

[Study of Electronic or Digital Link Disclosure for Bioengineered Foods \(Report\)](#)

Identifies challenges and barriers associated with accessing bioengineered food disclosure information through a digital or electronic link.

Updated last **November 3, 2017**
for the July 2017 report.

WHAT IT DOES

The National Bioengineered Food Disclosure Standard ([Public Law 114-216](#); [7 U.S.C. 1639 et seq.](#)) ([SciPol brief available](#)) sets national standards for how bioengineered foods must disclose via labeling that they are bioengineered. Particularly, the law requires these labels to be “a text, symbol, or electronic or digital link” ([7 U.S.C. 1639b\(b\)\(2\)\(D\)](#)). The law further requires that the Department of Agriculture (USDA) carry out a study within one year of the law’s enactment assessing the challenges consumers may face with accessing bioengineering disclosure information using an electronic or digital link. This resulting [study](#), carried out by Deloitte for USDA, fulfills that requirement.

According to the study, the two most common forms of electronic links in use today on food packaging are barcodes and [QR codes](#). In order to access the information contained in the codes, customers must scan the codes using a smart phone or similar device. The study identified potential barriers both in the use of and access to the technology needed to read the codes. The four technical barriers that may affect access to bioengineering disclosure information include:

1. Digital links are not inherently associated with additional food information, but rather consumers assume they are for marketing or industry use;
2. Consumers may not have the equipment needed to scan digital links and retailers often do not provide the equipment needed;
3. The wide variety of scanning apps available, each with differing levels of user-friendliness, may cause consumer confusion and result in difficulty opening the links; and
4. Consumers might not have access to an adequately fast internet connection to open the links.

In addition to identifying barriers to access disclosure information, the study provided three potential solutions the government and relevant stakeholders could take to address access to bioengineering disclosure information:

1. Educating consumers and retailers about electronic disclosure links and bioengineered foods more generally;
2. Developing and offering offline disclosure options, such as phone or text messages, that provide the necessary disclosure information; and
3. Developing user-friendly scanning apps.

RELEVANT SCIENCE

As used in the law, bioengineering with respect to food describes any food that contains genetic material that has been modified through in vitro [recombinant DNA techniques](#) and for which modification could not otherwise be obtained through conventional breeding or in nature.

Although [not synonymous](#), another commonly used phrase to describe bioengineered (or genetically engineered) food is [genetically modified food](#). Genetic modification specifically refers to a [range of methods](#) to alter a given species for a desired [phenotype](#), whereas genetic engineering requires the deliberate introduction of a genetic change in the target organism’s [genome](#). Often these genes give the food crop some trait or characteristic not present in the non-modified version of the plant. For example, [genes can be](#)

[inserted](#) that cause a plant to produce its own [insecticide](#), increasing the plant's resistance to certain insects. Scientists [can also insert genes](#) that make crops more resistant to [herbicides](#) that are used to control weeds.

Many of these plant products exist and are being used in agriculture today. "[Roundup Ready](#)" crops describe plants that contain an inserted gene that makes them tolerate the commonly-used weed killer Roundup. This allows farmers to apply Roundup to keep weeds down without affecting their crop yield. Another engineered food is "[Golden Rice](#)". This is a type of rice that has been engineered to produce [b-carotene](#), a nutrient that later converts to vitamin A; proponents urge consumption of the rice in an attempt to reduce vitamin A deficiency in children suffering malnutrition.

The gene that has been inserted into an organism is called a transgene. If the transgene has been successfully inserted into a [chromosome](#) of the target organism, it will be passed on to all offspring. Once the gene has been successfully inserted into the organism's chromosomes, the organism is now considered transgenic because it has a gene that was not originally present in its [genome](#).

According to [researchers at Harvard University](#), many of the concerns about genetically engineered foods focus on their safety for humans and the environment. The researchers suggest people are concerned about potential allergic responses to the genetically modified foods or about undesired side effects. These side effects include, but are not limited to, potential damage to internal organs or to a baby during pregnancy, or [gene transfer](#) from the genetically engineered food to the consumer.

With regards to the [environment](#), people focus on the potential that genetically engineered foods might push insects and weeds to adapt to pesticides and herbicides. However, the National Academies of Sciences, Engineering, and Medicine [suggests](#) that GMO foods are not causally associated with adverse human health impacts, nor with impacts to the environment beyond some increased resistance to herbicides and insecticides.

RELEVANT EXPERTS

[Brandon R. McFadden, PhD](#), is an Assistant Professor in the Food and Resource Economics Department at the University of Florida. His research focuses on food choice, consumer behavior, and attitudes towards contemporary agriculture production.

This is an important study that seeks to better understand how consumers interact with QR codes. Consumers are increasingly interested in food production and QR codes could allow consumers to quickly receive a large amount of information about production processes. This study highlights some of the challenges accompanied with the adoption of QR codes, and while many consumers are not currently accustomed to using QR codes, it is important to remember how quickly app use has become almost ubiquitous in the US.

Relevant Publications:

- McFadden, Brandon R., and Jayson L. Lusk. 2017. "Effects of the National Bioengineered Food Disclosure Standard: Willingness to Pay for Labels that Communicate the Presence or Absence of Genetic Modification." *Applied Economic Perspectives and Policy*. doi:[10.1093/aep/px040](https://doi.org/10.1093/aep/px040)

BACKGROUND

Genetically modified foods have a [long history](#) in the diets of humans. [Historically](#), genetic modification of food took place through selective breeding, or [artificial selection](#), of plants. Many present-day foods, such as corn and bananas, exist in their current form following generations of human selection for larger kernels and smaller seeds, respectively. The first modern genetically modified organism [was created in 1973](#) when two scientists transferred an antibiotic resistance gene from one type of bacteria to another. This led to immediate concerns among the scientific community about the uses of such technology; the [Asilomar Conference of 1975](#) was held to establish conditions under which research using genetic modification could be conducted. Since this conference,

genetically modified organisms have been created to facilitate various processes, including production of food and of [human medication](#).

The largest public concerns surround the use of genetic modification in foods. The [general public remains skeptical](#) of the benefits and supposed safety claims of genetically modified foods. In a [Pew Study](#), 39% of Americans believe that consuming genetically modified food is worse for your health compared to other foods. In the same study, 74% of people surveyed who care about genetically modified foods purchased foods that have a “GMO-free” label.

ENDORSEMENTS & OPPOSITION

Endorsements:

- Leslie G. Sarasin, CEO of Food Marketing Institute, [statement](#), September 7, 2017: “Our findings concur there is a majority and increasing number of our members’ customers who are able and willing to use digital means to access detailed product information when they want that information. Increasingly shoppers have the hardware and Wi-Fi or cellular access available to them to do so.”
- Grocery Manufacturers Association (GMA), [statement](#), September 7, 2017: “GMA strongly supports consumers having tools and information to make informed decisions about the products they buy and use. A consumer education campaign will be a vital part of the implementation and rollout of the bioengineering disclosure regulations.”

Opposition:

- Center for Food Safety, [press release](#), August 27, 2017: “Electronic labeling will not provide disclosure to a large portion of Americans, disproportionately affecting minority, low-income, and elderly people.”

STATUS

According to the National Bioengineered Food Disclosure Standard ([38 U.S.C. 1639b\(c\)\(4\)](#)), the USDA must now use the findings of this study to assess whether “additional and comparable” disclosure options are necessary to adequately allow consumers access to biotechnology information while shopping.

RELATED POLICIES

- [S 1528](#): Genetically Engineered Salmon Labeling Act ([SciPol brief available](#))
- [HR 204](#): Genetically Engineered Salmon Labeling Act ([SciPol brief available](#))
- [HR 205](#): To amend the Federal Food, Drug, and Cosmetic Act to Require Labeling of Genetically Engineered Fish ([SciPol brief available](#))

POLICY HISTORY

The [National Bioengineered Food Disclosure Standard](#) was enacted into law on July 29, 2016. Section 293(c)(1) ([38 U.S.C. 1639b\(c\)\(1\)](#)) states that “Not later than 1 year after July 29, 2016 [i.e., by July 29, 2017], the [USDA] shall conduct a study to identify potential technological challenges that may impact whether consumers would have access to the bioengineering disclosure through electronic or digital disclosure methods.” On August 25, 2017, [the USDA was sued](#) for not publicly releasing the study by the deadline; the USDA responded by publicly releasing the study on September 6, 2017.

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