

# Genetically modified organism



If you ate a bowl of cereal or a corn muffin, or just about any other processed food, you've eaten a genetically modified organism. "A genetically modified organism is an organism whose genetic structure has been altered by incorporating a gene that will express a desirable trait, often termed gene splicing" (Howard, et al). The United States Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA) do not require manufacturers to label products with GMOs as having GMOs. Essentially, consumers are ingesting test tube food without their knowledge.

Labeling of foods containing GMOs needs to be required because of health risks, truth in advertising and costs. Consumers have the right to know what they are purchasing. When talking about genetically modified organisms there are several things to know. The terminology can be confusing, but according to the United States Department of Energy, "combining genes from different organisms is known as recombinant DNA technology, and the resulting organism is said to be genetically modified, 'genetically engineered', or transgenic". Knowing the different terms can help consumers know more about the topic of GMOs.

The first GMO came on to the market in 1994 ("Are you eating"). This first product was the Flavr Star Tomato. This tomato was able to be delivered firm and ripe because it had a gene spliced into its DNA that prevented the breakdown of the tomatoes' cell wall (Howard, et al). Since the 1990s the use of GMOs has been skyrocketing (McCluskey). In fact, by 2011, the United States has produced 94 percent of its soybeans and 88 percent of its corn all from genetically engineered plants (Smith, 39). The companies that produce

GMOs like, Monsanto, DuPont, and Syngenta, have two focuses when they produce GMOs.

These are " engineering the bug-killing gene from the insecticide *Bacillus thuringiensis* (Bt) and crops that can withstand Monsanto's Roundup and other herbicides" (Philpott. 6). These organisms are so widely used that " 60-70 percent of the foods on US grocery shelves now contain genetically modified organisms" (" Genetic Engineering"). With so much of our food sources being genetically engineered, why do we not know about it? The US government took the official position that GM foods were 'substantially equivalent' to conventional foods and didnt require safety testing or labeling" (Smith, 38).

The FDA takes this position because of the way the human body breaks down food during digestion. According to Howard, et al, " once we have ingested the protein, the genetically modified organism digests in the same way every other protein we consume. The human body cells cannot discern what is a gene from a 'natural' or genetically modified organism because they are completely unbound from the original plant". The use of genetic engineering in the production of food sources has become commonplace, however, as more consumers become aware of its use, the topic of labeling GMO foods has become controversial. associated with GMOs.

One of the greatest health concerns is the creation of new allergens and the possibility of hidden allergens being unknowingly ingested (Howard, et al). " Consumers with rare allergies fear that they may suffer serious allergic reactions from ingesting an otherwise acceptable food that without their

knowledge carries a gene from an allergen. For example, soybeans modified to carry a Brazil nut gene caused allergic reactions in people allergic to Brazil nuts. According to Smith (39), the American Academy of Environmental Medicine (AAEM), in 2009, suggested that doctors encourage patient to follow a non-GMO diet.

The AAEM warned that there is health risks linked to eating a diet consisting of GM foods. The health risks include infertility, immune system problems, accelerated aging, disruption of insulin and cholesterol regulation, gastrointestinal issues and changes in organs which were discovered during animal research (Smith, 39). Since the FDA does not perform safety tests or any long term studies, but relies on the manufacturer to conduct test, there is really no way to be confident that there will not be any negative long term effect from consuming GMOs (" Are You Eating").

Furthermore, " some scientists have suggested that the process of genetic engineering could accelerate antibiotic resistance in humans (" Are You Eating"). Ferrie considers this the most alarming side effect of GMOs, " Indeed, 80 percent of all antibiotics manufactured goes to livestock. This has brought about the rampant antibiotic resistance in life threatening bacteria so that the use of drugs 'of last resort' has increased by 79 percent between 2005 and 2009". Clearly, the question of potential health risks associated with GMOs is ongoing.

Another reason that GMO food should be labeled is because of the idea of truth in advertising. Consumers rely on producers to be honest with them on what exactly is in their food. Hundreds of advocacy groups have formed

around the United States with the purpose of pressuring the government to require labeling. The consumer health advocacy organization Environmental Working Group, along with more than 100 other organizations representing healthcare, consumer advocates, farmers, businesses, environmentalists and more is pressuring the FDA to label GMOs via the Just Label It Campaign ("The Push to Label").

One more group working on this issue is Mothers for Natural Law, who collected over one million signatures on their "Consumer Right to Know" petition which demands a ban on GMOs until they can be proven free from danger and also requires labeling of products that contain GMOs ("Genetic Engineering"). These grass root organization have had some successes along the way. A member of the organization Greenpeace sent a fax to the Gerber Corporation complaining about the use of GMOs and this complaint and the fear of negative press led Gerber to decide to stop using any genetically modified ingredients (Longman).

Longman also confirmed that the manager of communications for Gerber, Kate King, stated that "We decided that mothers would be more comfortable if they knew that Gerber would be GMO free". Ferrie reported in 2011 that the US Federal Department of Agriculture said, at the March 2011 Codex (International Food Standards) meeting, that "consumers do not need GMO labeling, as it would only confuse them, and they would then make the incorrect food choices".

This disregard for consumers intelligence is highly insulting, the US consumer is Along with the health risk and right to know controversies'

surrounding the debate of labeling GMO foods is the issue of what labeling would cost and who pays. There are three groups to consider with this issue, the producer of GMOs, the consumer, and the government. Howard et al states that "genetically modified organisms are theorized to reduce production costs due to reduced chemical and mechanical needs in planting, maintenance, and harvest" and "conceivably, this savings could in turn be passed on to the consumer".

It can be assumed that if the cost of producing GMOs goes up due to labeling costs or additional cost of production for producers who chose to produce both GM and conventional products, these costs are surely going to be passed on to the consumer (McCluskey). Kimbell argues that the most important thing to know about GM food companies is that they only benefit themselves; they "have yet to produce anything that benefits the consumer. There's no better taste, no better nutrition, no lower price" (qtd. in Smith, 38).

Food producers are already required to label their products with ingredient and nutritional information, the additional cost doesn't appear to be cost prohibitive. The real cost of labeling comes in the enforcement and verification process. McCluskey admits that a barrier to the labeling question is the process of verification of non GMO products, and that the product testing could be very costly. The regulatory agency in charge of such a process would undoubtedly pass their cost onto the producers and the producer would then pass the cost back to the consumer.

The result of non GMO labeled food would be increased costs to the consumer. " The most convincing critique of mandatory labeling is the cost of preserving the identity of all foods that could potentially be genetically modified" (McCluskey). The cost of labeling is definitely a concern for all parties, producers, consumers and the government. GMO labeling is not required in the United States; however, it is required in over 40 countries worldwide (" The Push to Label"). In fact, " in the European Union, where labeling has been required since 1997, most consumers have rejected GMOs, essentially killing the market for them" (Philpott).

Skepticism about the science of genetically engineered food is so strong in Europe that the chemical company, BASF, has decided to not produce any more GM seeds for their European market. Why is there very little concern in the United States? The answer is because consumers do not know that GMOs are part of their daily diet. With so many concerns regarding health risks, consumers' right to know and the costs associated with, labeling, the FDA and USDA need to require the labeling of foods containing GMOs.