

PLANT AND ANIMAL GENE EDITING

What Is Gene Editing?

- Gene editing technologies — such as CRISPR — use naturally-occurring processes to make small changes to an organism’s own genes in order to modify a specific characteristic. Gene editing occurs constantly in nature. This cutting-edge advancement has applications in plant and animal agriculture as well as human health.
- Plant and animal breeding are continually improving as people learn more about biology. Gene editing is really just the newest tool in a very long history of biological advancement.
- The first gene-edited agricultural product was introduced to the U.S. market in 2019.
- Agricultural scientists and plant and animal breeders are researching and developing gene-edited agricultural and food products with specific societal benefits, including:
 - Eggs, milk, wheat, and other food products, with lower allergenic potential
 - Healthier soybean oils that replace trans-fat
 - Pest- and disease-resistant fruits and vegetables
 - Disease-resistant animals, which improves animal welfare

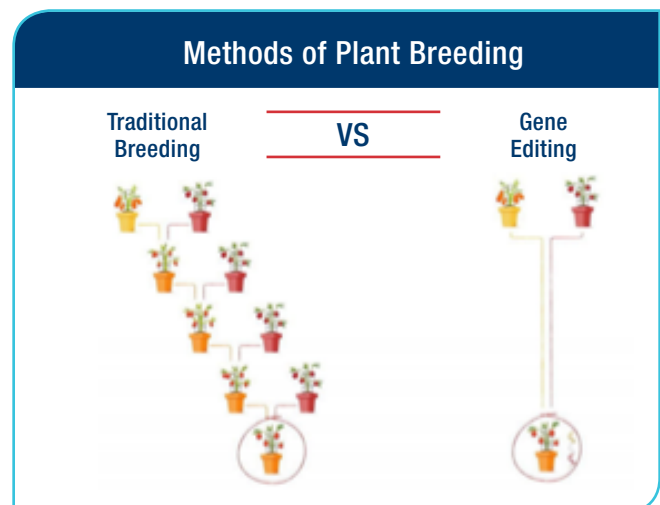


What Is CRISPR?

- CRISPR (pronounced “crisper”) is an acronym for “Clustered, Regularly Interspaced, Short Palindromic Repeats,” and refers to a recently developed genome editing technology that can revise, remove, and replace DNA.
- Zinc-finger (ZFNs), TALENs, rAAV, Transposons are examples of other gene editing technologies.

How Does Gene Editing Work?

- Evolving methods like gene editing allow us to work within a plant’s own gene pool — without the introduction of foreign DNA — to achieve the same end-result that could be achieved through more traditional breeding methods, but in a more targeted way.
- This added precision allows scientists to forgo multiple cycles of plant selection from a population of thousands of individual plants and move to testing elite lines sooner.



USDA Issues Clarifying Statement on The Regulation of Gene-edited Products

U.S. Secretary of Agriculture Sonny Perdue issued a statement on March 28, 2018, providing clarification on the USDA's oversight of plants produced through new breeding techniques, including genome editing.

The statement says:

“Under its biotechnology regulations, USDA does not regulate or have any plans to regulate plants that could otherwise have been developed through traditional breeding techniques as long as they are not plant pests or developed using plant pests. This includes a set of new techniques that are increasingly being used by plant breeders to produce new plant varieties that are indistinguishable from those developed through traditional breeding methods.

“The newest of these methods, such as genome editing, expand traditional plant breeding tools because they can introduce new plant traits more quickly and precisely, potentially saving years or even decades in bringing needed new varieties to farmers.”

It's important to note that the USDA statement reaffirms and clarifies existing policy, which sends a clear message to other governments that its regulatory policy on gene-edited plants has not changed.



What People Are Saying

“Plant breeding innovation holds enormous promise for helping protect crops against drought and diseases while increasing nutritional value and eliminating allergens. Using this science, farmers can continue to meet consumer expectations for healthful, affordable food produced in a manner that consumes fewer natural resources.”

— U.S. Agriculture Secretary Sonny Perdue

“Applications in agriculture and animal health have the potential to deliver major advances to help feed the world.”

— Katrine Bosley, President & CEO, Editas Medicine, Inc.

“Over the next decade, gene editing could help humanity overcome some of the biggest and most persistent challenges in global health and development...Gene editing to make crops more abundant and resilient could be a lifesaver on a massive scale.”

— Bill Gates, Co-chair of the Bill & Melinda Gates Foundation

“Gene editing is a potentially revolutionary tool that will improve the lives of humans in clear and tangible ways.”

— Michael Specter, Columnist for The New Yorker

“The most widespread use until now has been in agriculture, to create disease-resistant wheat and rice, and modify tomatoes and soybeans to improve yields. CRISPR's use in humans is more recent, but the possibility of the diseases it could treat and the lives that could be improved is remarkable.”

— Senate Health Committee Chairman Lamar Alexander (R-Tenn.)