BIO ISSUE BRIEF

Biotechnology Innovation Organization

Plant Genome Editing

Issue Background

Scientists are exploring myriad potential uses for genome editing tools, including clinical, agricultural, and environmental applications. In basic research, genome editing is being used to determine the roles different genes play in disease and medical researchers are exploring ways to treat or prevent genetically-defined human diseases such as sickle cell disease, cystic fibrosis, congenital blindness, hemophilia, amyloidosis, and lysosomal storage disorders.

Improving the health of plants, their sustainable production and nutritional benefit has become an area of heightened societal interest. Independent researchers and farmers are committed globally to advancing these goals and consumers are looking for more information with respect to these practices when making food choices.

The history of selecting plants with improved genetics has provided steady improvements including increased yields while using fewer resources and greater resistance to disease and pests. However, the benefits to society can be greatly improved using more modern breeding techniques, such as genome editing, that continue to tap into the significant genetic potential that exists in the plant's own natural genetic code. In other words, changing the genomes of plants is not new, and ultimately, neither are the results that we can achieve. The benefit of genome editing is we can now do it in a manner that is more informed, and more precise and therefore can better serve our goals for society more readily.

Policy Position

BIO is a strong proponent of science-based, risk-proportionate regulation of biotechnology. BIO is highly supportive of the science-based position that plants with genetic changes created using genome editing tools without introducing foreign DNA, should not be treated differently than those modified through more traditional breeding methods to achieve similar results.

As scientific developments progress, BIO supports continued discussion and engagement on this topic with important stakeholders, including members of the regulatory, legal, academic, ethical, and agricultural communities.

Key Points

- ✓ In the pipeline are important traits that will improve plant health and reduce the use of pesticides such as varieties of spinach and grapes that are resistant to downy mildew and normally require multiple sprayings per season to control.
- ✓ Scientists are increasing crop sustainability by improving drought and heat tolerance.
- ✓ Research is underway to improve the genetics of rice to make high-yielding, disease resistant varieties that tolerate marginal soils that would particularly benefit farmers in developing nations, who lack access to many agricultural inputs and production technologies
- ✓ Modern plant breeding tools are delivering on important consumer traits such as reduced gluten wheat and soybeans with healthier oil content and improved protein composition.