

Frequently Asked Questions

As interest in how food gets into our shopping carts, and ultimately, onto our plates, continues to grow, so too will questions about food and farming. See the below responses to frequently asked questions that have been submitted by consumers to the [GMO Answers](#) and the [Discover Monsanto](#) websites. You can also visit these websites to pose any questions that are not covered here, as well as suggest consumers and your colleagues/peers do the same.

We also recommend the [GMO Answers Q&A Booklet](#) that contains helpful information on glyphosate.

GMOs

What is a GMO?

GMO stands for Genetically Modified Organism. The GMO process involves isolating a beneficial trait that helps a plant thrive in nature and adapting that trait to a new plant so that it can better survive in its environment. These improved characteristics can include greater resistance to insects or more efficient use of water.

What seed companies produce genetically modified seed?

Several companies, in addition to Monsanto, sell genetically modified seeds, including DuPont, Bayer, BASF, Dow Chemical Company and Syngenta. Researchers at numerous universities and humanitarian organizations are also involved in genetic modification of seed for many reasons, including increasing water efficiency and protecting plants against pests to help farmers around the world produce better harvests.

Are big companies forcing farmers to grow GMOs?

No, companies do not force farmers to grow GMOs. Each year, farmers analyze the data from their farms – taking into consideration factors such as soil type, typical climate conditions and the types of crops previously planted in the field – and then farmers decide what seeds to plant. Companies must compete for business every year and provide the best product for each farmer in order to win business. Consider this parallel: Say you consistently choose a certain brand of car because it has proven to be well-made, low maintenance and all-around reliable. The car company does not force you to be a repeat buyer, but you are eager to do so because of great experiences in the past. It's the same way with farmers and GM seeds. When it comes to GMOs, farmers choose to use them based on favorable prior experience and the needs of their farms.

Why are GMOs banned in some countries?

Regulatory processes in most countries involve several factors, including whether to allow import and/or cultivation of GMO crops. Many of the world's countries – more than 60 countries around the globe, including countries in North America, South America, and Europe – allow farmers to grow GM crops or import GM products. Peru is the only country that currently bans cultivating and importing GMOs. Regarding Europe, there are a few countries within the European Union (EU) that allow GM crops to be imported.

Frequently Asked Questions

GMO Safety

Who tests GMOs?

GMOs go through a lengthy test period during their development cycle. Rigorous, internationally accepted scientific standards from various countries around the world are used to test GM traits and seed products before they are made available for farmers to purchase and grow. In the United States, two agencies, the USDA and the Food and Drug Administration ([FDA](#)) are involved in assessing each GMO trait. In addition, the Environmental Protection Agency (EPA) reviews and registers a GM crop if it contains a trait that involves insect protection.

Is it safe to feed my kids GMOs?

Yes – scientists and researchers from around the world have studied GMOs and determined that they pose no greater risks to safety than non-GMO products. . That includes groups like the [American Medical Association](#) and the [World Health Organization](#), as well as governmental agencies like the [FDA](#).

Do GMOs cause cancer?

No – the health and safety of GMOs have been validated by numerous independent scientists and organizations around the world. GMOs in agriculture have been studied for more than 30 years with the collective research indicating they pose no greater risk than non-GMO products. Please visit www.biofortified.org where you can find more than 1,000 studies about the health and safety of GMOs.

Are GMOs causing an increase in allergies?

No – GMOs are rigorously tested to help avoid the creation of new food allergies, and it is important to know that GMOs do not introduce any new allergens. That said, if a person is allergic to a non-GMO plant, he or she will also be allergic to the plant's GMO counterpart. In other words, if someone is allergic to soy, they are going to be allergic to soy regardless of how it is produced.

Are GMOs contributing to the death of bees and butterflies?

Before a GM crop can be grown commercially, companies must demonstrate that the new plants are not harmful to “non-target” insects, such as bees and butterflies. Because of this rigorous testing, there has been no indication that GMOs cause harm to these pollinators.

Food and Nutrition

If livestock eat genetically modified grain, will there be GMOs in my meat?

GMO crops are used extensively as feed for animals, such as cows, pigs and chickens. Animal scientists have found that all feed – whether it is GMO or not – is digested the same way within the animal. Because of this, GMOs have not been detected in the milk, meat or eggs of animals that consume GM feed.

Frequently Asked Questions

What are the changes in nutritional value when a crop is genetically modified versus a non-GMO version of the same crop?

Foods made from GMO crops have the same nutritional value as foods made from non-GMO crops, whether it's the protein, fat, fiber, oil or carbohydrates. There could be an exception if a GMO crop was developed to provide improved nutrition – like Golden Rice with increased Vitamin A, which could help reduce Vitamin A deficiency in the developing world. If you're interested in learning more about the nutritional value of GM crops, please check out this [video](#). And you can learn more about the Golden Rice Project [here](#).

Are GMOs increasing the price of food?

No. New technology and techniques like GMOs have greatly advanced farmer productivity. In general terms, it is important to recognize that the price of food has fallen consistently during the last 50 years. This has come about not "out of the blue" but from enormous improvements in productivity by producers. (Source: [GMO Answers](#))

GMO Labeling

Why do GMO companies seem like they are so against labeling GMO foods?

Often it is not that companies are against GMO labeling, but rather against a state-by-state patchwork of labeling laws. Within the United States, the FDA is the nation's foremost food safety agency and, as such, has established a clear, national policy with respect to labeling food products containing GM ingredients. The FDA's existing science-based federal labeling policy is the preferred approach to food labeling. It not only provides a framework for consumer protection and safety, it also offers consumer choice by allowing labels like "non-GMO" or "organic" for consumers who want to purchase those products. This federal solution provides a consistent set of standards for safety, as well as consumer information.

Does Monsanto support mandatory labeling of GMOs? If no, why not?

Each country established its own food labeling laws. Within the United States, we are one of over 1,100 food and agriculture organizations that support the bipartisan national legislative agreement on GMO labeling that passed approval in the U.S. Senate and House of Representatives in July 2016. Monsanto understand that consumers want to know more about their food and believe this framework will provide consistency in access to information about the use of GMOs in the food system across the country. It also avoids the alternative patchwork of state laws and the negative impacts these would have for consumers, small businesses, and the farmers who grow our food. They safety of our products is our first priority, and multiple health societies, hundreds of independent scientific experts, and dozens of governments around the world have determined that foods and ingredients developed through biotechnology [or genetic modification (GM)] are safe. Monsanto has historically opposed state by state initiatives to mandate labeling of ingredients developed from GM seeds in the absence of any demonstrated risks. Such labeling creates a confusing and costly patchwork of state laws.

Isn't it fair to vegetarians to label if you use animal DNA to mix with plant DNA?

Animal DNA is not mixed with plant DNA. When consuming vegetarian diets, consumers can be confident that animal protein is absent from the vegetables they eat. A food product made with or using ingredients from GMO crops with any nutritional difference would be required

Frequently Asked Questions

by existing laws to have that nutritional difference reflected on the label. The [World Health Organization](#) and the [American Medical Association](#) agree that GMOs have a proven safety record and that they are just as safe as their non-GMO counterparts. We support the current labeling conventions that give companies the right to choose to label their non-GMO products as non-GMO.

Sugar is not inherently harmful, yet must be listed on nutrition labels. Why not GMOs?

Sugar is required to be included on nutrition labels because, unlike GMOs, sugar relates to the nutritive value of a food and is important information for consumers with certain health conditions.

The FDA requires that most food labels contain a disclosure of ingredients in a nutrition facts panel, which provides specified nutrition and safety disclosures (e.g., relating to allergens). The fact of whether a food ingredient is derived from a GMO crop does not impact its safety or nutritive properties. If the nutritional content of a product is changed (e.g., the Vitamin A content in “Golden Rice” or fat content in improved nutrition oils), regardless of how the change occurs, the change would be reflected contained on the nutrition facts panel.

Agriculture

What does Monsanto do?

Monsanto is in the business of providing sustainable agriculture solutions. This includes seeds developed by both plant breeding and biotechnology; crop protection products to protect plant health; and data that provides farmers with the information they need to make the best decisions for their farm throughout the growing season. These solutions are used by all types of farmers, including conventional and even organic growers. Bottomline – Monsanto is about much more than GM seeds.

What affect does Monsanto have on small farmers? Both organic and not. Do you encourage small business farming?

We are supportive of all types of sustainable farming, large and small. In fact, many of our customers are small farmers, and some of our customers are organic farmers, too. It's up to the individual farmer to determine what crops he or she is most interested in growing, but [we offer a number of conventionally produced fruit and vegetable seeds, including tomatoes, melons and bell peppers, and GMO varieties \(as well as conventionally produced varieties\) of squash and sweet corn.](#)

Are genetically modified foods sustainable?

Yes, genetically modified foods are sustainable. GM crops are developed to use water more efficiently and to help prevent pest infestation of crops, ultimately helping to limit the amount of pesticides needed. These traits enable farmers to do more with fewer resources. In fact, global green house gas emissions would go up by 7 – 17% if GMO crops were banned in the United States alone.

Frequently Asked Questions

Pesticides

What is Monsanto's response to the increased number of pesticides used on genetically modified crops? Are you developing more resistant GMOs?

According to a recent USDA study, the overall use of pesticides in the U.S. has dropped dramatically since farmers started using GMO seeds. GMOs can help farmers reduce chemical sprays that protect crops from insect pests. And one benefit of glyphosate-tolerant crops has been a reduction in tillage on fields.

For more information, check out this article in Grist by Nathanael Johnson: ["In the insecticide wars, GMOs have so far been a force for good."](#)

In GMO products are the pesticides actually present in the seed and therefore inside of the produce?

Yes – some GMO corn, soybean, and cotton crops produce a type of proteins called "Bt proteins" that are harmful to some problematic insects, but safe for animals and humans. Bt protein, in the form of a spray, is also used by many organic farmers to protect their crops from pests, since it's a naturally occurring, organic substance.

The benefit of having the protein produced by the plant itself is that it can help reduce the amount of pesticide sprayed in fields to control pests. In both cases, the Environmental Protection Agency and numerous other regulatory agencies and independent scientists have determined that these uses of Bt proteins are safe. Here's a link from the [EPA](#) with more information about Bt crops and Bt protein.

How can a GMO crop with pesticides in its DNA be as healthy as a non-GMO?

Some GMO crops have a gene from a naturally occurring bacteria called "Bt" that affects a few types of insects (the insects that typically are responsible for destroying crops and can threaten farmers' livelihoods), but it is safe for people, domestic animals, fish and other wildlife. In fact, because Bt is produced naturally, it's one of the more common pesticides used by organic farmers. Both ingredients from crops containing the Bt trait and from organic crops sprayed with Bt are safe for human and animal consumption. The EPA evaluated many years of safety data before registering Bt corn. If you're interested, check out more information on [Bt corn from the University of Minnesota](#).

Glyphosate

How do farmers use glyphosate?

Glyphosate-based products, such as Roundup® branded herbicides, are one tool some farmers use to protect their crops from troublesome weeds, which compete with crops for sunlight, water and nutrients. Watch this [short video](#) to learn more.

Why is the EPA reviewing glyphosate?

In the U.S., the EPA regulates pesticides to ensure they can be used safely. Since 2009, the EPA has been conducting a routine "registration review" of glyphosate. Registration reviews occur at least every 15 years for all previously approved pesticides. The purpose of a registration review is to ensure any new, relevant information is considered. The EPA's review process is comprehensive and, by law, based on the best available science.

Frequently Asked Questions

How does the review process work?

- First, the EPA reviews all available scientific information on a pesticide.
- If additional information is needed, the EPA requests data from the registrants.
- Then the EPA issues a draft decision and invites public comment.
- Lastly, the EPA considers the comments and makes a final decision.

Where is glyphosate in the process?

The EPA's registration review for glyphosate has been ongoing since 2009. The EPA is currently evaluating the data on glyphosate to develop their draft decision, called a "preliminary risk assessment."

What has the EPA previously said about glyphosate?

For over four decades, the EPA has consistently supported the safe use of glyphosate. In an October 2015 [report](#), the Cancer Assessment Review Committee's (CARC) 13 experts classified glyphosate as "Not Likely to be Carcinogenic to Humans" after a thorough review. This is the EPA's most favorable classification. In 2013, the EPA [concluded](#) that "glyphosate does not pose a cancer risk to humans."

Furthermore, the overwhelming conclusion of experts worldwide has been that glyphosate, when used according to label directions, does not present an unreasonable risk of adverse effects to humans, wildlife or the environment. Most recently, in May 2016, the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) [concluded](#) that "glyphosate is unlikely to pose a carcinogenic risk to humans from exposure through the diet."

Organic

What is Monsanto's view of organic?

Many solutions lead to sustainable food production. It's going to take a lot of different tools and approaches. That includes organic farming, and we support organic farming. We provide a range of conventionally produced seeds that have not been improved through biotechnology for fruits and vegetables such as tomatoes, melons and bell peppers, and many of our customers who purchase those seeds are organic farmers.

If you're interested, Dr. Robb Fraley, Monsanto's Executive Vice President and Chief Technology Officer, wrote a piece in The Huffington Post about [feeding the world with both GMOs and organic](#).

How do you support organic farming? And what makes you think you are sustainable?

We sell many types of conventionally produced seeds, and, while we do not currently produce organic-certified seed, many organic farmers purchase our seed when organically-produced equivalent varieties are not available. Check out this [Huffington Post blog post](#) for more info about how we are working with organic farmers and others to contribute to solving the world's big agriculture challenges.

In terms of sustainability, we view sustainable agriculture as a cornerstone of who we are as a company. We are focused every day on helping farmers have a smaller impact on the environment while growing food. For example, GMO crops that can use less water than their conventional or organic counterparts can help farmers conserve that natural resource. Find out more about how we are working to grow food more sustainably [here](#).

Frequently Asked Questions

How much of the organic seeds do you produce?

We do not currently produce certified organic seed. Regarding our seed sales to organic crop producers, it's difficult to quantify our market share. Looking at the market generally, according to 2012 U.S. Census data, there are [16,525 organic farms, either certified or exempt, in the U.S.](#), which is roughly 0.7 percent of all farms. And, organic sales account for over [4 percent of total U.S. food sales](#).

The USDA National Organic Program defines a practice of farming that allows and prohibits certain advanced agricultural tools. Some organic farmers use our products, like our conventionally bred [vegetable seeds](#). As a company, more than ninety-eight percent of our vegetable research dollars go into conventional plant breeding where we develop over 2,000 varieties of seeds for fruits and vegetables like peppers, broccoli, carrots and melons. You can read more about our [vegetable seed business](#) and our work to help farmers [grow food for a balanced plate on our website](#).

Why are there more laws and fines in place (at least in California) for organic farming standards than for conventional?

Both organic and conventional farm production are regulated; however, organic production may seem like it's regulated at a slightly higher level. Here are a few reasons why:

The first is marketing. When the USDA organic program was developed (starting in the early 1990s), detailed production guidelines were made for organic producers to follow in order to ensure accuracy and credibility of a product's "organic" claim. Note that if farmers make claims under other USDA marketing programs, such as "Angus Beef" or "Free Range", they also need to back up their claims.

Another is pesticide use. In short, organic farmers are restricted as to what pesticides they use in order to protect their crops. While all users of pesticides are obligated by law to use pesticides in accordance with the product's label, organic farmers need to also be sure they use non-synthetic pesticides approved for use in organic production.

You can take a look at the [USDA Agricultural Marketing Service's organic standards](#) for more information.

More Questions

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