WELCOME TO A NEW ERA OF GENE EDITING DISCOVERY



"As we launch this first edition of our gene editing newsletter, I'm proud to share the growing momentum behind responsible innovation in agriculture. At the Center for Food Integrity, we believe transparency and trust are the foundation for progress—and gene editing is one of the most promising tools to meet the food system's evolving demands. Through the Coalition for Responsible Gene Editing in Agriculture, we are helping to shape a social landscape where science-driven solutions can thrive. The future of food will be defined not only by what we grow, but by how we engage the public in understanding the technologies behind it."

— Charlie Arnot, The Center for Food Integrity

Shaping the Future of Food:
The Role of Responsible Gene Editing

COALITION FOR RESPONSIBLE GENE EDITING IN AGRICULTURE

As global challenges like climate change, food insecurity, and sustainability intensify, gene editing is emerging as a powerful tool to help agriculture adapt and thrive. From crops that use fewer resources to livestock with improved health traits, gene editing offers solutions that can increase productivity while protecting the environment. But with innovation comes responsibility.

The adoption of gene editing in agriculture is accelerating worldwide, with significant engagement from companies, governments, and academic institutions:

Over 500 gene-edited agricultural products are currently in development globally, spanning from basic research to in-market commercialization. Notably, the private sector accounts for 43% of these developments.

According to *AgFunderNews,* Investment in agricultural gene editing startups surged by 206% year-over-year in the first half of 2024. Since 2012, these startups have collectively raised more than $2.7 billion.

Leading AgriTech companies are at the forefront of CRISPR research and commercialization, focusing on enhancing crop traits such as yield, stress tolerance and disease resistance in animals.

Academic institutions are also making significant strides. For instance, the Innovative Genomics Institute in Berkely, CA has developed CRISPR protocols for editing over 30 common crop species and is working on applications like improving drought tolerance in rice and reducing toxic compounds in cassava.

This global momentum underscores the importance of responsible governance and collaboration, as championed by the Coalition for Responsible Gene Editing in Agriculture, to ensure that gene editing technologies are developed and adopted in ways that are transparent, safe, and aligned with social expectations.

The Coalition's mission is to cultivate global support for gene editing by developing and promoting trustworthy guidelines for its use. The work emphasizes key principles that foster transparency, prioritize safety, and address the social, ethical, and market implications of this technology. Through effective stakeholder engagement and broad collaboration, the Coalition is helping shape a future where gene editing is embraced for its benefits and guided by a foundation of responsibility and trust.

As conversations about food innovation continue, the Coalition stands as a model for how science, values, and global cooperation can come together to move agriculture forward.

Learn more by visiting: geneediting.foodintegrity.org

Find us on YouTube. *Discover more about the mission of the Coalition by visiting our YouTube Channel.*

[1] Journal of Biomedical and Research Environmental Sciences; NIH PubMed Central



TRAITS AND TRENDS

FDA Approves Gene-Edited PRRS-Resistant Pigs, Marking Milestone in Livestock Health

In a landmark decision for animal agriculture, the U.S. Food and Drug Administration (FDA) has approved the use of gene-edited pigs resistant to Porcine Reproductive and Respiratory Syndrome (PRRS), a disease that has plagued the swine industry for over three decades. Developed by Genus plc and its subsidiary, the Pig Improvement Company (PIC), this breakthrough offers a promising solution to a virus responsible for significant economic losses and animal suffering.

The PRRS-resistant pig is a breakthrough for both animal welfare and public health. Because these pigs are protected from a devastating disease called PRRS, PRRS resistant pigs are less susceptible to secondary infections that require treatment with antibiotics. That's great news for reducing antibiotic use on farms and helping prevent antibiotic resistance. Healthier pigs also mean fewer sick days, less stress, and a better quality of life for the animals. Plus, they grow more efficiently—using less feed, water, and land—which helps make pork production more sustainable. All of this adds up to safer, more affordable pork for families and a food system that's better for animals, farmers, and the planet.

The gene-editing technology employed by Genus involves a precise deletion of a small portion of the pig's DNA that encodes a protein used by the PRRS virus to enter and infect the pig's cells. This modification renders the pigs resistant to PRRS without affecting their overall health or the quality of pork products. Essentially pigs will continue to be exposed to the virus, they just won't get sick.

Matt Culbertson, Chief Operating Officer of PIC, emphasized the significance of this development:

"We have spent years conducting extensive research, validating our findings, and working with the FDA to gain approval. Today marks a major milestone for consumers, farmers, and the entire pork industry who have desperately hoped for a solution to PRRS."

While the FDA's approval is a critical step toward commercialization in the U.S., Genus is actively seeking regulatory approvals in key export markets, including Canada, Mexico, Japan, and China. Countries like Brazil, Colombia, and the Dominican Republic have already issued positive determinations, indicating they will



regulate the PRRS-resistant pigs the same as conventional pigs.

This advancement not only promises to enhance animal welfare by reducing disease prevalence but also aims to decrease the industry's reliance on antibiotics, addressing concerns about antimicrobial resistance. As the global demand for sustainable and ethical food production grows, the approval of PRRS-resistant pigs represents a significant stride toward meeting these challenges.

For more information on this development, visit PRRSResistantPig.com.

Sources: *(FDA, www.pic.com)*

A comprehensive review of gene-edited plants reveals significant advancements across three key trait categories: enhanced resistance to fungi and viruses, improved nutritional profiles, and traits that increase the overall utility and productivity of crops and animals for global food systems. Below are just a few examples:

PRODUCT	TRAIT	METHOD	STATUS	NOTABLE DEVELOPERS
Tomatoes (Japan)	Increased GABA (blood pressure benefit)	CRISPR	Commercially available	Sanatech Seed
Soybeans (US)	High oleic acid (healthier oil)	TALEN	Commercial	Calyxt
Rice (China, India)	Blast resistance, drought tolerance	CRISPR	Advanced field trials	CAAS, IRRI
Mushrooms (US)	Non-browning (polyphenol oxidase knockout)	CRISPR	Deregulated (USDA)	Penn State University
Pigs (US, UK)	PRRSV resistance, leaner meat	CRISPR	Research/ pre-regulatory	University of Missouri, Genus
Potatoes (US, Canada)	Reduced browning, lower acrylamide	TALEN	Commercial (conventional + GE mix)	Simplot (Innate lines)
Bananas (Africa)	Virus resistance (eBSV)	CRISPR	Field trials	IITA, UC Davis
Maize (China)	Improved yield, herbicide resistance	CRISPR	Field trials	CAAS
Cassava (Africa)	Cassava mosaic virus resistance	CRISPR	Research & field trials	IITA, Donald Danforth Plant Science Center
Watermelon (China)	Male sterility for hybrid breeding	CRISPR	Early-stage trials	Dalian University of Technology

EVENTS AND CONFERENCES

2025 Dates

- **Dec. 3-6, 2025:** Plant Genomes, Systems Biology & Engineering • https://meetings.cshl.edu/meetings.aspx

2026 Dates

- **AGBT Annual Conference (TBD)** https://www.agbt.org/home/home/agbt-ag/registration
- **March 17–18, 2026:** World Agri-Tech Innovation Summit 2026 https://worldagritechusa.com/
- **January 9–14, 2026:** Plant and Animal Genome Conference https://intlpag.org/PAG33

Get Involved / Stay Connected:

Would you like to become a member of the Coalition for Responsible Gene Editing in Agriculture?
The Coalition leads two initiatives:

- A research-based communication framework to effectively engage in conversations about gene editing with developers, food manufacturers, processors and retailers, and consumers.
- A Framework for the Responsible Use of Gene Editing in Agriculture to build trust in researchers, developers and the end-users of gene editing technology.

Learn more here.