



NO
GENETIC ENGINEERING
GREENPEACE
DON'T DO IT



Unpredictable

The introduction of the Growth Hormone gene into fish resulted in:

Abnormally enlarged skulls leading to difficulty in breathing and feeding.

Unpredictable behavioral changes



High Risk

Canada Agrochemical giant Monsanto was experimenting with their patented Genetically Modified Mustard when...

They found that Percy Schmeiser, the neighbouring mustard farmer had some of their GM Mustard growing on his field. Monsanto took Percy to court in a case that went on for three years.

Despite the farmer arguing that his field was contaminated by Monsanto's GM Mustard, the Supreme Court ruled in favour of the corporation.



Irreversible

USA 2000: GE corn (Starlink) was approved for animal feed only

2 years later it caused allergies in people who ate Corn chips and Taco shells manufactured by KRAFT.

The US government ensured a product recall of Corn chips, taco shells and starlink crops. In 2003 India received a shipment for food aid from the US containing starlink corn.

What's in your food?

What is Genetic Engineering?

Genetic Engineering (GE) also known as Genetic Modification (GM) is a technology through which new varieties of plants/ animals are created by “engineering” genes. Genes are the basic building blocks of life that carry the blueprint of an organism. A genetically engineered plant or animal is called a Genetically Modified Organism (GMO).

What is the logic behind using Genetic Engineering techniques?

Scientists believe that by injecting foreign genes into organisms ‘new’ life-forms are designed that are equipped to perform certain specific functions. For instance, scientists claim to have created certain GE crops that are capable of self producing toxins that are pesticidal in nature to specific pests, thereby reducing the need for external dosages of chemical pesticides. Similarly GE techniques are used to artificially introduce organisms to qualities such as longer shelf-life, saline resistance, higher nutrient content and so on.

Who makes GE crops?

Globally, only five large multinational companies control the entire GE crop market, namely Monsanto (with 80% market share), Aventis (with 7% market share), Syngenta (with 5% market share), BASF (with 5% market share) and Du Pont (with 3% market share).

Are GE crops available in the Indian market?

So far, no GE food crop is commercially available in India, since *Bt.cotton* is the sole GE crop to have been commercialised. However, numerous Indian agricultural institutions are in the research process of developing GE food crops, some of them in the field trial stage as well. Presently, common food crops such as rice, cabbage, cauliflower, chickpea, citrus, brinjal, mung beans, corn, muskmelon, mustard/rapeseed, potatoes and tomatoes are in various stages of their research. The greatest threat today is the fact that, neither is research data made available to the public, nor are the impacts of GE crops well known to the common man.

Is GE food safe to eat?

Even Monsanto isn't sure! In 1999, the caterers at Monsanto UK's main offices banned GE food at the staff restaurant in response to “concern raised by our customers”. The customers in this case being Monsanto staff themselves! The health effects of GE food remain unpredictable, irreversible and they can be potentially dangerous. Yet, even the testing of GE crops is not done properly enough. For instance, in the US, GE corn was tested on chickens for just 45 days and declared fit for human consumption!

What is wrong with promoting GE or the companies that promote them?

Everything! With decreasing demand for pesticides in the developed world, agrochemical giants have re-oriented their business to focus on GE seeds. Since companies patent all GE seeds, these seeds come with a heavy price both in short term and long term. Over-the-counter, these seeds are generally three to four times the market price of ordinary seeds. In the longer term, as these seeds come with heavy royalty fees, poor farmers and agriculturalists fall into the vicious cycle of shelling out money for every crop cycle year.

Is GE food more nutritious?

Definitely not! While scientists claim to have increased the protein content in GE potato, the reality is that one would have to eat about 10 kilograms of genetically modified potato per day to meet the daily minimum protein requirement. 10 kilograms! Golden rice – another GE variant is equally bad – it needs to be consumed in a similar unimaginable high quantity to provide your basic dietary needs.

Are GE foods cheaper than ordinary foods for consumers?

No! Simple, back-of-the-envelope calculations reveal that GE crops are thrice as expensive in the short term and much more in the longer term. Apart from these direct costs to the farmers, the health risk to the community remains unpredictable and high.

I am told that opposing genetic engineering will mean that many people in India will continue to be hungry. Is that true?

This is not correct at all. There is absolutely no connection between GE food and the problem of hunger in India. This is an example of how companies promoting GMOs make people feel guilty about their opposition to the GE foods. The true picture is that there is food rotting in our godowns across the country. The real problem is ineffective distribution, lack of purchasing power among the very poor and outdated policies. The solutions to these problems are in no way connected to GE. So GE food cannot be the answer to hunger.

So what can we do about GE technology?

Globally, a common sense approach called the Precautionary Principle is being adopted towards GE foods. The precautionary principle enables people to take action in situations where there is potential for serious or irreversible threats to health and environment. In other words, one does not have to wait to be actually harmed to reject a technology. This principle can be easily applied to GE foods and has been built into the Cartagena Protocol on Biosafety* that came into force in 2003 when 50 countries including India ratified it.

Should GE food be given out as part of food aid?

No. It is morally and ethically incorrect to give out untested, unreliable food aid as ‘help’ to the survivors of a tragedy. Companies use the opportunity of human made and natural disasters to promote GE food with the help of corrupt bureaucrats, and uninformed NGOs. This way, they hope to gain legitimacy by gaining entry into markets that view them with suspicion and would have otherwise remained inaccessible to them.

What is the “pesticide problem” in reference to Indian farming?

To increase yields, some Indian farmers have been using a wide range of chemical pesticides on their relatively small land holdings. Over a period of time, most pests have developed resistance to these pesticides. The problem occurs when farmers use heavier dosages and mix of pesticides to combat them, which ultimately enter the lowest level of the food-cycle and the food-web.

*A multilateral agreement that gives signatory countries the right to reject GMOs to safeguard the interest of farmers and consumers.



A word about Greenpeace

Greenpeace is a non-profit organisation, with a presence in 40 countries across Europe, the Americas, Asia and the Pacific.

Greenpeace uses non-violent creative confrontation to expose global environmental problems and to force solutions which are essential for a green and peaceful future. Our goal is to ensure the ability of the earth to nurture life in all its biodiversity.

We strongly believe that violence in any form is morally wrong and accomplishes nothing. Philosophically and tactically, our peacefully protests work to raise awareness and bring public opinion to bear on decision makers.

Greenpeace exists because this fragile earth deserves a voice. It needs solutions. It needs change. It needs action. It needs you.



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What kind of changes is made to crops through genetic modification?

Here are some examples:

1. The company creates an insect resistant *Bt*.corn plant by inserting a gene from *Bacillus thuringiensis* (*Bt*.), a soil bacterium, into the corn plant to make it produce its own toxins that can kill the corn borer pest. The *Bt*. corn plant thus produces its own bio-pesticide. It is a pesticide factory of sorts!!
2. The company creates herbicide tolerant plants like GE mustard and GE soya. A "bar" gene from a bacterium is inserted into the mustard plant. This allows the plant to deactivate the herbicide. So, when the herbicide is sprayed, all the weeds perish while the mustard plant survives.
3. The company creates "enhanced" nutrition crops like Golden rice, a rice grain that produces pro-Vitamin A. A second example is a protein-enhanced potato called "Protato".

What is the issue about *Bt*.cotton?

Despite public outcry and adverse scientific studies, *Bt*.cotton was introduced in India in March 2003. While *Bt*.cotton is initially effective against bollworm, a common cotton pest, numerous secondary pests have ruined the cotton harvest over the last few years. Shockingly, Monsanto, instead of admitting the problem and withdrawing the seeds from the market, started bundling free packets of pesticides with *Bt*.cotton seeds. This burst the bubble of Monsanto's claim of *Bt*.cotton, that it reduces pest incidence and reduces pesticide usage.

What is the solution to this issue?

As a consumer you must ask for and expect solutions that are healthy for both the individual and the planet. There can be no one stop solution to the problem of hunger, decreasing yields and chemicals out of control ending up in our food. In fact, it is 'magic solutions' like pesticides during the green revolution and now GMOs during the ongoing gene revolution that has compounded the problem. Solutions have to be multi-pronged and at multi levels.

As a first step, we must demand from government to enforce strong labelling laws. Companies that sell food with GE ingredients must label them as GE, so that we have the choice to reject them at the supermarket. Until we have a clear labelling policy in place, we will be unable to differentiate safe food from GM food products. Each one of us must ensure that no GMO enters our markets and our plates.

A basic policy to eating healthy is to eat local produce (food that hasn't traveled thousands of miles) traditional (varieties that are region and climate specific) and seasonal food. Every time we eat a non-seasonal, non-local food we make a trade off and contribute to an increase in demand for industrial farming and pesticides. Organic food is the best way to avoid dangerous pesticides and GMOs in food.

Won't opposition to GE food slow down scientific progress?

No. Not at all. Some people think that resorting to the precautionary principle is being unscientific but what it actually requires is greater scientific rigour. Greenpeace says that GE technology is poor science with money-grabbing motives. Too little is known, GE companies are in too much of a hurry and too little information is given to the public for assessment. Government regulations on GE technology are too weak. So we must be alert and cautious to this dangerous situation. Better safe than sorry.

