



### **What are GMOs?**

A genetically modified organism (GMO or GM) refers to any plant that has had a gene introduced to its DNA to allow for development of a specific feature. (For example – plants that are resistant to certain pests, or fruits that resist turning brown when exposed to air, or plants with added nutrient value.) Through various breeding techniques, humans have been genetically modifying crops for thousands of years. New technology now allows us to do this process more precisely and more quickly in a lab.

### **Are GM foods safe to eat?**

Yes, GMO foods and ingredients derived from GM-crops are safe to eat. Hundreds of scientific studies in addition to comprehensive regulatory review support the safety of foods derived from biotechnology. The scientific community unanimously supports their safety. (Supporting organizations include: Institute of Medicine, The American Medical Association, the EU Economic Commission, the World Health Organization...)

What about animals who eat GM-based feed? Are their products safe to consume?

There is no evidence that there is any difference in the nutrition profile of animal products derived from GM-fed animals.<sup>1</sup> Field data also shows that there are no negative health or productivity effects in animals fed GM crops.

### **Why would farmers choose to use GM-crops? What are the benefits?**

The option of GM-crops can be a valuable tool for farmers based on soil conditions, type of crop being planted, and pest issues. When it makes sense, farmers may choose to plant GM-seed for a variety of reasons.

- Pest resistance and overall crop health
- Reduced pesticide & fuel use (helps improve surrounding environment)
- Nutrient preservation - many GM-crops require less soil tillage
- Higher crop yield

Globally, genetic engineering has great potential to:

- Protect finite resources (land & water)
- Prevent crop disease
- Respond to the pressures of climate change

### **Why is the agricultural community generally against labeling laws? 2**

Current law requires food labeling when there is a substantial difference in the nutritional quality or safety of a food. Genetic modification does not inherently create that difference. If a GM food did contain a potential allergen, this would automatically require labeling.

- Labeling “non-GMO” may create the perception that such products are “healthier,” which is not the case.
- Consumers who wish to purchase non-GMO derived foods already have that option and can purchase organically certified foods. USDA organic standards exclude the use of genetic modification.

There would be huge cost to the food system infrastructure that would ultimately be borne by the consumer. Prices at the market would go up.

## What GM Foods are on the market?

The most abundant GM crops are used as ingredients or used as animal feed:

- Soybean, corn, cotton, canola, sugar beets

Virus resistant squash & papaya are available

Recently, a non-browning potato and apple were approved for distribution.

## What is the health impact of consuming foods with GM ingredients?

There are no documented adverse health effects to consuming GM-derived foods. Furthermore, there are very few GM foods that we actually consume directly (exceptions include virus-resistant papaya, and squash). The most common GM crops on the market are soybean, corn, cotton, canola, and sugar beets. These crops are often used as food ingredients, and the nutritional difference between GM-produced ingredients are no different than non GM-produced ingredients.

## Can consuming GM foods cause food allergies?

FDA closely regulates all allergens in foods. Companies are not currently developing GM crops that contain potential allergens; however, if an allergen were introduced through GM, labeling would be required.

## Does use of GM crops produce “super weeds”?

Insects and weeds can become tolerant to any pest-control technique regardless of farming type – organic, conventional, or biotechnology. All farmers and seed developers use practices to manage pests.<sup>3</sup>

## Why have other countries banned GM-foods?

Few countries explicitly ban GMOs. Instead, many governments have not approved domestic cultivation of GMO crops. Some countries allow for the production and import of GM crops for animal feed, but GM foods destined for human consumption cannot be consumed. Despite the fact that the EU Research Directorate notes that there is no evidence that these crops carry more risk than their conventional analogs, GMO critics have been successful in implementing strict regulatory policies mandating the labeling of all food products containing GMO-ingredients, which has forced these products out of the marketplace. Critics’ concerns arise from distrust of US products as well as the issues listed above.<sup>4</sup>

## What are the concerns of GM-crops?

Many current consumer concerns over genetic engineering stem from misunderstanding of how the technology is used, distrust of large corporations and the role they play in our food supply, and perception that seed-companies value profiteering over the betterment of humanity.

As with all technologies, scientists need to be cognizant of how genetic engineering is being applied to agriculture and the domestic and global challenges we face with limited resources, and increasing demand for food.

## Where do GM-crops fit into the future of agriculture?

Scientists agree that genetic engineering is one tool among many for a successful and sustainable food system. Conventional, organic, and biotechnological methods of agriculture can and should co-exist for a healthy food supply and healthy planet.

<sup>1</sup>A. Van Eenennaam and Young, 2014. Prevalence and impacts of genetically engineered feedstuffs on livestock population. J. Anim. Sci. 92:4255-4278

<sup>2</sup> Colorado State University Extension: Labeling of Genetically Modified Foods. <http://www.ext.colostate.edu/pubs/foodnut/09371.html>

<sup>3</sup> International Food Information Council Foundation: Food Biotechnology: A Communicator’s Guide to Improving Understanding. <http://www.foodinsight.org/education/food-biotechnology-communicator’s-guide-improving-understanding>

<sup>4</sup> BestFoodFacts.org “Why are GMOs Banned in Other Countries?” <http://www.bestfoodfacts.org/food-for-thought/gmos-banned>