

Stephanie Ho (SH): Hello and welcome to the podcast, USDA – Now You Know. This episode answers the question “What is the National Bioengineered Food Disclosure Standard?” This rule just went into full force on January First, 2022.

Anastasia Bodnar (AB): The National Engineered Food Disclosure Standard is a national standard for food that are, or may be, bioengineered.

SH: Anastasia Bodnar is USDA's Biotechnology Coordinator. Under the new standard, food manufacturers, importers, and certain retailers are required to let consumers know which of their products have ingredients that are bioengineered.

AB: For the purposes of this standard, bioengineered foods are foods that contain genetic material that has been modified through *in vitro* rDNA, that’s recombinant DNA techniques, and where the modification could not otherwise be developed through conventional breeding or found in nature.

MUSIC BRIDGE: [Robert John, “Surface”](#)

SH: There are many details about the new standard online, and I'll tell you later in this podcast about how to find more information. But first, we'll talk about what we're talking about. The term "bioengineered" may sound unfamiliar to many people, but it refers to processes that may be more recognizable under different names.

AB: There are a lot of terms that get used, and we talk about GMOs or biotechnology. So, GMO, or genetically modified organism, is a common term that consumers or popular media, the press, use to describe foods that have been created through genetic engineering. It's used to describe plants, animals or micro-organisms that have had their genetic material, or DNA, changed using technology.

SH: And it would be unfair to ignore the fact that there are vocal critics of biotechnology, but that debate is beyond the scope of this specific podcast, which is aimed at letting people know where they can go for more information about the new standard.

MUSIC BRIDGE: [Crowander, "Don't You Leave"](#)

SH: The new National Bioengineered Food Disclosure Standard requires food manufacturers, importers and certain retailers to let consumers know whether the food they offer for retail sale contains bioengineered ingredients. The disclosure is usually made directly on the food product packaging.

AB: Generally, the standard applies to foods that are sold in a grocery store or other retail establishment – but foods that are sold in a restaurant are exempt. And the standard is also exempt for very small food manufacturers.

SH: To better understand the context of this new national rule, let's first back up and look at recent history. Congress passed the National Bioengineered Food Disclosure Law in 2016, and USDA followed with the National Bioengineered Food Disclosure Standard in 2018. The country began phasing it in on January first, 2020 -- which means it's possible you have already seen

"bioengineered" labels on your food in the grocery store. The standard went into mandatory compliance nationwide on January first, of this year.

MUSIC BRIDGE: [Nelvian, "Indigo"](#)

SH: Genetic engineering is a breeding tool that falls under a group of methods known collectively as agricultural biotechnology -- which is not a new thing in agriculture.

AB: Even before biotechnology or genetic engineering, humans have been causing major genetic changes in animals and plants, for thousands of years. People have been selecting the best plants and animals, and continuing with those in agriculture. Our ability to cause genetic changes has gotten more and more sophisticated over time, as we gain a better understanding of natural genetic processes.

SH: One of the primary goals with agricultural biotechnology has been to encourage traits in crops that humans have deemed to be favorable.

AB: We started out by picking the best examples – the tastiest plants, or the animals that survived after a disease came through, just for example – but then, over time as we gained a better understanding of genetics, we started to intentionally combine good characteristics from two parents. That led to hybrid breeding. And through hybrid breeding, for example, humans were able to take corn, from 20 bushels an acre, in the 1920s, 1930s, all the way up to 180 bushels an acre today. It's a pretty impressive gain, in part due to hybridization, and then all of the other types of genetic improvements over the decades.

SH: Moreover, biotechnology has helped and will help farmers grow better products, while using fewer resources.

AB:including less land, less labor, less water, less fertilizer and other inputs. And the need to do this of course is only getting more important with climate change, as weather is getting more unpredictable, as the global population is increasing, and as we're turning to agriculture to grow more of the inputs that we need for fuel and other material. So, using the technologies that we have, including agricultural biotechnology to improve our crops in micro-organisms, to produce the things that we need, will really help us to meet our goals, of doing more with less.

MUSIC BRIDGE: [Sarah Jansen, "Miss You"](#)

SH: Two of the most common genetically-engineered traits up until now have been focused on farmer needs -- for their crops to resist insect pests and to tolerate herbicides that are aimed at killing destructive weeds. For one major example of insect resistance, scientists started with a gene from a soil bacteria called *bacillus thuringiensis* – which is better known by its initials, Bt.

AB: Bt bacteria make proteins that are toxic to specific insect larvae, such as cotton borer or fall army worm. And when those insect larvae eat the protein, they die within two to five days. That's significant because these particular pests are voracious. When they get into a field, they can decimate it quickly.

SH: So, what are the options?

AB: Farmers have a choice – they have to either let their crop get eaten or spray insecticide. But with genetically-engineered Bt crops, they have a third option, which is let the crops protect themselves.

SH: Bt crops are able to protect themselves by producing a protein that is not harmful to humans or other animals, but is toxic to pests like fall army worm, which otherwise could wipe out much of the crop. The Environmental Protection Agency and the Entomological Society of America have more information about the safety of Bt. Meanwhile, another genetically engineered trait that has been useful to farmers is herbicide tolerance.

AB: This is important because weeds are a major source of crop yield loss, and the more crop yield that we lose because of competition with weeds, is the more land that's needed to produce the food. Herbicides are actually a more efficient way to control weeds, than other methods, like tilling or plowing or hand weeding, or other more labor-intensive methods. They have lower fuel use, lower erosion, lower soil loss and lower greenhouse gas emissions.

MUSIC BRIDGE: [Roa, "Puzzle"](#)

SH: At USDA, the Agricultural Marketing Service – also known as AMS – is the lead agency in charge of the National Bioengineered Food Disclosure Standard.

AB: And they apply the standard and look at what crops fall under this definition of bioengineered foods. So, they're developing a [list of foods](#) that apply. Right now, certain varieties of alfalfa, apple, canola, corn, cotton, eggplant, papaya, pineapple, potato, salmon, soybean, squash and sugarbeet – are going to be labeled as bioengineered. And when I say

certain varieties, it depends on which crop – so, for example, for pineapple, it's specifically talking about some pink flesh pineapples that are available. You might see those in the grocery store. Most pineapple is not going to be labeled as bioengineered, would not meet those requirements, but in particular, the pink pineapple is, just for example.

SH: Another example is apples – one type of apples is on the list, but it's not the case that all apples are subject to the disclosure rule.

AB: For apple, the specific variety would be Arctic brand, non-browning apples, which currently you can only buy in a dried form.

SH: If you want to see the [full list of bioengineered foods that are subject to the standard](#), USDA's AMS maintains it online and will update it annually.

MUSIC BRIDGE: [Crowander, "American"](#)

SH: The new National Bioengineered Food Disclosure Standard requires food manufacturers, importers, and certain retailers to let consumers know if there is indeed bioengineered ingredient in a food product. Beyond helping farmers improve crop yields, Bodnar notes that biotechnology also can bring environmental sustainability benefits.

AB: In addition to the traits that I already talked about – insect resistance and herbicide tolerance, there are so many crops that are being developed. Already on the market are drought-tolerant crops, non-browning crops that are helping to reduce food waste, crops with increased nutritional qualities, and virus-resistant crops that are protected from certain diseases.

SH: In another example, she points to findings that were published in July 2020 in the journal ["GM Crops and Food – Biotechnology in Agriculture and the Food Chain."](#)

AB: One study estimated that from 1996 to 2018, pesticide use on biotech crops was reduced by 775 million kg of active ingredient of pesticide, compared to the amount that would have been used, if that had been planted to conventional non-biotech crops. And, because less pesticide was applied, less fuel was needed. With those benefits, in 2018, biotech crops were estimated to have reduced fuel use by about 920 million liters – that’s equivalent to taking 1.63 million cars off the road for an entire year.

SH: If you want to know more about the new National Bioengineered Food Disclosure Standard, please go online to the [informational webpages](#) hosted by USDA’s Agricultural Marketing Service. The best way to find these pages would be to enter the terms "bioengineered," "food," "disclosure," and "standard" into your search engine. There also are links to the AMS webpages and other useful webpages, directly on our podcast page. And please make sure you are on the USDA AMS webpage for the most authoritative information.

MUSIC BRIDGE: [Monolog Rockstars, “At the Restaurant”](#)

SH: I'm Stephanie Ho, with USDA's Office of the Chief Economist. Thanks so much for listening.