IN THE NEWS

Innovations in Preventing Plant Diseases

Corteva Agriscience has a long-standing commitment to meeting the rapidly evolving needs of farmers. As part of this effort, scientists added a game-changing gene editing technology to our R&D process beginning in March.

The proprietary technology will help bring added protection to Corteva's elite corn hybrids by packaging multiple disease-resistant native traits into a single location within the gene. This will help better target products in the R&D pipeline to address the most devastating corn diseases facing American farmers. This includes Northern leaf blight, Southern rust, gray leaf spot and anthracnose stalk rot, which combined cost corn growers more than 318 million bushels in 2021.

In June, *Molecular Plant Pathology* published Corteva research that confirms the natural movement of disease resistance genes within a corn plant's genome. This natural gene mobility occurs too slowly to effectively address disease growth and climate-related pressures facing farmers, but gene editing tools (such as DNA-replicating CRISPR technology) can mimic this naturally occurring process to allow researchers to relocate multiple disease resistance genes, speed the plant breeding progress and more quickly deliver enhanced, high-performing products to farmers.

By using gene editing to combine and reposition disease-resistant traits that already exist within the corn genome, scientists can bolster disease tolerance and minimize production stress, which could result in healthier plants and increased yield potential. Leveraging these new breeding techniques also simplifies disease management options for farmers and reduces the need for additional crop protection product applications to combat disease pressure. It will give farmers the freedom to select performance characteristics to meet their yield goals, rather than having to worry about disease resistance.

This gene editing breakthrough and subsequent research are part of Corteva's effort to provide farmers with more sustainable ways to protect their crops while safeguarding the resources that make food production possible. It helps meet Corteva's sustainable innovation criteria for new products, which are based on the United Nations Sustainable Development Goals.

This groundbreaking plant breeding approach is initially being applied to the diseases that most concern American farmers, but it could be scaled to other crops, incorporate other diseases or be tailored to specific geographies. Corteva expects to offer the resulting products by the end of the decade.


Northern leaf blight


Southern rust


Gray leaf spot


Anthracnose stalk rot

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