

GENETICALLY MODIFIED ORGANISMS (GMOs)

What are GMOs?

The initials stand for "genetically modified organism". GMOs are not a thing, but rather a process. A GMO is a plant developed through a process in which a copy of a desired gene or a section of genetic material from one plant or organism is placed in another plant, or by turning off or moving an existing gene.

Examples of wanted traits include drought resistance, insect and pest resistance, and disease resistance which are beneficial to the farmer in higher crop yields.

In Florida, where the disease called citrus greening has caused widespread crop damage and loss to the citrus industry, orange trees have been modified with a spinach gene to help crops resist the virus.¹

What GMO crops are commercially grown in the U.S.?

The only GMOs commercially available in the United States are the following nine crops: soybeans, corn (field and sweet), papaya, canola, cotton, alfalfa, sugar beets, potato and summer squash.

Non-GMO In order to obtain the non-GMO label, a product must be certified as containing ingredients with less than 1% genetic modification. Manufacturers must work with independent certification companies that verify the product meets the non-GMO project's standards.

Are wheat allergies caused by GMOs?

One of the most common <u>misconceptions about GMOs</u> is that there is GMO wheat. People frequently claim on social media to have a gluten allergy because of GMO wheat. However, **there is actually no commercially grown GMO wheat**. Wheat has been intensively conventionally grown and bred over hundreds of years to be the wheat we know and grow today. These conventional breeding methods produce many traits that could be genetically engineered, but at a much slower pace. However, since wheat is grown in such abundance every year, the process of conventional breeding is much faster.

Is Genetic Modification new?

Genetic modification isn't a new thing; it's been happening for many millennia. Have you ever heard of teosinte? This grassy plant is the precursor to corn, or maize. About 10,000 years after farmers in what is now Mexico took the first steps to domesticate the plant by simply choosing the most desirable kernels to plant, corn now provides about 21 percent of human nutrition across the globe.



Farmers have intentionally changed the genetic makeup of all the crops they have grown since domestic agriculture began.

Every fruit, vegetable and grain that is commercially available today has been altered by human hands, including organic and heirloom seeds.

"Nature is the master of genetic shuffling and is constantly sorting and resorting DNA, causing both subtle and profound changes in all living things. People first began their own DNA management thousands of years ago, when they began cross-breeding plants to produce better foods or fiber. In 1953, scientists discovered the structure of DNA, and in 1973, researchers developed a method for cutting and splicing DNA. That method became known as recombinant DNA, or rDNA, because it enabled scientists to cut and recombine segments of DNA. Since then, researchers have learned how to move genetic material in the form of DNA from one plant or animal to another.

"Genetic modification is **much more precise than selective breeding**. By transferring only certain genes from one plant or animal to another, researchers can **introduce one specific trait without also transferring dozens of unwanted traits**, as often occurs in selective breeding. And genetic modification is the only existing tool available for producing certain vaccines, drugs and diagnostics. Genetic modification in plants has been going on since the early 1980s. In 1986, EPA approved commercial growing of the first genetically engineered crop — tobacco plants resistant to a tobacco virus.

The GMO apple was developed to help fight food waste. As any parent knows, when you slice an apple into sections for easy eating, exposure to the air causes them to brown quickly. The GMO apple was modified to be non-browning.²

Are GMOs safe for my family?

Transgenic crops are no riskier than other crops. Alison Van Eenennaam, a geneticist at UC-Davis who specializes in animal biotechnology points to a 20-year history of safe use that includes "thousands of studies, eleven National Academies <u>reports</u>, and the consensus of every major scientific society in the world." She adds, "GMO crops protect plants and animals from disease and decrease the use of chemicals in agricultural production systems, minimizing the environmental footprint of food production."

Are seedless watermelons GMOs?

Seedless watermelons are not a GMO. Seedless watermelons are not the result of genetic engineering or modification, but rather just centuries of breeding watermelons with smaller and smaller seeds until we got the watermelon we eat today.

Non-GMO labels can often be misleading. Alison Van Eenennaam, a geneticist at UC-Davis who specializes in animal biotechnology points to one of the more ridiculous examples: non-GMO salt. "Salt doesn't contain DNA, so salt cannot be genetically engineered," she says. "All salt is 'non-GMO' salt."³

¹https://gmoanswers.com/ask/when-did-genetic-modifying-foods-start

²<u>https://www.gmoanswers.com</u>

³ucdavis.edu, <u>https://health.ucdavis.edu>bkic>good-food>2019/04</u>