



# An Overview: Genetically Modified Crops

**Genetically modified (GM) crops can better cope with weeds, insects, diseases and extreme weather, benefiting farms of all sizes, consumers and the planet.**

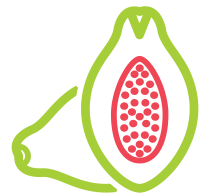
## The Basics

- // **What:** Genetically modified crops have specific traits to help them grow and thrive in today's changing environment.
- // **Why:** Genetic modification gives farmers another tool to manage things like weeds, pests, diseases and changing climate more sustainably.
- // **How:** Genetic modification of plants takes a desirable trait, like resistance to pests or diseases, and transfers it into a plant.

Because of genetic modification, we can still enjoy delicious Hawaiian papaya today that would otherwise be extinct due to the

***papaya ringspot virus.***

Researchers are working to apply the science to protect other threatened crops, like oranges and our morning cup of juice!



## The Background

For centuries, farmers and scientists have worked to improve plants to make them more resilient to pests and disease as well as tastier and more nutritious. As scientists' understanding of genetics evolved, it has become easier to identify specific traits in plants and breed for them. In the 1980s, researchers discovered a way to copy a desired trait and insert it into plants, opening up new opportunities to develop crops that benefit farmers and consumers alike. There are 11 genetically modified crops commercially available today around the world, with many others in development.<sup>1</sup>

## The Highlights

### Genetically modified crops are safe.

- // Government regulators and every major scientific body that has reviewed the safety of genetically modified foods over the past 20 years has come to the same conclusion: these crops are safe for human health, animals and the environment.
- // Since becoming available in the 1990s, not a single food safety or health issue associated with genetically modified crop use has ever been recorded.<sup>2</sup>

### Genetically modified crops improve productivity and sustainability.

- // Conservation tillage practices have been greatly enhanced by herbicide-tolerant crops, resulting in significantly less soil erosion and greater CO2 capture in the soil. Such soils are healthier, less likely to lose moisture and require fewer tractor trips across the field, which also saves irrigation and fuel expenses for the farmer.

- // Insect-resistant plants need fewer sprays, and herbicide-tolerant crops require fewer trips across a field.

### Small and large farms realize the benefits.

- // Genetically modified crops give farmers access to the best crop varieties available, which is particularly important in sub-optimal growing areas.
- // Fewer inputs and increased productivity can add up to greater cost-savings and a higher return for all farms, regardless of size.

#### References

1. ISAAA. <https://www.isaaa.org/resources/publications/briefs/54/infographic/pdf/B54-Infographics-English.pdf>
2. NAS report, Genetically Engineered Crops: Experiences and Prospects



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## Key Things to Remember

- // Innovations in plant breeding and plant science have resulted in better choices and varieties for the food and products we all depend on.
- // One example of plant science is the science of biotechnology, such as genetic modification. It is a safe and proven process that takes a beneficial trait - like resistance to pests or diseases - and transfers it into a plant to make it stronger.
- // GMO crops increase productivity, protect biodiversity, reduce the need for chemical insecticides, facilitate the adoption of no-till and conservation tillage systems, enable adaptation to the effects of climate change and help farmers of all sizes to grow crops more profitably.
- // Genetically modified crops allow farmers more choice and flexibility in identifying varieties that can thrive on their farms. Consumers, in turn, have access to the variety and supply of foods they want that, without genetic modification, might not otherwise be available.