

**Increasing
sustainability**

NGT CROPS FOR DISEASE AND PEST RESISTANCE



SUGAR BEET

British Sugar, in collaboration with agricultural biotechnology company **Tropic Bioscience**, has successfully applied gene editing to sugar beet to **target Virus Yellows (VY) disease**. Using Tropic's GEIGS® technology, the team has made precise gene edits in sugar beet to **build natural resistance to VY**, a disease that is devastating major European sugar beet regions, such as France, Germany, Poland, the UK, the Netherlands and Belgium, sometimes leading to 50% yield losses. These newly edited plants will now undergo further testing in controlled environments, with field trials anticipated in the coming years. If successful, this development could offer a **sustainable solution** to protecting sugar beet yields and **reducing the need for plant protection solutions**.



STRAWBERRY

Ohalo Genetics, in partnership with **UF/IFAS**, **Florida Foundation Seed Producers**, and the **Florida Strawberry Growers Association**, is developing **strawberry varieties resistant to neoestalotiopsis**—a damaging fungal disease first detected in Florida in 2017, that has resulted in significant crop losses and increased production costs for growers. The project uses advanced breeding technologies to integrate resistance into existing UF/IFAS varieties. Field trials are planned for this year 2025, **aiming to reduce fungicide use and improve crop resilience**.



CANOLA

Cibus Inc. is developing genome-edited canola varieties with **durable resistance to Sclerotinia (white mold)**, a major fungal disease that **significantly reduces yields in oilseed crops**. Using its proprietary RTDS® gene-editing platform, Cibus has engineered multiple modes of action to improve plant defence against the pathogen, with **field trials showing enhanced resistance**. The company recently completed edits for a fourth mode of action and expects greenhouse results this year 2025. These developments are part of Cibus's broader strategy to offer trait solutions that reduce yield losses and input dependency.





ORANGE

Huanglongbing (HLB) and **citrus canker** have devastated Florida's citrus industry, **cutting production by 80%** and threatening thousands of jobs. In response, biotech startup **Soilcea**, in collaboration with the **University of Florida**, is using CRISPR to develop **citrus trees resistant to these diseases** by targeting genes linked to susceptibility. The company is working with growers to test and distribute the new varieties, with the goal of scaling up production and commercialising them. This approach offers a sustainable alternative to the use of plant protection solutions, aiming to restore citrus production and protect grower livelihoods.

SORGHUM

Sorghum is the second most important cereal in sub-Saharan Africa, with over 300 million people relying on it as a key part of their diet and nutrition. **Kenyatta University** in Kenya, the **ISAA-AfriCenter**, the **African Agricultural Technology Forum (AATF)** and **Corteva Agriscience** are developing genome-edited sorghum varieties with **resistance to Striga (witchweed)**, a **parasitic plant responsible for major yield losses** in the region. By reducing the crop's susceptibility to Striga this innovation aims to improve food security for smallholder farmers. The project is currently undergoing multi-location field trials under the Feed the Future Striga Smart Sorghum for Africa (SSSfA) initiative, with commercial release expected in the coming years, pending regulatory approval.



GRAPE WINE

Fondazione Edmund Mach, an Italian research institute, has confirmed it will begin open-field testing of its first genome-edited grapevine variety, 'Chardonnay+', developed using CRISPR/Cas9. The edited plants carry point mutations in two native genes to **enhance resistance to downy mildew**, a **major fungal disease in viticulture**. If successful, this will be one of the first authorised field trials of NGT grapevine in the EU **aimed at reducing fungicide use** and supporting more sustainable wine production.

NGTs help farmers reduce the need for plant protection solutions, making agriculture more cost-effective and sustainable

Plant protection solutions are essential for maintaining agricultural productivity across Europe. However, farmers and policymakers alike are seeking ways to improve their use to reduce environmental impacts and costs — aiming to protect biodiversity, as well as soil and water health.

New Genomic Techniques (NGTs) offer a promising way forward. They enable the development of crop varieties with improved resistance to pests and diseases, reducing the need for plant protection products while helping to maintain or even increase yields.

By enhancing a plant's natural resilience, NGTs support more targeted and efficient crop protection strategies. This can reduce overall use of inputs and contribute to integrated pest management practices, with lower environmental impacts such as fewer residues, less runoff, and reduced pressure on non-target organisms.

As the EU works toward greener and more resilient food systems, NGTs can help farmers meet sustainability goals while staying competitive — supporting a shift toward more effective and environmentally responsible crop protection.



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