plants or weeds, which would then also be resistant to chemicals. On top of this there are issues like the potential damage to wild life as well as concern over long term damage to the health of humans eating GM products.

To gain an objective assessment of these issues has become almost impossible when large areas of scientific research are either funded directly by the biotech industry or by government departments whose stated aim is the promotion of research which benefits industry. The problem was highlighted last year when the results of a three year study conducted by Dr Arpad Pusztai at the Rowett Research Institute in Scotland on the growth and immune systems of rats fed with GM potatoes were suppressed and Dr Pusztai lost his job (see link below). Pusztai's work was unfairly rubbished by the prestigious Royal Society and the House of Commons Science and Technology Committee—allegedly his work had not been subjected to peer review and did not use sound statistical methods. As Pusztai has pointed out, the Royal Society only examined an internal Rowett report—not the whole of his team's extensive study. The demand for a peer reviewed publication has to be set against the virtual absence of peer reviewed papers in this field, because the biotech industry operate in secrecy making none of their data publicly available.

Trial planting and testing of GM crops by a number of countries have done little to give scientific proof that there is no environmental risk. The

European Union began small scale trials of GM crops in its member countries three years ago. In Britain this year the 146 small scale trials (reduced from 170 because of protests) have been extended to include larger scale trials, each of about 20 hectares (50 acres). No details of the methodology of the trials has been made public, though they were supposed to be independent of the agribusiness corporations. In March this year Dr Jean Emberlin, Director of the National Pollen Research Unit, produced evidence to show that bees or strong winds could carry the pollen of the crops under test much further than the 200 metre "exclusion zone" set up between the trials and neighbouring fields. Not surprisingly there were complaints from farmers. Then in June, following media criticism and several weeks after the trials had already begun, the government announced that a new "independent" committee of scientists had been set up. Effectively admitting that the trials had not been thought out, the government said that the committee would advise on the design of the experiments, statistical analysis, and the interpretation of results.

Although they are under pressure from environmentalists, the main concern of EU politicians has been the protection of European agriculture. Meeting at the end of June, EU environment ministers proposed what amounts to a moratorium on growing genetically modified (GM) crops in Europe. No new authorisations to grow such crops will be accepted till 2002 and beyond. GM food products sold in shops, including those originating in the United States, will have to be labelled.

Demanding that foods which contain GM products, such as soya, are labelled, will inevitably step up the trade war over agriculture between the United States and Europe. As the *Financial Times* expert Guy de Jonquieres put it, " if Europe closes its markets to this $1.5 bn a year trade, it could trigger a conflict that would dwarf existing transatlantic differences about farm trade."Because GM soya and maize (corn) grown in the US is generally mixed in with non-GM material, huge amounts can no longer be sold in Europe—last year the US Department of Agriculture estimates it lost $270 m of trade in maize alone, before the opposition to GM developed to its present pitch.

In the run up to the World Trade Organisation talks in November the US farm lobby are demanding a fight over the GM issue. US trade negotiator Peter Scher declared that "American producers or America's farmers are suffering trade discrimination simply because they adopted techniques which have already been proven to be scientifically beneficial. . .We have to address the fears that consumers in Europe have squarely, but we have to address the based on objective, scientific certainty and not let politics and protectionism and fear rule the resolution of the issues."

The issue is not just the US farm lobby attempting to boost its falling export revenues by opening up the European market. Behind the farmers the biotech corporations, Monsanto, DuPont, Novartis, Zeneca-Astra, Dow Agrochemicals, intend to use GM crops to achieve global domination of agriculture and its related industries. They have pushed through the application of GM techniques at a tremendous rate. Predictions were made in the late 1980s that biotech methods would not be applied to farm scale production until well into the first decade of the next century. Yet world-wide expansion of GM crops is now proceeding at an exponential rate. From 1.5 million hectares grown in 1996 the area grown expanded to 8.1 million hectares in 1997 and is now well over 30 million hectares.

Some 64 percent of GM crops are grown in the United States, where over a dozen products have been approved. Already 60 percent of the processed food eaten in the United States contains GM products. Fifty five percent of soya, 50 percent of cotton and 40 percent of the maize grown in the US are now genetically modified. Other countries now growing significant amounts of GM crops are China, Argentina and Canada, with many other countries under enormous pressure from the transnationals to agree to GM crop production.

Genetically modified seeds are in a majority of cases tied to a particular commercial herbicide or pesticide. Because of this a series of take-overs and mergers have taken place, putting the global market in the hands of a few companies.

Monsanto (USA), the world's third largest agro-chemical industry company, is also the world's second largest seed company. Novartis (Switzerland), the world's second largest agro-chemical industry company, is also the world's third largest seed company. Other major players are Dupont (USA), fifth largest in agro-chemicals with a 20 percent share of the largest seed company, and Zeneca/Astra (UK and Sweden), fourth largest in agro-chemicals with part ownership of the fifth largest seed company. Five or six companies in all have virtual total control of the GM seed market. All have annual turnovers of several billion dollars.

In the so-called Green Revolution from the 1950s onwards, agricultural production in many areas has seen yields more than double with the use of chemical fertilisers and the reduction of diseases, pests and weeds with synthetic chemicals. Whilst the agrichemical industry was able to guarantee a continual source of profits, environmental damage could be largely downplayed. As profits in these traditional chemicals declined and increasing yields became more difficult, companies like Monsanto began to make huge investments in biotechnology and genetic modification. As well as claiming to use fewer chemicals and being more environmentally friendly, GM crops promise farmers higher yields. (This is disputed. Claims by the industry suggest a 9 percent increase in crop yields and 40 percent less herbicide. However, US Department of Agriculture figures recently released suggested no significant increased yields or reduction in pesticides and herbicides).

The desperate situation facing much of world agriculture, the collapse of commodity prices following the crisis in the former Soviet Union and Far Eastern economies, has made it easier to push farmers into making contracts with the GM seed suppliers. Legal agreements tie the farmers into buying the GM seeds each year and not saving seeds from the crop for next year. There are now dozens of breach of contract cases being pursued by biotech corporations against farmers in the US.

Much of the present media debate on GM food has concentrated on the conflict between the supporters of the biotech corporations and the various environmentalists such as Greenpeace. Environmentalists have put forward no viable alternative to the transnationals. Their main demand has been for the production and sale of organic food. The much higher costs involved put these products out of the reach of the majority of the population. They present no alternative to the domination of transnationals and banks over the Less Developed Countries (LDCs). In pursuing their campaign against the biotech corporations they have shamelessly relied on the power of another set of companies—the supermarket chains, who are concerned at their loss of customers. The exploitation of the LDCs by the supermarkets, which are themselves powerful transnationals, is conveniently forgotten.

There is only one way to develop food production on a scale that meets the needs of the world population whilst being safe, satisfying nutritional requirements without creating serious environmental damage. It means taking the profit out of food production and placing it under the democratic control of the mass of the population. It is high time that the discussion over the dangers and potential of GM food is broadened into a critique of capitalist production and class society.