Consumers Union

Why We Want Mandatory Labeling of Genetically Engineered Food

Genetically engineered ingredients, also known as genetically modified organisms (GMOs), are present in most processed food products sold in supermarkets in the United States.[1] Genetic engineering (GE) is a new technique whereby scientists in a laboratory can alter the genetic material (DNA or RNA) of plants and animals, usually by splicing together genes from different organisms that would not normally be able to interbreed. GE techniques, which were first discovered only a few decades ago, have been used in agriculture primarily to create commodity crops, including soy, field corn, canola, sugar beets and cotton,[2] that can withstand herbicides, produce their own insecticides, or do both.[3] GE foods are thus different than conventional foods.

Genetic engineering raises unique issues of human safety, environmental impact, the ethics of owning and altering life forms, control of the food supply, and consumer right to choose. Labeling has wide support among both U.S. consumers and around the world. For these reasons, discussed further below, Consumers Union supports mandatory labeling of genetically engineered food.

GE Food is Different

The primary reason GE food should be labeled is that genetically engineered food is fundamentally different. Industry and their allies argue that GE is just an extension of traditional breeding, which humans have been doing for thousands of years. However, GE represents an advance of monumental proportions beyond traditional breeding—the ability to move genetic material *from* any organism *to* any other organism as well as the ability to create genetic material that has never existed before. Traditional breeding involves transfers of genetic material between closely related organisms. In contrast, GE has been used to move artic flounder genes into tomatoes, human genes into rice, and spider silk genes into goats. Indeed, many of the GE plants that have been commercialized have genetic material for viruses and bacteria inserted into them, including genes for antibiotic resistance; such traits could not be transferred via traditional breeding.

Many processes used in food production that result in food that is significantly different are required by law to be labeled, including food that is frozen, made from concentrate, irradiated, or pasteurized. In addition, labeling is also required for ingredients, additives, and for nutritional content (e.g. calories, fat and protein content). Federal law requires all "material facts," defined as information that is of importance to consumers, to be on a food label. For example, FDA requires labeling for most irradiated foods, even though FDA believes food irradiation to be safe. A 2014 nationally representative poll by Consumers Union found that 92% of consumers would like genetically engineered food to be labeled.[4] More than 1 million consumers have written to FDA in support of a citizen petition to FDA to require labeling of GE foods. Thus, GE constitutes a "material fact," that should be labeled.

GE Food Raise Unique Allergy Concerns

A significant number people have life-threatening allergies to particular foods, such as peanuts and shellfish. They manage their condition by systematically avoiding the foods that trigger a reaction. Through genetic engineering, however, genes that could provoke an allergenic response could be unintentionally introduced into another food, without that fact being apparent. Only through labeling could an allergic consumer distinguish an engineered food which might be causing an allergic reaction, from an unengineered food, and avoid the reaction-causing food.

In addition to adding an allergenic substance via GE, the process of GE could also increase the existing allergenicity of a food. The process of GE involves randomly inserting new genetic material into the genome of the new organism. Depending on where the new genetic material lands, there can be unexpected effects. One study found that the process of GE turned on a known corn allergen gene in a GE corn that was not turned on in the non-engineered corn.[5] The process of genetically engineering salmon to grow to market size faster resulted in a GE salmon that was significantly more allergenic than was the non-engineered salmon, i.e. blood from people allergic to salmon reacted more strongly to the engineered salmon compared to the non-engineered counterpart.[6] Thus, to protect people with food allergies, all GE food should be labeled, so that allergy sufferers can be aware of any new reaction they might have to such a food and have the ability to avoid it.

Safety Assessment Is Not Required

Safety is not the primary reason for labeling genetically engineered food, but given current gaps in safety assessment, labeling could help identify any safety problems that might possibly arise. There is global agreement that genetic engineering is different than conventional breeding, and that safety assessments should be completed for all GE foods prior to marketing. Codex Alimentarius, the food safety standards organization of the United Nations, has developed a set of documents on how GE safety should be assessed[7] including whether there are increased levels of toxins or allergens in the foods, or if there are any unexpected effects. Premarket safety assessments are now mandatory in most developed countries, including all of Europe, Australia, Japan and China. However, the U.S. Food and Drug Administration (FDA) has no such requirement. Rather, FDA suggests that companies voluntarily come to the agency for consultations about safety. At the end of the consultation process, the companies receive a letter where the FDA itself makes no conclusions about the safety of the GE crop, but rather says they understand the company thinks the GE crops do not raise issues that would require FDA review. FDA also does no monitoring of imported food for GMOs, and does not require any studies of long term effects.

Over 300 scientists have signed a letter stating that there is no scientific consensus that GE foods are safe.[8] Mandatory labeling could help document unexpected safety impacts, if they are occurring. In the absence of mandatory safety assessment, consumers should have the ability to choose whether to eat these foods.

Environmental Benefits and Costs

Some consumers make food choices based on the environmental impact of growing systems. Although the biotech industry claims significant environmental benefits to GE crops, many of

these claims appear exaggerated and in many cases the downsides appear to outweigh benefits. The two main supposed environmental benefits of GE crops are reduced pesticide use and reduced soil erosion due to increased use of no-till agriculture.

In fact, pesticide use overall has not declined as a result of genetic engineering. Over 99% of GE crops have been engineered to withstand chemical weed killers, to produce an insecticide throughout the plant, or, increasingly more frequently, to do both. While use of insecticides has declined somewhat since GE crops were introduced, the use of herbicides, and thus pesticide use overall, has increased vastly. In the period between 1996 and 2011, during which GE crops were introduced into U.S. agriculture, chemical insecticide applications declined by 123 million pounds, while herbicide use increased by 527 million pounds, such that overall, pesticide use increased by an estimated 404 million pounds.[9]

The vast increase in herbicide use, virtually all glyphosate (trade name RoundUp), associated with GE crops, has caused a drastic increase in glyphosate-tolerant weeds. A survey of farmers in 2012 found that almost half of U.S. farmers had glyphosate resistant weeds on their farms, up from 34% in 2011.[10] The biotech industry's answer to this problem has so far primarily been to develop crops (corn and soy) that are resistant to other herbicides such as 2,4-D and dicamba, herbicides that are considered to be more toxic than glyphosate.[11] Widespread herbicide use on GE crops throughout the corn belt also appears primarily responsible for a large decline in monarch butterfly populations, due to wiping out most of the milkweed on which the Monarch butterfly depends for food.[12]

The biotech industry also claims that GE herbicide tolerant crops, particularly Roundup Ready crops , allow farmers to use no-till systems of cultivation. However, the large majority of no-till and low-till adoption in the U.S. occurred before GE crops came on the market and has stagnated since, according to the Union of Concerned Scientists.[13]

The biotech industry has long promised other benefits as well, such as disease resistance and drought tolerance. However the results so far have been meager. A GE virus-resistant papaya is grown in Hawaii, and according to some reports some farmers grow GE virus-resistant summer squash. However these appear to be the only examples of disease resistance that have been commercialized. For the most part, environmental benefits have not materialized.

Impact on Food Availability and World Hunger

Biotech companies often claim that genetic engineering increases yield, and is needed to feed the world's hungry. However this doesn't seem to be the case. In fact, the yield increases in GE crops in the U.S. range from very small to nonexistent, with most of the increases in crop yield being due to conventional breeding.[14] GE crops have been adopted by U.S. farmers primarily to simplify weed control rather than increase yield.

Meanwhile, in terms of fighting hunger, the world already produces more than enough food to feed all its inhabitants. Hunger, whether in the U.S. and or other parts of the world, is no longer caused by an insufficient quantity of food being grown. Rather it is caused by disparities in wealth (which means some people have more than enough food, while others haunt soup kitchens), wars, waste and by problems getting crops to market.[15] Engineering crops does nothing to address the root causes of hunger in the world today.

A highly touted crop known as "Golden Rice," engineered to contain pro-vitamin A with the goal of combating blindness caused by vitamin A deficiencies among poor populations, originally developed in 2000, has yet to reach the market. Serious problems—primarily getting enough pro-Vitamin A in the types of rice eaten by the poor in Asia in sufficient levels to have a clinical impact on Vitamin A deficiency—have prevented commercialization.

Long term, another aspect of GE foods—the fact that they are patented-- may actually threaten food availability and increase food costs. Biotech corporations patent and own genetically engineered seeds. Three global companies (Monsanto, DuPont and Syngenta) control over half (53%) of the global commercial seed market. In the U.S., four companies control 76% of the corn seed market and 85% of the soy market.[16] If a farmer saves and grows patented seeds, the company can sue that farmer for patent infringement.[17] Companies are also patenting engineered food animals, like the GE salmon that may soon be commercialized. Patenting life forms raises ethical questions, and while patenting seeds raises the specter of monopoly control of food supply, which could limit food availability or increase costs. Consumers may want to choose foods that are in the public domain and not the property of particular corporations.

Costs of Labeling Will Be Minimal

Because food processors frequently make changes in product labels, the cost of labeling GE foods should be minimal. One study, by Joanna M. Shepherd Bailey, Ph.D., of the Emory University School of Law, found that the economic impact of a proposed GE labeling law in California would be, at most, a one-time cost of $1.27 per family.[18]

Voluntary Labeling is Not Sufficient

Consumers can currently avoid genetically engineered foods by buying food labeled as USDA Organic, which does not allow use of GMOs, or foods labeled Non-GMO Project Verified , which are certified to have no more than 0.9% engineered content. However these labels are not sufficient to meet consumer needs. Organic foods are only about 5 percent of the total market, and because they are grown according to rules that also prohibit pesticides and antibiotics and have other requirements, are often more expensive. The Non-GMO Project label is growing rapidly, but is also a small percent of the market and has very limited availability. Further, voluntary labeling but puts burden of labeling in wrong place. Consumers want to know about all the food they are buying, not just a small percentage.

Consumers Want Labels/Several States and Many Countries Require Them

A 2014 nationally representative poll by Consumers Union found that 92% of consumers would like genetically engineered food to be labeled.[19] A *New York Times* poll last year got an almost identical result, 93% in favor.[20] This is starting to be translated into law in the United States. In 2014 Vermont because the first state to require mandatory labeling.[21] Maine[22] and Connecticut[23]passed laws the previous year that will go into effect when a total of five northeast states have similar requirements. Alaska has a law on the books to require labeling of GE fish. These laws are gradually bringing the U.S. in line with the rest of the world, where some 64 countries require GE food labeling.[24]

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[4] Consumer Reports National Research Center, "Consumer Support for Standardization and Labeling of Genetically Engineered Food: 2014 Nationally-Representative Phone Survey," p. 1, available at: https://consumersunion.org/wp-content/uploads/2014/06/2014_GMO_survey_report.pdf.

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[16] Pg. 28 in ETC Group. Who will control the green economy. http://www.etcgroup.org/files/publication/pdf_file/ETC_wwctge_4web_Dec2011.pdf
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[18] Joanna M. Shepherd-Bailey, Ph.D., "Economic Assessment: Proposed California Right to Know Genetically Engineered Food Act (Prop 37) Likely to Cause No Change in Food Prices, Minor Litigation Costs, and Negligible Administration Costs," p. 4, available at: http://www.anh-usa.org/wp-content/uploads/2012/08/GE-Food-Act-Costs-Assessment.pdf, accessed July 21, 2014.

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