

## Social Effects

The biotechnology industry claims that GE crops will reduce world hunger. The *truth* is that GE crops have brought hardship to farmers and to the poor:

- GE seeds are expensive. Farmers must also pay the corporation that produced the seed a per-acre technology use fee.<sup>26</sup>
- GE seeds are patented. It is illegal to save and replant them.
- GE pollen can contaminate non-GE farmland. Farmers can be sued for violating patent law if their plants have cross-pollinated with GE plants. This can happen easily by wind, insect or animal. Organic farmers are losing markets because they can not guarantee the purity of their product.
- GE seeds are sometimes the only option. A few large biotech corporations have purchased many of the world's seed companies. In many places, farmers do not have the choice of buying non-GE seeds.
- GE crops are not designed to increase yields. In fact, some GE crops have lower yields.<sup>27</sup>

Through free trade agreements and food aid programs, many developing countries have been forced to import highly subsidized food from industrialized nations, much of which is GE. This influx has devastated farming economies and contaminated indigenous crop varieties.<sup>28, 29</sup>

Traditional plant breeding and sustainable agriculture techniques can produce enough food to feed the world at a fraction of the GE pricetag.<sup>30, 31</sup> Small farmers have long ensured food security by planting a diversity of locally suited crops; now GE is threatening this way of life. Farmers around the world are fighting back against the corporate takeover of the food supply. So can you!



## There is hope! Change is happening!

### Success Stories

- In 1999, the biotech industry predicted that 95% of seeds would be GE by 2004. Today only four main crops have been commercialized.<sup>32</sup>
- Trader Joe's brand is GE-free!
- Many Oregon dairies have pledged to keep their cows rBGH-free!
- Kinko's and Home Depot have pledged not to use GE tree paper products!
- Mendocino, Marin, Santa Cruz & Trinity counties in California are GE-free!
- Australia, Japan, and many European countries have bans on GE foods!

### What You Can Do

- Demand GE-free products from your grocery store.
- Buy organic food or grow your own.
- Call the 1-800 # on the back of the products you buy and ask if they use GE ingredients. If they do, tell them you won't buy from them again until they stop.
- Pressure your elected officials to ban GE foods and protect farmer's rights.
- Visit [www.nwrage.org](http://www.nwrage.org) and get involved.
- Attend our monthly public meeting every 2<sup>nd</sup> Wednesday of the month at 7 pm (3347 SE Belmont, ring bell #5).
- Organize a GE educational event. We will help.
- Donate to NW RAGE on our website! Become a monthly sustainer to support our campaigns.

### NW Resistance Against Genetic Engineering

is a non-violent grassroots organization dedicated to promoting a sustainable and just use of agriculture and science through education, community building, advocacy and action.

### Contact Us

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# The Truth About Genetic Engineering



## What you should know about the food you eat

[nwrage.org](http://nwrage.org)

## What is Genetic Engineering?

Genetic Engineering (GE) is a process of creating new organisms by splicing genes from one organism into another. It is very different from traditional breeding, which works within the genetic code of a single species. The methods used to implant the new genes into DNA are imprecise and based on flawed science; they create unexpected outcomes, many of which are harmful to human health and to the environment.<sup>1</sup> Unfortunately, the public is paying the price for bad science.



## Is It Safe?

The FDA does not require testing or labeling of GE foods. The 1992 FDA policy states, “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” ... “ultimately it is the food producer who is responsible for assuring safety.”<sup>2</sup> Most Biotech companies do not test for safety because testing is expensive, difficult and not in their best interests.<sup>3</sup> However, independent research has shown that GE crops are damaging to our health and to the environment.<sup>4,5</sup>

## Which foods on the market are GE?

US GE crops (% that was GE as of 2007)<sup>6</sup>

**Soy** (89%)

**Cotton** (83%)

**Canola** (75%)

**Corn** (60%)

**Hawaiian Papaya** (over 50%)

**Sugar Beets** (In 2009, 90-95% of all sugar beets grown are expected to be Roundup Ready. Sugar from sugar beets makes up 50% of the US sugar supply.)<sup>33</sup> Small amounts of **zucchini, radicchio, yellow squash**

Other Sources

**Dairy** products from cows injected with rBGH

Food **additives**

Products of animals that were fed **GE feed**

## Health Effects

### Allergenicity

Genetic engineering may create allergenic foods, even if the transplanted genes were not originally allergenic. One study found that peas with an inserted kidney bean gene produced an allergic response in mice, even after the peas were boiled for 20 minutes.<sup>7</sup>

### Toxicity

In the mid-1980s one company genetically engineered the supplement L-tryptophan. The GE process created many toxic compounds which killed 37 people and left over 1500 sick or disabled.<sup>8</sup> In this extreme case the product was able to be traced and withdrawn, but thousands of other untested, unlabeled, possibly toxic GE products remain on the shelves today.

### Antibiotic Resistance

Every cell of a GE plant carries a gene that codes for antibiotic resistance. This means that all of the foods we eat made from GE crops may be capable of transferring antibiotic resistance to our bodies.<sup>9,10</sup> Antibiotics are vital medicines and their usefulness must be preserved.



### Animal Studies

Studies of animals fed GE foods have shown stunted growth, impaired immune function, less developed brains and testicles, enlarged and atrophied livers, bleeding stomachs, liver and kidney lesions, inflamed lung tissue, and increased adult and offspring death rates.<sup>13</sup>

### Risk of Cancer

Cows treated with rBGH produce milk that has high levels of the hormone IGF-I. This hormone has been linked to prostate, breast, colon and lung cancer.<sup>11</sup> The milk also has a 19% higher pus composition and reduced nutrition.<sup>11,12</sup>

## Environmental Effects

### Increased Pesticide Use

Monsanto claims that GE crops will reduce pesticide use. This is simply not true. The majority of GE crops are engineered for resistance to Monsanto's pesticide Roundup (glyphosate), which allows farmers to broadly spray a field without killing their crop. In the US, pesticide use *increased by 122 million pounds* between 1996 and 2004.<sup>14</sup>



### Weed and Insect Resistance

Glyphosate-resistant weeds and Bt (*Bacillus thuringiensis*) insecticide-resistant insects have arisen since the introduction of GE crops.<sup>15,16,17</sup> This forces farmers to spray greater amounts more frequently or switch to more toxic chemicals to get the same results; these tactics then create more resistance.

### Harm to Non-Target Species

Bt pollen/plant residues are harmful to beneficial insects such as monarch butterflies and ladybugs, and aquatic insects such as the caddisfly.<sup>18,19</sup> Glyphosate is toxic to fish, especially salmonids, and to soil organisms like earth worms and mycorrhizal fungus.<sup>20,21,22</sup> It also endangers many at-risk plants species.<sup>23</sup>

### Biological Pollution

A chemical spill can be cleaned up or will eventually biodegrade, but a gene spill will spread, interbreed, and evolve. *Genetic contamination is impossible to recall!* 50% of US conventional corn and soy, and 100% of US conventional canola is GE contaminated.<sup>24</sup>

### Reduced Biodiversity

75% of world farmland biodiversity was lost during the 20<sup>th</sup> century.<sup>25</sup> GE crops worsen the problem as they contaminate local crop varieties, increase chemical dependence and harm non-target species. GE is a threat to biodiversity. *We must protect our genetic heritage!*