Monsanto admits that the volume of herbicides used with genetically engineered crops in the United States has increased relative to 10 years ago, but because the herbicides used with herbicide-tolerant technology are less harmful than the ones they have replaced, the increase in amount used is inconsequential.

Ht technology increased herbicide use by 527 M lbs.

Bt technology reduced insecticide use in the USA by 123 M lbs between 1996 and 2011.

Bt cotton ineffective against pest in parts of Gujarat, admits Monsanto.

Figure 1: Pesticide Use in the United States: The First Thirteen Years

Chemical pollution
Chemical pollution

Farmers must spray insecticides to prevent insects from developing resistance.

Genetic pollution

2013
108 strains – 38 species of common weeds have developed resistance to glyphosate in the US, Ontario and Alberta, in 65 M acres of corn, soya, and cotton.

GMOs reduce the use of pesticides
GMOs increase yields
GMOs do not impact the environment
GMOs are safe to eat.
Studies from Kansas and Wisconsin show a 6% yield drag with Roundup Ready corn and soybean.

"Genetic engineering is not precise or well understood, and it is not the successful technology the industry claims."

The transgenes spread from transgenic crops to plants.

Contamination from GM corn makes it difficult or impossible to grow non-GM corn.
Contamination from GM canola makes it difficult or impossible to grow non-GM canola.

Canada's annual $300 M canola export to EU evaporated.

The Canadian flax seed export markets also disappeared because of contamination with GM flax.

Contamination from Artic apple trees will make it difficult or impossible to grow organic or conventional apples.

Contamination from GM alfalfa will make it difficult or impossible to grow non-GM alfalfa.

Contamination from GM crops will make it difficult to grow backyard gardens.
Contamination from GM crops will make it difficult to grow backyard gardens.

Beets
Corn
Brassica
Squash
Tomato
Peppers

The transgenes spread from transgenic crops to other plants and to soil organisms.

A survey of drug resistance transgenes originating from synthetic plasmid vectors in 6 Chinese rivers. Sichuan University, Chengdu, Sichuan Province People’s Republic of China.

All rivers sampled contained ampicillin resistant soil bacteria originating from local transgenic crops.
The transgenes spread from transgenic crops to plants, to soil organisms, and to humans. Human volunteers fed GM soybeans show that engineered DNA resist digestion and is detectable in the intestine. There is horizontal gene transfer to gut bacteria.

Gene pollution

GMOs reduce the use of pesticides
GMOs increase yields
GMOs do not impact the environment
GMOs are safe to eat

Genetic Engineering in Agriculture

Genetic engineering is based on a naïve understanding of the genome - the One Gene One Protein hypothesis

Published on Monday, March 11, 2013 by Common Dreams

Official: 'Catastrophic Threat' of Antibiotic-Resistant 'Superbugs'

UK's chief medical officer warns of deadly threat of untreatable infections in face of mutated bacteria

- Lauren McCauley, staff writer

Antimicrobial resistance poses a catastrophic threat. If we don’t act now, any one of us could go into hospital in 20 years for minor surgery and die because of an ordinary infection that can’t be treated by antibiotics,” cautioned Sally Davies, England’s chief medical officer.

"Routine operations..."
A genome is a complex ecosystem of genes under the influence of "regulatory" DNA of which we know nothing.

Each gene makes many proteins according to environmental cues.

Inserting a transgene into a genome and expecting only the single protein you want and nothing else, is fallacy.

Genetic engineering creates rogue proteins.

There is no need to test the safety of GM foods. So long as the engineered protein is safe, food from GM crops are substantially equivalent and they cannot pose any health risks.
Based on the safety and nutritional assessment you have conducted, you have concluded that your genetically modified varieties of corn are not different in composition, safety, and other relevant parameters from corn currently on the market, and that they do not require premarket review by the FDA.

**Letter of agreement from the FDA to Monsanto**

**1996**

Amino acid sequence alignments to assess potential allergenicity of proteins used in genetically modified foods.

*Advances in Food and Nutrition Research*

sequence similarity between Cry1Ab and Cry1Ac and vitellogenin, a known allergen, as well as between Cry3A and β-lactoglobulin, a major milk allergen.

**1998**

Effect of diets containing genetically modified potatoes expressing *Galanthus nivalis* lectin on rat small intestine

*The Lancet*

Pre-cancerous cell growth in the digestive tract

**1999**

Bacillus thuringiensis Cry1Ac protein is a potent systemic and mucosal adjuvant.

*Scandinavian Journal of Immunology*

Cry1Ac is a mucosal and systemic adjuvant as potent as cholera toxin which enhances mostly serum and intestinal IgG antibody responses

**2002**

Mice fed GM soy had damaged liver cells

Altered gene expression

 Higher metabolic activity (stress)

*Cell Structure and Function*

**2004**

Mice fed GM soy had damaged testicles or changes in their uterus and ovaries

*European Journal of Histochemistry*
Safety testing and regulation of genetically engineered foods. *Biotechnology*

In 1996 there were lots of internal FDA memos documenting an overwhelming consensus among FDA scientists that transgenic crops would have unpredictable, hard to detect side effects – allergens, toxins, nutritional effects, new diseases. They urged their superiors to require long-term feeding studies.

Transgenic expression of bean α-amylase inhibitor in peas result in altered structure and immunogenicity. *Journal of Agricultural and Food Chemistry*

the genetic engineering process transformed a protein that is safe into one that is toxic

Proteomics as a complementary tool for identifying unintended side effects occurring in transgenic maize seeds as a result of genetic modifications. *Journal of Proteome Research*

43 proteins in MON 810 plants were significantly disrupted, compared to the non-GE near isoline.

GM crops (Bt corn, Ht corn, RoundUp Ready soybean, and a male-sterile canola) currently on the market, showed that the transgenic lines have different proteins compared to the original structure reported by the companies.

Scientific Institute of Public Health, Brussels, Belgium.

Based on independent studies showing infertility, immune dysregulation, accelerated aging, dysregulation of genes associated with cholesterol synthesis, insulin regulation, cell signaling and protein synthesis, and changes in the liver, kidney, spleen, and gastrointestinal tract, the AAEM calls for:

*A moratorium* on GM foods, safety testing and labeling

2012: Ingesting BT corn invokes an anaphylactic response within the body. *Journal of Immunology*

2012: Intestinal and peripheral immune response to MON810 maize in weaning and old mice. *Journal of Agriculture and Food Chemistry.*

2012: Glyphosate induces apoptosis in mature rat testicular cells in vitro. *Toxicology in Vitro*
Gene pollution

Chemical pollution

in humans


2009 Glyphosate-based herbicides are endocrine disruptors in human cell lines. *Toxicology*

2011 Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada. *Reproductive Toxicology*

2012 Cytotoxicity on human cells of Cry1Ab and Cry1Ac Bt proteins alone or with glyphosate. *J. Appl. Toxicology*

2012 Cytotoxic and DNA-damaging properties of glyphosate and Roundup in human cells. *Archives of Toxicology*

2012 Rats fed a diet containing 11 percent GM corn developed serious health problems and started dying at 11 months with breast cancer, kidney and liver damage. *Food and Chemical Toxicology*

To put this into human perspective with a lifespan of 80 years, these health problems should start during the 43rd year of your life, provided your diet contained over 10 percent GM foods from early childhood.

North Americans are now eating 193 lbs of GM food annually.
2013
Over 60 countries including Japan, South Korea, Australia, Russia, India, New Zealand, Saudi Arabia, and most of Europe, now require GM foods to be labelled.

2013
In a recent survey 91% of US voters want labelling.

2013
20 US state legislatures have now introduced bills requiring mandatory labeling of GE foods.
A growing body of scientific research refutes the claims of GMOs

**Comox Valley Echo**

*Saturday, March 23, 2013*

**Election Special**

**2013**

Poll from 03/15/2013 to 03/22/2013

Should genetically modified crops be banned on Vancouver Island?

- Yes. It's better for the planet and better for us: 79%
- No, but products should be clearly labeled: 16%
- Not at all. The system is fine the way it is: 5%

Total Votes: 473

http://www.youtube.com/watch?v=5epdNz4T_x0

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Genetic Engineering in Agriculture

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GR TV Global Research TV

BACKGROUNDER

http://www.youtube.com/watch?v=5epdNz4T_x0