# GMO Food (Pros and Cons)

BDC Elementary: https://bluegrassdebate.org/homework/#elementary

| PROS | CONS |
|---|---|
| 1. Protecting Crops from Pests<br>< Healthline, July 2, 2020 > | 1. Causing Allergic Reactions<br>< Healthline, July 2, 2020 > |
| 2. Farmers Using Less Pesticide<br>< Healthline, July 2, 2020 > | 2. Increased Risk of Cancer<br>< Healthline, July 2, 2020 > |
| 3. Increasing Food Production<br>< Healthline, July 2, 2020 > | 3. Causing Diseases in Animals<br>< Healthline, July 2, 2020 > |
| 4. Increasing Nutritional Value<br>< Healthline, July 2, 2020 > | 4. Causing Pesticide-Resistant Weeds<br>< Healthline, July 2, 2020 > |
| 5. Making Food Look/Taste Better<br>< Healthline, July 2, 2020 > | 5. Using "Nut" Genes is Risky<br>< Healthline, July 2, 2020 > |

***Evidence-based pros and cons of GMO foods,***
*Insider.com, November 20, 2020*
https://www.insider.com/gmo-pros-and-cons
*Note: This article may have some words that are difficult to understand (so pls try!).* 😊

| PROS | CONS |
|---|---|
| 1. _____<br>< The Insider, November 20, 2020> | 1. _____<br>< The Insider, November 20, 2020> |
| 2. _____<br>< The Insider, November 20, 2020> | 2. _____<br>< The Insider, November 20, 2020> |
| 3. _____<br>< The Insider, November 20, 2020> | 3. _____<br>< The Insider, November 20, 2020> |

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- GMO foods are designed to be healthier and cheaper to produce, but genetic modification is not without consequences.
- The pros of GMO crops are that they may contain more nutrients, are grown with fewer pesticides, and are usually cheaper than their non-GMO counterparts.
- The cons of GMO foods are that they may cause allergic reactions because of their altered DNA and they may increase antibiotic resistance.

**[DEFINITION]** Genetically modified organisms (GMOs) are living organisms that have had their genes altered in some way. GMOs can be animals or bacteria, but most often they are crops like corn or potatoes that have been tweaked in a lab to increase the amount or quality of food they produce. Chances are, you've eaten GMO foods without even realizing it – in 2018, around 92% of corn and 94% of soybeans grown in the US came from genetically modified seeds.

The process of creating a GMO plant is complex, but it follows these basic steps:

1. Researchers identify the genes in a plant that cause specific traits, such as resistance to insects.
2. They then make copies of these insect resistance genes in a lab.
3. Scientists next insert the gene copies into the DNA of another plant's cells.

These modified cells are then used to grow new, insect-resistant plants that will go through various reviews and tests before they are sold to farmers.

**Pros of GMOs**

"GMOs are designed to be extra — extra healthy, extra fast-growing, and extra resistant to weather or pests," says Megan L. Norris, PhD, a biomedical researcher at the UT Southwestern Medical Center. Because scientists can select the most ideal traits to include in GMO crops, there are many advantages of modified foods, including:

***GMOs may have fewer pesticides.*** Many GMO crops have been altered to be less vulnerable to insects and other pests. For example, Bt-corn is a GMO crop that has a gene added from Bacillus thuringiensis, a naturally occurring soil bacteria. This gene causes the corn to produce a protein that kills many pests and insects, helping to protect the corn from damage. "Instead of having to be sprayed with a complex pesticide, these crops come with an innate 'pesticide'," Norris says.

This means that farmers don't need to use as much pesticide on crops like Bt-corn – a 2020 study found that farmers with GMO crops reduced their pesticide use by 775.4 million kilograms (8.3%) between 1996 and 2018. The use of fewer pesticides in crops may lead to fewer health risks for people eating them and less damage to the environment.

***Evidence-based pros and cons of GMO foods, (Continued…)***
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***GMOs are usually cheaper.*** GMO crops are bred to grow efficiently – this means that farmers can produce the same amount of food using less land, less water, and fewer pesticides than conventional crops. Because they can save on resources, food producers can also charge lower prices for GMO foods. In some cases, the costs of foods like corn, beets, and soybeans may be cut by 15% to 30%.

***GMOs may have more nutrients.*** Certain GMO crops are designed to provide more nutrients like vitamins or minerals. For example, researchers have been able to create a modified form of African corn that contains:

- 2 times as much folate when compared to traditional crops
- 6 times as much vitamin C when compared to traditional crops
- 169 times more beta-carotene than traditional crops.

This may be especially helpful in regions where people suffer from nutritional deficiencies.

Though there are possible risks, major agencies like the US Food and Drug Administration and the Environmental Protection Agency tightly regulate GMO foods and ensure that they are safe for people to eat. "I consume GMO products and feed them to my family without hesitation," Norris says.

**Cons of GMOs**

GMO crops can offer many advantages in costs and nutrition, but some experts worry that they carry health risks, as well.

***GMOs may cause allergic reactions.*** Because GMO foods contain DNA from other organisms, it's possible that the new DNA can trigger allergies in people who wouldn't normally be allergic to the food. In one instance, a GMO soybean crop created using DNA from a Brazil nut was unsafe for people with nut allergies and couldn't be released to the public. However, GMO foods go through extensive allergen testing, so shouldn't necessarily be riskier than conventional crops.

***GMOs may increase antibiotic resistance.*** When GMO scientists insert new DNA into plant cells, they will often add in an additional gene that makes the modified cells resistant to antibiotics. They use an antibiotic to kill off any plant cells that didn't successfully take in the new DNA.

However, researchers are finding that these antibiotic-resistant genes don't always go away once you digest GMO foods but can actually be passed through your feces into sewage systems. Some experts worry that these genes may be absorbed into harmful bacteria found in sewers or your gut that can cause serious illnesses like staph infections. This means that the usual antibiotic treatments would be powerless against these new super-bacteria. Not all experts agree on this concern, however – some scientists argue that this type of gene transfer is very unlikely and there is little risk to humans.

**Author:** Madeline Kennedy
Madeline Kennedy is a health writer for Insider covering a wide range of topics including reproductive and sexual health, mental health, nutrition, and infectious disease. Before joining Insider, Madeline worked as a health news writer for Reuters, and a domestic violence therapist. She has a master's degree in social work from UPenn and is interested in the intersection of health and social justice.

Note: This article was medically reviewed by Samantha Cassetty, MS, RD, a nutrition and wellness expert with a private practice based in New York City.

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