

# What Would a World Without GMOs Look Like?

Women harvest rice in Bali.

Photograph by Diane Cook, Jen Lenshel, National Geographic Creative

It was hailed as a radical move when more than 100 Nobel laureates [sent a letter](#) to Greenpeace Wednesday, urging the environmental group to stop blocking genetically modified foods like golden rice from reaching those who need it.

But really, the letter (and the press conference scheduled for Thursday) are just amplifying what most scientists have been saying all along: GMOs [are safe](#), important to farmers, and can help solve some of the world's most vexing nutrition problems, like preventable blindness, as well as climate challenges like drought.

Does this mean that GMOs are perfect? No. There are indications that some GMO crops are creating expensive problems with herbicide-resistant weeds, according to a recent National Academy of Sciences study (see [Scientists Say GMO Foods Are Safe, Public Skepticism Remains](#)), and the public perception that GMOs are uniformly bad is a major hurdle to selling them. And then there's the whole [labeling debate](#).

Greenpeace calls GMOs "genetic pollution." But if GMOs are to be completely out of the picture, it might mean there are no vegetables enriched with cancer-fighting chemicals, drought-resistant corn, allergen-free peanuts, and [bananas that deliver vaccines](#).

Here are some other potential breakthroughs that could be lost:

## Saving the Florida Orange

Oranges in Florida are under attack from a citrus-greening virus that threatens a \$9 billion industry. Despite generations of breeding, no citrus plant resists greening, and once infected, a tree dies. A plant pathologist at Texas A&M is developing virus-resistant oranges (see [Can Genetic Engineering Save the Florida Orange?](#)).

Avian flu devastated chicken and turkey flocks across the U.S. last year, affecting about 48 million birds, the U.S. Department of Agriculture estimates. But a team of U.K. researchers has developed a genetically modified chicken—the Isa Brown—that doesn't pass the virus onto other birds. And that means food for more people. (See [Want a Bird Flu-Free World? Consider Breeding Resistant Birds.](#))

There are not enough fish in the ocean to feed the 9 billion people expected on the planet by 2050, so scientists have been looking for years at ways to farm fish using fewer resources. After a lengthy review, the Food and Drug Administration last year

[approved](#) salmon genetically modified to grow to full size faster than regular salmon.

Along those lines, a Boston-area startup is developing ways to feed farmed shrimp with lab-grown bacteria, rather than harvesting wild fish to feed them (see [Finding Ways to Feed the Fish That Feed Us](#)).

## Fighting Blindness and Malnutrition

And then there's the enhanced golden rice (see [The Next Green Revolution](#)) which, along with sweet potatoes, have the potential to [prevent Vitamin A deficiency](#) that affects up to 50 percent of the population in some countries and leads to blindness. Golden rice has won humanitarian awards, yet public outcry has largely blocked its use.

Meanwhile, the debate over whether GMOs are good or bad has been stuck in neutral for years. Pamela Ronald, a UC Davis scientist who has been working to develop a disease-resistant, drought-tolerant rice, laid out what's at stake in a *National Geographic* [article](#) last year:

"All this arguing about what's genetically modified is a big distraction from the really important goals. We need to produce safe and nutritious food that consumers can afford and farmers can make a profit from. And we need agricultural practices that enhance soil fertility and crop biodiversity, use land and water efficiently, reduce use of toxic compounds, reduce erosion, and sequester carbon."