



## Cornell University College of Agriculture and Life Sciences

### Genetically Engineered Foods in 2013: A Consumer Guide to What's in Store

Since 1995, U.S. farmers have been growing crops that are genetically engineered, or “GE.” These products of biotechnology are commonly referred to as “genetically modified organisms,” or “GMOs.” Their use raises issues for consumers, farmers and regulatory agencies.

#### What is genetic engineering?

Genetic engineering is the process of copying a gene from one living thing (bacteria, plant, or animal) and adding it to another living thing using biotechnology.

#### Why have some crop plants been genetically engineered?

Genes are the instructions all living things use to build and maintain their cells. Adding a new gene to a crop plant can give it traits that may be beneficial to growers or consumers, making plants that:

- are more resistant to insects and disease, and in some cases allow reduced pesticide use;
- simplify weed control and potentially reduce soil erosion;
- produce fruit that will stay fresh longer.

#### Who regulates genetically engineered products?

In the United States, three agencies regulate genetic engineering:

- Food & Drug Administration (FDA): food safety for animals and humans
- Environmental Protection Agency (EPA): safety of GE plants in the environment
- United States Dept. of Agriculture (USDA): environmental release and safety

#### Am I eating genetically engineered foods?

Recent estimates suggest that 60 to 70% of processed foods contain at least one ingredient from a GE plant, largely due to the widespread adoption of GE corn and soybean by farmers. Many of these crops eventually become processed ingredients, such as corn syrup or soybean oil, and traces of genetic engineering can no longer be detected.

#### Are GE foods safe to eat?

The FDA considers the safety of a new GE food in comparison to a similar non-GE food. A GE food must be labeled or kept off the market entirely if it has any detectable difference in nutrition or allergens from the comparable non-GE food—but no GE foods currently on the market do. There is no evidence to date that GE foods on the market are less safe than their non-genetically engineered counterparts.

#### What if I don't want to eat food made with GE ingredients?

Certified organic standards do not allow use of genetically engineered foods or processing aids. More and more stores have an assortment of certified organic foods.

## **Which plant products might contain ingredients made from genetically engineered (GE) plants?**

**Soybean.** About 93% of the U.S. soybean crop in 2012 was grown with genetically engineered varieties used for weed management. Soy-based ingredients—including soy protein, soy lecithin, and soybean oil—are present in a wide array of processed foods.

**Corn.** Farmers planted about 88% of the U.S. field corn crop in 2012 with GE varieties for insect control and weed management. Corn-based ingredients include corn flour, corn oil, corn syrup, and many more. Some fresh-market sweet corn is GE, but almost no canned or frozen corn is genetically engineered.

**Canola.** Canola oil is extracted from the rapeseed plant, grown mainly in Canada, where 93% of the 2010 crop was grown from GE varieties used for weed management. Canola is used as a cooking oil and may also be found in many processed foods. The U.S. is Canada's largest canola market, with only small amounts produced domestically in North Dakota. Of U.S. canola acreage, 87% was GE in 2006.

**Cotton.** Although you might not think of cotton as a food, it often is—cottonseed oil is used in fried snacks, peanut butter, candies, and many other products. Nearly 94% of the U.S. cotton crop in 2012 consisted of varieties genetically engineered for insect control and weed management.

**Potato, papaya, squash and zucchini.** Although some U.S. farmers grow genetically engineered varieties of these fruits and vegetables, they are rare in most markets. These crops are engineered for disease and insect control. Some processed foods may contain GE potatoes. In 2006, 90% of U.S. papaya acreage and 13% of U.S. squash acreage was GE.

**Other plants.** Genetically engineered varieties of tomato, rice, flax, sugarbeet, and radicchio (red-heart chicory) have been approved by U.S. regulators but are not currently marketed.

## **What other products might contain ingredients from GE organisms?**

### **Dairy and Meat**

It is estimated that more than 70% of the cheeses on the market are made with a GE enzyme, rather than an animal enzyme. Milk is commonly obtained from cows treated with a GE version of a naturally occurring hormone (bST-Bovine Somatotrophine) in order to increase milk production. Meat is commonly derived from animals fed a mixture of GE and non-GE plant feed. There are no genetically engineered animals on the market.

### **Other Foods and Products**

Genetically engineered bacteria and yeast have been used in the food industry for more than 30 years to produce vitamins and nutritional supplements. Many pharmaceutical drugs used to treat diabetes, arthritis, heart disease and other conditions are the products of genetic engineering.