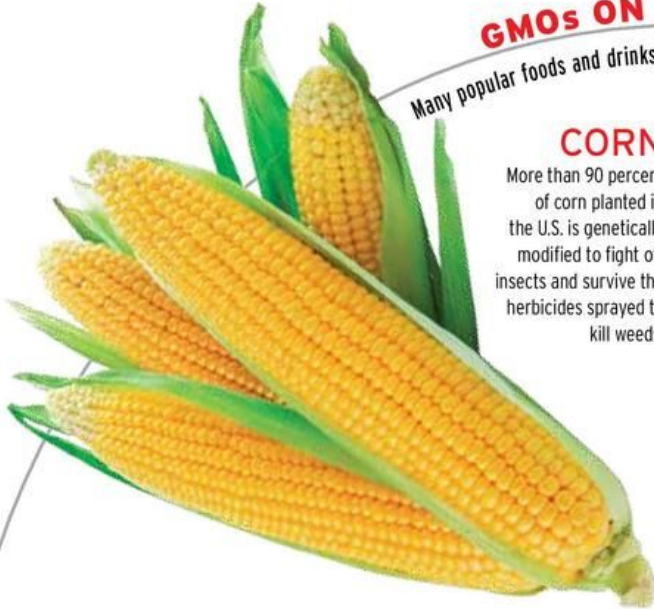


## GMOs ON YOUR PLATE

Many popular foods and drinks contain genetically modified organisms



## CORN

More than 90 percent of corn planted in the U.S. is genetically modified to fight off insects and survive the herbicides sprayed to kill weeds.

## PIZZA

Some animal-derived ingredients in pizza, like cheese and meat, can contain GMOs if the animals were fed genetically modified corn, soy, or alfalfa.



# THE BATTLE OVER GMOs

(GENETICALLY MODIFIED ORGANISMS)

**Are GMOs the answer to feeding a hungry world, or Frankenfoods that put the environment—and us—at risk?** BY ALESSANDRA POTENZA



## SODA

Most sodas are made with high-fructose corn syrup—which is likely to come from genetically modified corn—or sugar, which is likely made with genetically modified sugar beets.



## APPLES

The U.S. government recently approved a genetically engineered apple that doesn't brown after being sliced or bruised.

## CEREAL

Kellogg's and General Mills are among the cereal makers that have acknowledged using GMOs in some of their products. Any cereal may include genetically modified ingredients like corn, soy, or sugar made from genetically engineered crops.



Watch a video on the first genetically modified tomato at [upfrontmagazine.com](http://upfrontmagazine.com)



**T**housands of people recently took to the streets in 400 cities worldwide. The cause of their anger? Not oppressive governments, unemployment, or income inequality, but apples that don't brown when sliced and corn that's bred to fight off insects. In short, GMOs—genetically modified organisms.

In Los Angeles, protesters chanted, "Hell no GMO!" In Strasbourg, France, demonstrators held a minute of silence in front of the European Parliament. And in Rio de Janeiro, Brazil, people accused GMO producers of "bioterrorism."

GMOs are organisms whose DNA has been combined with a gene from an unrelated species to produce a desired trait. Some crops are genetically modified to survive herbicide sprays that kill weeds. Others are engineered to be more nutritious: A pink pineapple awaiting U.S. government approval has the same antioxidant that makes tomatoes red and may help prevent cancer. In November, the U.S. Food and Drug Administration approved the first genetically modified animal: a salmon engineered to grow to market size in about half the time as a regular salmon.

But GMOs haven't been very popular lately. Only 37 percent of Americans think they're safe to eat, according to the Pew Research Center. McDonald's recently refused to use a new genetically modified potato that produces less of a cancer-causing chemical when fried. Chipotle dropped GMOs from its U.S. offerings. And General Mills stopped using GMOs in original Cheerios after a yearlong campaign by environmentalists.

### 'I Don't Think We Know Enough'

While some see GMOs as Frankenfoods that hurt the environment, and us, others see them as the most promising solution to feeding the world's population, which is expected to skyrocket from 7 billion today to 10 billion by 2050. The government agencies regulating GMOs in the U.S. say they're safe. But some scientists and consumers argue that GMOs haven't been around long enough for us to know their long-term health effects.

"We're putting genes into crops that have never been in the food supply before," says Doug Gurian-Sherman, a scientist at the Center for Food Safety, a nonprofit organization opposing GMOs. "I don't think we know enough."

The first GMO, a tomato that ripened without softening, was sold in the U.S. in 1994. (It was later taken off the market.) In 1996, soybeans and corn that resist herbicides and kill pests were introduced. Both crops proved extremely popular with farmers. Today, 94 percent of soybeans and 93 percent of corn planted in the U.S. is genetically altered—and most of it ends up in processed foods.

According to the Grocery Manufacturers Association, up to 80 percent of what you eat has GMOs—but you might not know it. Unlike the European Union and places like India and Russia, the U.S. doesn't require foods with GMOs to be labeled.\* That



**A salmon** that's genetically modified to grow fast, next to a regular salmon roughly the same age

bothers Lena Romaldini, a 21-year-old senior at the University of New Hampshire, who tries to buy only organic foods. She fears that altering the DNA of plants is a bit like playing God—with a host of unwanted consequences for the environment. "I think we're just digging ourselves into this hole that we're not going to be able to get out of," she says.

But GMO proponents say people like Romaldini don't have all the facts. "[GMOs] have positive environmental effects," says Yves Carrière, a GMO expert at the University of Arizona. "Scientifically, they are positive and safe."

### A Boon to Farmers?

Carrière argues that bug-killing crops are beneficial because they reduce the use of insecticides, which can harm people and the environment. (Between 1996 and 2011, bug-killing corn reduced insecticide use in corn production by 45 percent worldwide.) Developing crops that can survive dry climates, others say, could help us grow food as climate change makes the planet more prone to droughts. Such crops could make a difference for drought-stricken states like California.

Marlaina Johnson, a 16-year-old who works on her family dairy farm in Orange, Virginia, says that GMOs are key to farmers. Her family depends on the genetically modified corn and soybeans they grow to feed their 170 milk cows. "[GMOs] have helped our production," she says.

But some scientists fear GMOs hurt the environment. Herbicide-resistant crops have allowed farmers to use more herbicides to kill weeds. That has had serious unintended consequences, says Gurian-Sherman at the Center for Food Safety. Monarch butterfly populations have declined by 90 percent because their food source, a weed called milkweed, has been decimated, he says. And like insecticide, herbicide can harm people.

Whether GMOs prove to be a temporary experiment depends on who you ask. Some think consumers will have the final word on whether GMOs succeed or fail. Others believe that, with a warming world and a growing population, we don't have a choice. "I think that [genetically modified] crops are here to stay," says Michael Gray, a GMO expert at the University of Illinois. "They do offer enormous potential. But they are just a tool, and we need to keep that in mind." •



**Chipotle** went GMO-free last year.

\*Vermont passed a GMO labeling law in 2014 that is set to take effect in July. The law has been challenged in court.