New Genetic engineering Techniques (NGT):
New GMOs in Cultivation
New GMOs in Development

Source: “Rice can come in brown, white, red, and black colour.” https://commons.wikimedia.org/wiki/User:Earth100, via Wikimedia Commons

Baldegg, January 15, 2026

Commissioned by the Federal Office for the Environment (FOEN)

Imprint

Contracting authority: Federal Office for the Environment (FOEN), Soil and Biotechnology Division, Biotechnology Section, CH-3003 Bern. The FOEN is an office of the Federal Department of the Environment, Transport, Energy and Communications (DETEC).

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Date: January 2026

Note: This report was commissioned by the Federal Office for the Environment (FOEN). The contractor is solely responsible for its content.

Table of Contents

1. Introduction

This report is not market research in the usual sense (as offered, for example, by portals such as Research and Markets for a fee).[1]

As in the past ten years, various sources have been used to gain an impression of which plants developed using new genetic engineering techniques (NGT) are already being cultivated and marketed. Since 2025, research in publicly accessible (online) sources has been supplemented by information from organizations operating in countries where new genetic engineering techniques and their application in the plant sector have been (more or less) deregulated for some time (Canada, USA, Argentina, Japan). This direct exchange often makes it possible to determine more precisely whether an NGT plant is actually being cultivated and commercialized. This cannot be deduced from the statement "cleared for market access" alone (see 4.).

Anyone attempting to gain an overview of the market situation is confronted with the problem that companies are not obliged to provide precise information on whether and, if so, which of their NGT plants are already being cultivated and are commercially available. Research is made even more difficult by the fact that in many countries neither seeds nor NGT products are subject to declaration requirements. As long as the market is still reasonably transparent, as seems to be the case at present, direct inquiries to companies can be a way of clearing up ambiguities. For example, inquiries by the Canadian Biotechnology Action Network (CBAN) to food companies finds that NGT strawberries, although announced possible market entry in 2024, were still not on the market in Canada or the US in 2025. However, time-consuming research such as this requires at least some knowledge of which NGT plants companies are working on. Since a complete overview of the product portfolio is not possible, it can be assumed that the data contained in the report is not complete.

Many start-ups are still active in the field of NGT plant development. Almost every year, new names appear in this sector, while others disappear. One example of a new company is Ohalo Genetics, Inc., founded in 2019 in the USA, which only went public in 2024 with its first press release and a product that it claims is almost ready.[2]

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1 https://www.researchandmarkets.com, https://www.insightaceanalytic.com/report/plant-breeding-and-crispr-plants-market/3003, https://www.strategicmarketresearch.com/market-report/plant-breeding-crispr-plants-market (last accessed: December 15, 2025)

2 https://www.ohalo.com/about (December 15, 2025)

Other companies have had to file for bankruptcy after just a few years, such as Yield10 Bioscience, which had focused on NGT traits in camelina. Yield10 Bioscience has since sold its assets to Nufarm, a global agrochemical and seed company listed on the Australian stock exchange. With this acquisition, finalised 2025, Nufarm has access to technology, rights, and proprietary seeds and germplasm that have been developed over the last decade.[3]

Another example is Benson Hill:

> *"After the local startup Benson Hill debuted as a $2 billion public company on the New York Stock Exchange in 2021, it became the go-to success story of St. Louis' developing innovation system. St. Louis now had claim to a homegrown "unicorn." But in just a few years, that story crumbled as the company built around innovation in soybean genetics began to struggle, weighed down by physical assets and a bet on plant-based meat protein that didn't deliver the intended results. The company went through a structural pivot, now looking to sell its high-protein soybeans as animal feed, especially for poultry.*
>
> *"That kind of work – making pivots, recreating new markets, establishing what those value chains are going to look like – it takes time and money," says Mike DeCamp, president and CEO of St. Louis-based Expedition Ag Partners. "Unfortunately, they ran out of both."*
>
> *Benson Hill filed for Chapter 11 bankruptcy protection in March 2025.[4] Two months later a new private company, Confluence Genetics, emerged with Benson Hill's core intellectual property, assets, and market strategy.*
>
> *The new company is "focused solely on optimizing soy quality traits and nutrient density," while removing "anti-nutrient" elements of soybeans (oligosaccharides) that make them more difficult to digest. To make soybeans with these preferred traits, the new company will continue to make use of three core technologies purchased from Benson Hill in the bankruptcy process: decades of research into soybean genetics Benson Hill had acquired from Schillinger in 2019, a predictive breeding software platform called CropOS, and a physical "crop accelerator," a speed breeding facility housed in the 39 North AgTech Innovation District."[5]*

Actually it is not clear if the new company is using CRISPR in developing new soy traits.[6]

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3 https://nuseed.com/33321-2/ (November 13, 2025)

4 https://www.stlpr.org/news-briefs/2025-03-20/st-louis-benson-hill-agtech-bankruptcy-protection (December 18, 2025)

5 https://www.stlmag.com/business/confluence-genetics-benson-hill-bankruptcy/ (December 24, 2025).

6 https://confluence.ag/technology/ (December 14, 2025)

The entries in the table New GMOs in development have increased steadily in recent years. For the current report, we again checked whether up-to-date information was available for the plants listed there. Projects/traits for which no current information could be found and which are no longer listed on the companies' websites were removed from the tables. Unfortunately, it is not possible to clarify within the scope of this research whether these NGT plants are already on the market or whether their planned market launch has been postponed or discontinued altogether, for whatever reason.

Greater transparency about actual market developments could only be achieved through internationally binding agreements, mandatory disclosures by the developing companies, and a declaration requirement (from seed to end product).

The tables no longer include information on release trials conducted with NGT in various European countries (some of which have been ongoing for several years). The data on these trials is published annually by Testbiotech[7] and the transgen[8] portal, among others.

License agreements are also no longer listed. Comprehensive and up-to-date data is provided by the Swiss Federal Institute of Intellectual Property in a study published in August 2025: CRISPR Technology 2025: Patent & License landscape on Plants.[9]

How the plants listed in the tables would be treated under the new EU regulation – whether they fall under NGT category 1 or 2 – cannot be clarified within the scope of this report. It is also unclear how CRISPR was used in the plant development projects (transgenic/non-transgenic-CRISPR-approach).

There are various CRISPR systems:[10]

To perform genome editing, scientists must first introduce CRISPR and other related genes – foreign DNA sequences – into the plant cells. This can result in the plant's own genes being edited with or without foreign DNA remaining in the organism. Most genome-edited plants are still regulated as genetically modified organisms (GMOs) if they contain foreign genes.

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7 https://www.testbiotech.org/en/projects/field-trials-of-plants-derived-from-new-genetic-engineering-development-in-europe/ (November 12, 2025)

8 https://www.transgen.de/anbau/1455.freilandversuche-eu.html (December 15, 2025)

9 https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf (December 30, 2025)

10 https://today.uconn.edu/2025/11/new-method-makes-transgene-free-gene-editing-even-more-promising/ (December 30, 2025)

These approaches are called conventional CRISRP-Cas systems (such as CRISPR-Cas9). They utilize an RNA template (guide RNA) to direct the Cas nuclease to a DNA sequence, where it induces a double strand break. This break is often repaired by cellular processes such as non-homologous end-joining (NHEJ). This type of DNA modification is useful for knocking out genes. When a donor template is added, the double strand breaks can be repaired by homologous recombination to introduce targeted changes and insertions, including large insertions of transgenes.

There are more patent families which cover CRISPR-modified plants (5'152 patent families).[11]

These more conventional methods are often less efficient or specific than desired. This led to the development of more advanced CRISPR based techniques.[12] Base Editing uses a guide RNA to bring a base editing enzyme (deaminase fused to a Cas enzyme, such as a Cas nickase) to a specific nucleotide of DNA. Notably, no DNA is cut. This class of enzyme is capable of making four kinds of changes: C to T, T to C, A to G, and G to A. This type of targeted change can introduce very specific DNA changes, without the randomness of NHEJ or the relatively low efficiency of homologous recombination and is ideal for correcting or introducing point mutations. Although not all base conversions are currently possible, and off-target effects remain a consideration, base editors are intrinsically non-transgenic when delivered as ribonucleoprotein (RNP) complexes or transient constructs, making them highly relevant to the evolving regulatory frameworks in Switzerland and the European Union.

A newer method was developed called Prime Editing. This method uses a modified Cas protein is only able to cause single strand "nicks" rather than double strand breaks. The modified Cas protein is fused to a reverse transcriptase which allows it to introduce new DNA sequences into a specified site. This chimeric protein uses a prime editing guide RNA (pegRNA) to simultaneously specify the target site and serve as a template for the reverse transcriptase to introduce the desired edit. This method is capable of inserting up to 200 bases at a time, or deleting over five thousand bases at a time, with greatly reduced off-target effects. When paired with recombinases, insertions of over five kilobases are also possible.

There are less patents for non-transgenic CRISPR editing (2,350 patent families implicitly ("knock-out", "base editing", etc.) and 247 explicitly ("non-transgenic" or "DNA-free", etc.) describe non-transgenic genome editing).[13]

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11 https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf, p. 8. (December 30, 2025)

12 See for example: Longzheng Chen, Wei Li, Lorenzo Katin-Grazzini, Jing Ding, Xianbin Gu, Yanjun Li, Tingting Gu, Ren Wang, Xinchun Lin, Ziniu Deng, Richard J McAvoy, Frederick G Gmitter, Zhanao Deng, Yunde Zhao, Yi Li, A method for the production and expedient screening of CRISPR/Cas9-mediated non-transgenic mutant plants, *Horticulture Research*, Volume 5, 2018, 13, https://doi.org/10.1038/s41438-018-0023-4

13 https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf, p. 89. (December 30, 2025)

2. New GMOs in cultivation (see appendix, Table 1)

Currently three New GMOs are being cultivated in two countries. In the USA, two herbicide- and insect resistant maize varieties developed with CRISPR are being cultivated. Both varieties are also transgenic. Insect and herbicide resistance as dominant characteristics of "conventional" (transgenic) genetic engineering have been produced with CRISPR. In Japan, a tomato with increased GABA content is on the market, intended to lower blood pressure, also developed with CRISPR.

3. New GMOs in development (see appendix, Table 2)

In development there are 89 New GM crops which belong to 31 species. While the application of "conventional" genetic engineering largely focussed on four plants – soy, maize, rapeseed and cotton – used as animal feed, processed food ingredients, fuel or clothing, the spectrum of application of the New GMOs is far broader.

Close to market – according to information, given by the companies – there are 15 NGT-plants.

Corteva

- **Dwarf maize**

  According to the company: To be expected in 2027.[14]

- **Multi disease resistant maize**

  According to the company: To be expected in 2028.[15]

14 https://investors.corteva.com/static-files/86f6302a-8796-4658-b13e-96a96321ec44 (November 12, 2025)

15 https://investors.corteva.com/static-files/86f6302a-8796-4658-b13e-96a96321ec44 (November 12, 2025)

Inari

- **High-yielding soybean**

  "Closest to commercialisation are our first-generation high-yielding soybeans. Our customers will bulk up products for commercialisation soon, and in the meantime, their farmers can see our edited plants this summer at demo plots across the US."[16]

GDM

- **Drought-tolerant soybean**

  "GDM, a leading seed company in Argentina, is developing a gene-edited soybean variety that maintains growth under water stress by disabling a gene responsible for the plant's drought-response inhibition. The resulting variety is expected to show improved productivity in dry conditions, such as those experienced during 'veranicos' – short droughts with high temperatures – in southern Brazil. Commercial launch is planned for the 2027/2028 harvest, with early demand anticipated in water-stressed regions like Rio Grande do Sul."[17]

CIBUS Inc.

- **Herbicide-resistant rice (two different varieties)**

  "The herbicide-resistant traits (HT1, HT3) are progressing on schedule toward targeted initial commercial launch in Latin America, beginning in 2027, followed by expansion to the United States in 2028, and then Asia closer to 2030."[18]

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16 https://www.agtechnavigator.com/Article/2025/03/25/combining-ai-with-gene-editing-set-to-boost-stagnating-corn-yields-says-inari/ (October 13, 2025)

17 https://www.plantetp.eu/wp-content/uploads/2025/05/ngt-booklet-ngt-crops-for-resilient-agriculture.pdf (December 17, 2025)

18 https://www.investing.com/news/transcripts/earnings-call-transcript-cibus-q3-2025-reveals-earnings-miss-stock-dips-93CH-4357468 (December 22, 2025)

BioHeuris

- **Herbicide-resistant rice**
- **Herbicide-resistant sorghum**

  BioHeuris projects that the rice and sorghum varieties will be available in the market by 2026 or 2027.[19]

Delhi University's Centre for Genetic Manipulation of Crop Plants (CGMCP), Indian Council of Agricultural Research

- **Low-pungent, pest and disease resistant mustard**

  "In 2025 the mustard was undergoing the second year of trials in 16 locations across North and Central India. If the results are good, this variety – a canola-quality low-pungent mustard that is simultaneously resistant to major fungal pathogens and pests – would be ready for release by around August 2026."[20]

ToolGen

- **Drought-tolerant pepper**

  "ToolGene is currently conducting field trials on their CRISPR-developed drought-tolerant bell pepper, which is estimated to be commercialised in the next 3 to 5 years."[21]

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19 https://news.agropages.com/News/NewsDetail---51963.htm (December 18, 2025)

20 https://compass.rauias.com/current-affairs/gene-edited-mustard/ (December 22, 2025)

21 https://www.plantetp.eu/wp-content/uploads/2025/05/ngt-booklet-ngt-crops-for-resilient-agriculture.pdf (December 17, 2025)

Ohalo Genetics Inc.

- **Hybrid potato**

  "Ohalo's approach is to supply both seeds and finished products, with commercial trials underway and a broad rollout expected in the next 1–2 years."[22]

CIBUS Inc., S&W Seeds, Alfalfa Partners

- **Alfalfa with improved nutrient composition, better digestibility, high yields**

  "CIBUS has successfully completed the FDA's Plant Biotechnology Consultation Program for its altered lignin alfalfa trait, developed in partnership with S&W Seed Company. The FDA confirmed it has no further questions regarding the use of this gene-edited alfalfa in food or feed applications. S&W Seed Company plans to commercialize two initial variety offerings – a fall dormancy five variety and a fall dormancy seven variety – marking the first commercial gene-edited alfalfa varieties in the United States."[23]

Ohalo Genetics Inc.

- **Almond with improved agronomic property**

  "FruitionOne is the world's first self-fertile Nonpareil almond variety. This groundbreaking innovation allows almond growers to eliminate traditional pollenizer trees when planting Nonpareil almond orchards and is estimated to double mature orchard profitability. FruitionOne trial orchard plantings are underway. FruitionOne will be available for early orders in 2025 with first commercial deliveries beginning in 2027."[24]

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22 https://www.vantrumpreport.com/2025/07/14/the-worlds-first-true-potato-seeds-how-ohalo-is-transforming-agriculture/ (November 18, 2025)

23 https://investor.cibus.com/news-releases/news-release-details/us-food-and-drug-administration-completes-review-cibus-altered (December 12, 2025)

24 https://www.ohalo.com/fruitionone (December 30, 2025)

TROPIC Bioscience

- **Non-browning banana**

  "Our non-browning banana variety is now commercially available, and will be launching to consumers in the US and Canada in 2026. With regulatory approval granted in several growing regions, Tropic are well positioned to provide delicious varieties to markets around the world."[25]

Soilcea

- **HLB-resistant Orange**

  With support from the United States Department of Agriculture (USDA) and the National Science Foundation's Small Business Innovation Research Programs, Soilcea has developed a Carrizo rootstock variety – CarriCea T1 – that is resistant to Huanglongbing (HLB).

  "We are starting to exponentially scale our trees to have more numbers, and so really where we're at now is field trial scale, but by the fall of next year or the spring of 2027 we're going to have full-scale production where we can start putting hundreds of thousands of trees in the ground each year," Lagos shares. "It's definitely a sequential process. We're scaling up production while growers are getting experience with these trees, so hopefully then in two years they're going to be really ready to replant the industry."[26]

Elo Life Systems

- **Watermelon (as natural sweetener)**

  "Elo Life Sciences begins field trials to produce monk fruit molecule in watermelons with a goal to launch a new high intensity sweetener juice and powder in 2026."[27]

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25 https://tropic.bio/best-inventions-2025/ (December 30, 2025)

26 https://centralfloridaagnews.com/soilceas-disease-resistant-sweet-orange-trials-report-promising-results/ (December 30, 2025)

27 https://elolife.com/news/food-navigator-new-high-intensity-sweetener-that-rivals-monk-fruit-moves-closer-to-launch/ (November 5, 2025)

4. What does the category “cleared for market access” means?

In recent years, some countries have completely deregulated new genetic engineering techniques and the plants developed using them (e.g., Canada), but most have opted for a case-by-case approach: research institutes or companies that want to test a genome-edited plant in the field or market it as seed must demonstrate to the regulatory authorities that the conditions for deregulation are met. The US is one example of this.

In the late 2024, a US federal court struck down the "SECURE Rule” (introduced under the first Trump administration) a key 2020 regulation made by the US Department of Agriculture’s (USDA) Animal and Plant Health Inspection Service (APHIS).[28] This decision reinstated the pre-2020 regulatory framework, requiring the USDA's Animal and Plant Health Inspection Service to conduct case-by-case assessments of genetically engineered crops.

Within USDA, the Animal and Plant Health Inspection Service (APHIS) is responsible for protecting agriculture from pests and diseases. Under the Plant Protection Act, USDA-APHIS has regulatory oversight over products of modern biotechnology that could pose such a risk. Accordingly, USDA-APHIS regulates organisms and products that are known or suspected to be plant pests or to pose a plant pest risk, including those that have been altered or produced through genetic engineering. These are called "regulated articles."

USDA-APHIS regulations provide a petition process for the determination of non regulated status. If a petition is granted, that organism will no longer be considered a "regulated article" and will no longer be subject to oversight by USDA-APHIS. The petitioner must supply information such as the biology of the recipient plant, experimental data and publications, genotypic and phenotypic descriptions of the genetically engineered organism, and field test reports. The agency evaluates a variety of issues including the potential for plant pest risk; disease and pest susceptibilities; the expression of gene products, new enzymes, or changes to plant metabolism etc. A notice is filed in the Federal Register and public comments are considered on the environmental assessment and determination written for the decision on granting the petition. Copies of the USDA-APHIS documents are available to the public.[29]

Although if the new GMO is not regulated under 7 CFR part 340, it may be subject to other USDA regulations or other regulatory authorities. This was, for example, the case with the alfalfa, originally developed by Calyxt, now in the hands of CIBUS. In 2025 CIBUS successfully completed the FDA's Plant

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28 https://www.enga.org/fileadmin/user_upload/New_GMOs_Market-report-2025.pdf, p. 8. (December 30, 2025)

29 https://www.usda.gov/farming-and-ranching/plants-and-crops/biotechnology/regulation-biotech-plants For more information, visit: www.aphis.usda.gov/aphis/ourfocus/biotechnology (December 22, 2025)

Biotechnology Consultation Program for its altered lignin alfalfa trait, developed in partnership with S&W Seed Company. The FDA confirmed it has no further questions regarding the use of this gene-edited alfalfa in food or feed applications.

The table “New GMOs in development” lists almost all of the “Regulated Article Letters of Inquiry” published 2025 by APHIS that deal with plants developed using new genetic engineering techniques. It does not include inquiries submitted by university research institutions, as it can be assumed that the plants in question are not intended for direct commercialization. This would require at least cooperation with a company that provides elite germ plasm, conducts release trials, and handles seed propagation, distribution, and marketing. Release trials (on a small scale) are nevertheless possible in these research projects.

In the case of Canada and Japan the category "cleared for market access" is misleading because there is no process to "clear" the product – though there is a process in Japan to register the product.

In the case of Canada, deregulation means that most gene-edited plants that have no foreign DNA are automatically cleared for market access. In other words, in Canada whole categories of NGTs are "cleared for market access" without case-by-case assessments. These products are not required to be registered.

As the EU is on the path to deregulation the category in the future would more clearly need to be called "Unregulated" with sub-categories of "Registered" or "Unregistered". Therefor some products are skipping approval or clearance – this is a key reason why these products need to be listed in the report – if information is available, of course.

Finally one important note: Many plants that are cleared for the market access may never reach the market.

There are several reasons why:

- A company (start-up) that developed the trait was unable to enter into a partnership with a seed company. Start-ups, which rarely have their own genetic material but focus on the use of CRISPR on plant cells in the laboratory, need the opportunity to “transfer” their technical development into “high-quality” (high-yield, homogeneous, and stable) genetic material. Only then can (theoretically) a commercializable product be developed from changes made in the laboratory.

- The dominance of a few very large agrochemical and seed companies, which hold the majority of intellectual property rights,[30] can make it difficult for new companies and start-ups to enter the market. A USDA report published in 2023 states: "The number of independent seed dealers that test their own hybrid combinations or have some small variety development programs in-house has declined significantly in recent decades. During the same period of time, commodity farmers have increased their use of patented, genetically engineered seed traits. Because those seeds traits are owned by very few companies, seed dealers do not have very many breeding companies to choose from when licensing these traits and varieties. Therefore, breeding companies have power to dictate terms which may be unfavorable to independent dealers."[31]

- Unexpected developments can occur on the way from the laboratory to the field. The field phase (release trials) appears to be a bottleneck in the process. Traits that "work" in the laboratory and greenhouse do not necessarily produce the desired stable results in the field.

- The ideas of start-ups are often too far away from the reality of agriculture. In her book "The Problems with Solutions," Julie Guthmann[32] examined how start-ups and tech companies deal with the issues of food and agriculture. According to Guthmann, it became apparent that many companies had very little understanding of the dynamics and actual problems in the food and agriculture sectors. The basic idea is always that technology is the best way to solve social problems. However, the technical solutions offered often depend on a narrow definition of the problem at hand. This makes them appear practical, but if the solutions offered do not address the root causes of the problems, they are ineffective at best and could potentially be harmful.

- A company's financial problems can lead to certain development projects being prioritized while others have to be put on hold. One example of this is the company CIBUS.[33]

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30 "USDA found that in 1990, the top four companies held 41% of intellectual property protection for corn in the United States, with just one firm, Pioneer, owning 38%. By 2010, the IP ownership of the top four firms had risen to a whopping 93%. As of 2022, the top four firms owned an incredible 95% of the IP for corn, 97% for canola, 84% for soybean, and 74% for cotton. These very high levels of IP concentration far exceed that of wheat – a non-GM crop for which much of the breeding takes place in public sector institutions – which has an IP concentration among the top four firms of 51%." (Clapp, Jennifer 2025: How a few giant companies came to dominate global food, https://www.landclimate.org/how-a-few-giant-companies-came-to-dominate-global-food/) (December 15, 2025)

31 https://www.ams.usda.gov/sites/default/files/media/SeedsReport.pdf, p. 48. (December 30, 2025)

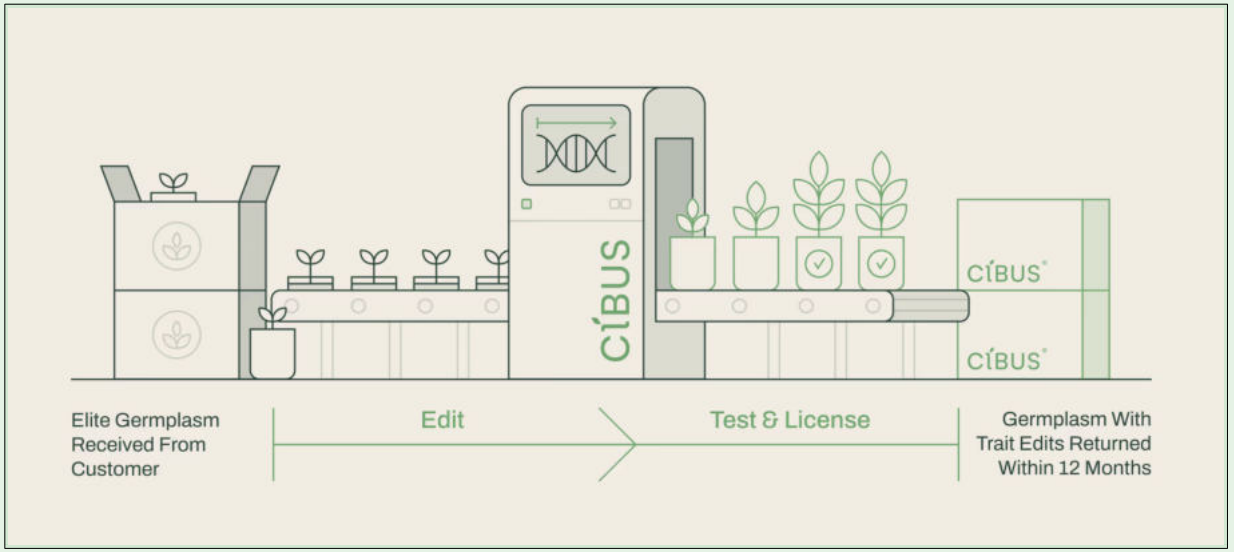
32 Guthmann, Julie 2024: The problems with solutions. Why Silicon Valley Can't Hack the Future of Food. University of California Press. An interview with Julie Guthmann can be found in the current issue (275, 11/2025) of the Gene-ethical Network: «Food Hype im Silicon Valley. Erobern die Tech-Unternehmen das Ernährungssystem?» (https://www.gen-ethisches-netzwerk.de/publikationen/gid/275) (December 30, 2025)

33 Source: https://www.genewatch.org/uploads/f03c6d66a9b354535738483c1c3d49e4/gene-editing-left-behind-fin.pdf (December 14, 2025).

5. Company Updates

5.1 CIBUS Inc.

CIBUS is an example of a company that focuses on technology development and ultimately integrates traits into genetic material that is made available to plant breeding companies.[34]



The company's economic situation continues to be difficult.

In 2024 shares in CIBUS fell significantly after Bonitas Research issued a report alleging that they "found no evidence that CIBUS' gene-editing technology brings desirable new crops to market" and reporting, "farmer complaints of lower crop yields and lost revenues, along with multiple examples of large seed

34 https://www.cibus.com/our-technologies (December 15, 2025)

manufacturers and distributors walking away from joint ventures and partnerships with CIBUS for a variety of seed types and seed traits."[35] In February 2025 the company announced that its editing platform for rice is considerably less efficient than previously reported, with editing rates of 10-25 % not reconfirmed in subsequent experiments due to experimental variability.[36] This was described as a "material setback" which "undermines confidence" in their technology platform.[37] Following this announcement, the CEO resigned.[38]

In July 2025 CIBUS announced "a reduction in force ("RIF") as a pivotal step in implementing its previously announced streamlined business focus, prioritizing its nearest-term and currently funded commercial opportunities. The RIF is expected to result in related one-time charges of approximately $0.5 million in the third quarter of 2025. CIBUS expects the RIF, along with other initiatives, to reduce its annual net cash usage to approximately $30 million by 2026.

The Company's streamlined priorities and resulting restructuring initiatives are intended to optimize CIBUS' Trait Machine™ gene editing processes with a focus on the commercial advancement of its HT1, HT3 and other trait combinations for weed management traits in Rice (...)."[39]

In fall 2025 CIBUS reported third quarter financial results. "The performance showed a significant reduction in revenue and a larger net loss per share than anticipated. (…) CIBUS reported an EPS of -$0.44, missing the forecast of -$0.30 by 46.67%. This marks a significant miss in earnings expectations, though the company's net loss showed improvement from the previous year. Following the earnings announcement, CIBUS's stock fell by 8.89%, closing at $1.23. This decline reflects investor disappointment with the earnings miss and the company's current financial position. The stock is trading near its 52-week low, indicating market concerns."[40]

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35 Block & Leviton LLP. (2024, October 6). SHAREHOLDER ALERT: Cibus, Inc. Investigated for Securities Fraud; Block & Leviton Encourages Investors Who Have Lost Money to Contact the Firm. GlobeNewswire News Room. https://www.globenewswire.com/news-release/2024/06/10/2896188/23044/en/SHAREHOLDER-ALERT-Cibus-Inc-Investigated-for-Securities-Fraud-Block-Leviton-Encourages-Investors-Who-Have-Lost-Money-to-Contact-the-Firm.html (August 11, 2025)

36 https://investor.cibus.com/news-releases/news-release-details/cibus-announces-important-update-rice-gene-editing-conversion (December 14, 2025).

37 StockTitan. (2025, February 14). Research Setback: Cibus Unable to Replicate Promising Gene Editing Results in Rice. https://www.stocktitan.net/news/CBUS/cibus-announces-important-update-to-rice-gene-editing-conversion-obbiikbtf52g.html (August 11, 2025)

38 Cibus Names President And COO Peter Beetham Interim CEO As Rory Riggs Resigns | Nasdaq. (February 28, 2025). https://www.rttnews.com/3517683/cibus-names-president-and-coo-peter-beetham-interim-ceo-as-rory-riggs-resigns.aspx

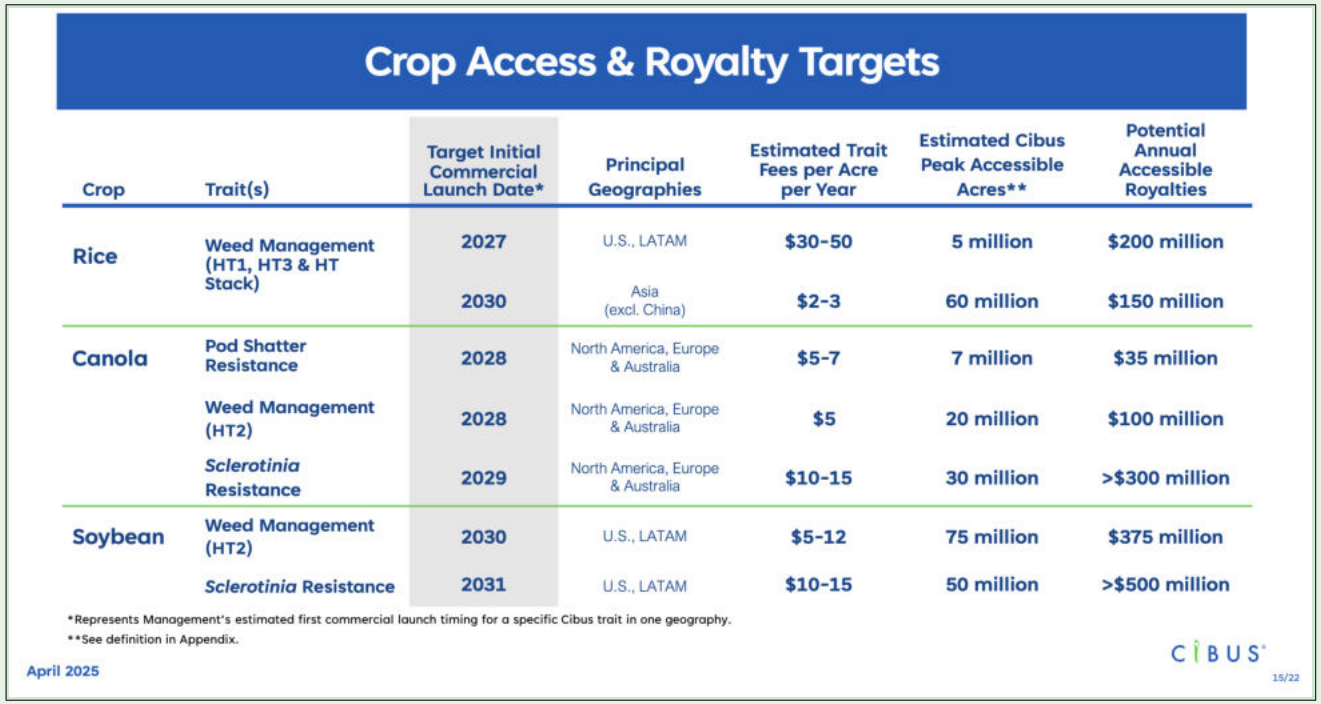
39 https://investor.cibus.com/node/10581/pdf (December 14, 2025).

40 https://www.investing.com/news/transcripts/earnings-call-transcript-cibus-q3-2025-reveals-earnings-miss-stock-dips-93CH-4357468 (August 11, 2025)

That's the background why CIBUS is now focusing on the "Weed Management" traits in Rice to gain revenues.

The pipeline presented by the company in an investor presentation[41] shows that the target date for the market launch of herbicide-resistant rice is expected to be in 2027.

Traits and species which were announced in the previous years seem to play only a minor role now.[42]



Crop Access & Royalty Targets

Crop	Trait(s)	Target Initial Commercial Launch Date*	Principal Geographies	Estimated Trait Fees per Acre per Year	Estimated Cibus Peak Accessible Acres**	Potential Annual Accessible Royalties
Rice	Weed Management (HT1, HT3 & HT Stack)	2027	U.S., LATAM	$30-50	5 million	$200 million
		2030	Asia (excl. China)	$2-3	60 million	$150 million
Canola	Pod Shatter Resistance	2028	North America, Europe & Australia	$5-7	7 million	$35 million
	Weed Management (HT2)	2028	North America, Europe & Australia	$5	20 million	$100 million
	Sclerotinia Resistance	2029	North America, Europe & Australia	$10-15	30 million	>$300 million
Soybean	Weed Management (HT2)	2030	U.S., LATAM	$5-12	75 million	$375 million
	Sclerotinia Resistance	2031	U.S., LATAM	$10-15	50 million	>$500 million

*Represents Management's estimated first commercial launch timing for a specific Cibus trait in one geography.
**See definition in Appendix.

April 2025

CIBUS

15/22

41 The presentation was available in early December 2025 (https://investor.cibus.com/static-files/8300dee4-2176-4a17-b9a1-5fdbcd292564). The presentation is currently unavailable; the link does not work.

42 This includes: Nitrogen-efficient canola, nematode resistant soybean, disease resistant rice, nitrogen-efficient rice, wheat with different traits (In the past Cibus claimed to have the RTDS breeding and Trait Machine platform in Wheat developed by the end of 2024), corn with different traits (In the past Cibus claimed to have the RTDS breeding and Trait Machine platform in Corn developed by the end of 2025). (See: Gelinsky, E. 2025: Neue gentechnische Verfahren: Kommerzialisierungspipeline im Bereich Pflanzenzüchtung und Lizenzvereinbarungen. Studie im Auftrag des Schweizer Bundesamtes für Umwelt (BAFU), Bern, link not available).

5.2 BASF

On the question of: Does BASF use genome editing to develop its seed and chemical products? BASF's website states:

Genome editing tools represent the next step in biotechnology innovation and BASF plans to use this technology to gain knowledge and improve organisms with both agricultural and industrial applications. At this time, BASF does not have any products on the market developed using new genome editing methods. In seed research, teams continue to optimize both conventional and biotechnology plant breeding methods, including the use of advanced tools for genome editing such as CRISPR-Cas9 or other genome editing technologies. BASF is exploring new genome editing techniques in seed, biotechnology and crop protection research. [43]

In the innovation pipeline of the company are:[44] Soybeans with herbicide tolerance (HT) and a nematode resistance trait; HT-Cotton; short-stature corn;[45] Yellow seeded canola hybrid; Pod shatter and clubroot resistant canola and Hybrid wheat.

BASF also offers vegetable seeds (under the brand of Nunhems). New genetic engineering techniques are not mentioned in this context.[46]

In 2025 BASF has announced plans to partially divest its Agricultural Solutions division through a minority IPO in 2027, marking a major shift in the global agribusiness landscape. The move is part of the company's broader "Winning Ways" strategy to streamline operations, boost capital efficiency, and sharpen its focus on core specialty chemicals.

The Agricultural Solutions division, which generated €9.8 billion in sales in 2024, will be legally separated and equipped with a dedicated ERP system to prepare for the listing. BASF confirmed to *AgTechNavigator* that it will remain the majority shareholder post-IPO, positioning the unit for greater strategic focus and operational flexibility.[47]

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43 https://agriculture.basf.com/global/en/innovations-for-agriculture/trends-in-agriculture/genome-editing (December 15, 2025)

44 https://agriculture.basf.com/global/en/business-areas/field-crops-seeds-and-traits/innovation-pipeline#item-1680696355567-1251125067 (December 15, 2025)

45 In collaboration with Bayer, BASF is developing short stature corn (SSC) by utilizing a transgene to shorten internodes that enable applicability across a wide array of germplasm.

46 https://agriculture.basf.com/global/en/business-areas/vegetable-seeds (December 15, 2025)

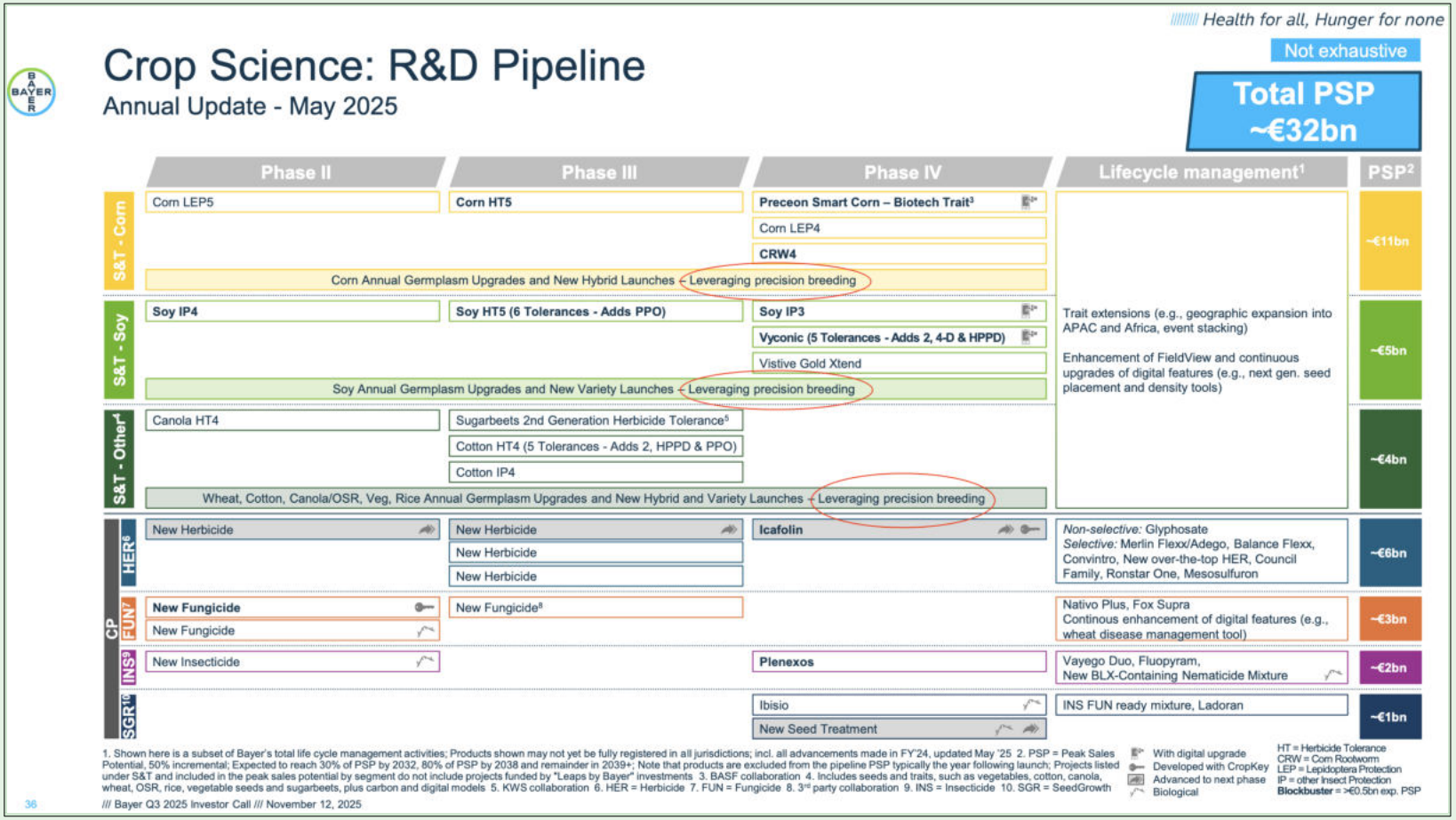
47 https://www.agtechnavigator.com/Article/2025/10/22/basf-to-partially-divest-agricultural-solutions-division-via-ipo-in-2027/ (December 15, 2025)

5.4 BAYER CropScience

Bayer is investing in genome editing platforms and is "leveraging precision breeding" across its R&D pipeline for seeds and traits (see marking).[48]

For BAYER, too, the core business currently and in the coming years will continue to be in the area of "conventional" transgenic GMOs. Dominant traits are herbicide tolerance.

It is possible, however, that also CRISPR is used in these varieties.



48 Q3 2025, Investor Call (November 12, 2025): https://www.bayer.com/sites/default/files/2025-11/q3-2025-investor-call-slides-2025-11-12.pdf, p. 36.

BAYER uses the term "precision breeding" to refer to a range of different technologies: automated greenhouses, automation in general, the use of artificial intelligence (AI), new genetic engineering techniques (genome editing), https://www.bayer.com/en/agriculture/new-technologies-driving-future-plant-breeding. (December 15, 2025)

There is only a brief update on the Short Stature Corn project:

"The PRECEON™ biotech approach [transgenic] in partnership with BASF has advanced to Phase 4 this year and is scheduled to launch in the US in 2027 with Canada expected to follow in 2029. The biotech approach will allow short corn to be combined with a wide array of germplasm to enable broad acre application in more environments.

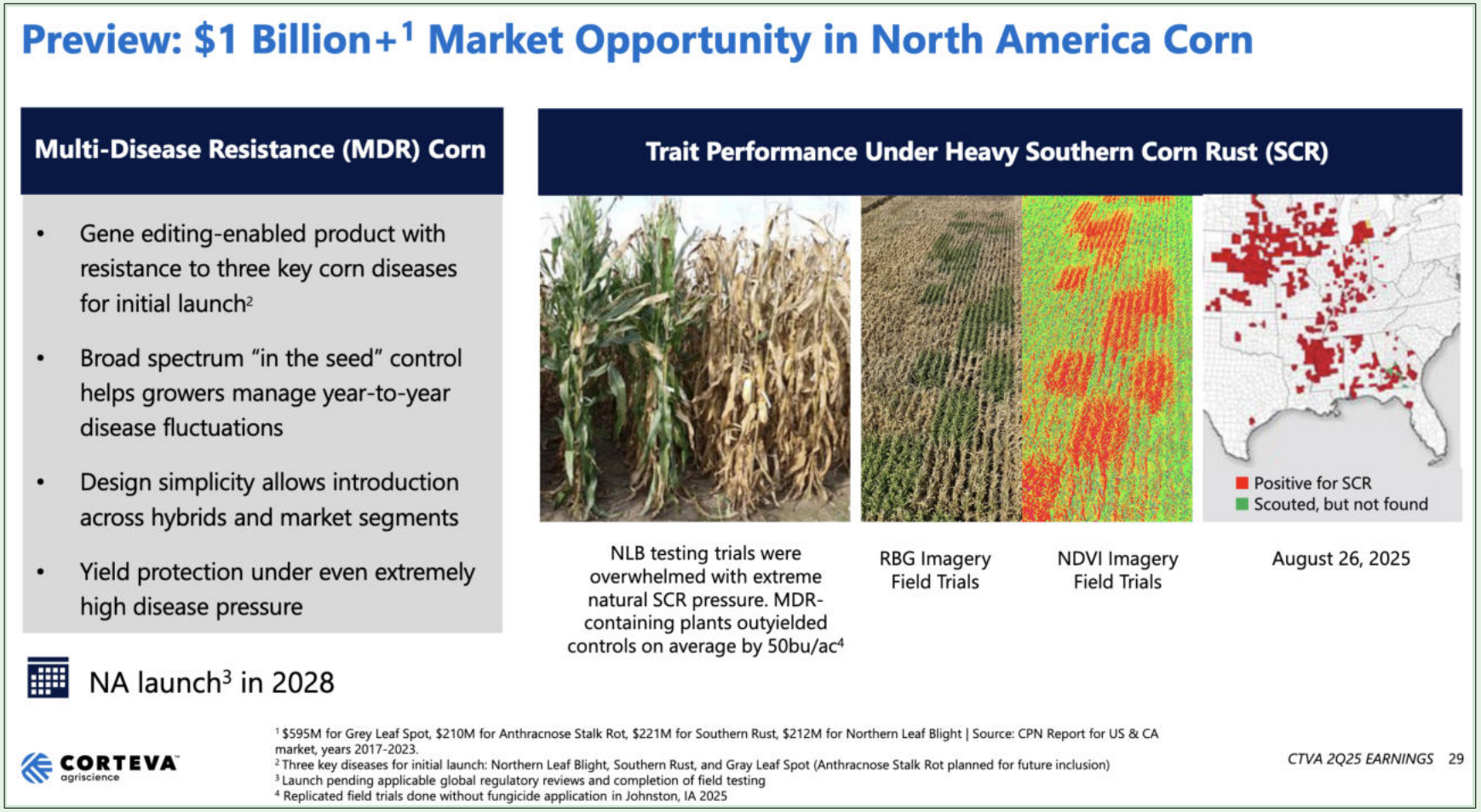
The PRECEON™ gene editing approach in partnership with Pairwise was announced earlier in 2024 here and will allow the system to fit within diverse environments while accelerating further development."[49]

Source: https://www.cropscience.bayer.us/traits/corn/preceon-smart-corn-system

49 https://www.bayer.com/en/agriculture/preceon-smart-corn-system (December 15, 2025)

5.5. Corteva

Corteva just mentions one new GM-product in it's last investor presentation for 2025. A multi-disease resistance corn. It's market launch is planned for 2028:[50]



50 3Q 2025 Earnings Conference Call, November 5, 2025: https://investors.corteva.com/static-files/86f6302a-8796-4658-b13e-96a96321ec44, p. 29.

Corteva announced in October 2025 it would separate its seed and pesticide businesses into separate listed companies, as the agrochemicals firm seeks to sharpen its strategic focus.

The separation will allow each company to set specific capital allocation strategies, respond faster to market shifts and pursue growth opportunities independently, Corteva said.[51]

The names of the new companies are:

New Corteva: Crop Protection.

SpinCo: Seeds and genetics.

In a Business Update Call (October 1, 2025)[52] Corteva staff-members explained the background and answered questions of different representatives of investors (Goldman Sachs, UBS, etc.). NGT is a recurring topic. However, Corteva employees do not address the prominent position that Corteva occupies around CRISPR-Cas 9 thanks to its license and patent portfolio.

"SpinCo is already a leader in gene editing, which promises to be one of the most transformative technologies our industry has ever seen, a position that should allow it to expand its offerings beyond row crops."

"SpinCo's commitment to being an industry leader in advanced genetics and capturing market share in areas like out-licensing [see 6.], gene editing, hybrid wheat, and biofuels will require disciplined capital allocation priorities, including targeted M&A opportunities in high-growth segments, which we expect will further maximize returns to shareholders."

Question: *"… how can the two companies avoid cannibalization essentially and competition where they'll both go after the same pathogens, but with two different axe [gene editing and crop protection] to fight them?*

Answer Corteva: *"… the best technology will win ... it's always been in this industry. And so I really see no change. If you think about what we're trying to accomplish with gene editing, it's always started with, if there is a problem, a disease, an insect, some sort of pressure that a farmer is feeling on a crop, the best solution, the most efficient solution is to attempt to design a seed that can withstand it. And we've been very clear with our messaging that gene*

51 https://www.reuters.com/legal/transactional/corteva-split-seeds-pesticide-units-into-separate-listed-companies-2025-10-01/ (December 22, 2025)

52 https://investors.corteva.com/static-files/c8981a90-ab01-45d5-ac2a-f8a09a18c755 (December 30, 2025)

editing is going to open up a different level of toolkit for our scientists to try to do that with seed genetics. But when that is not possible and there is disease resistant issues or movement around the world from climate change, then we revert back to looking at both chemical and biological solutions. … So when we get the freedom to operate from a gene editing perspective, I think what you'll see is SpinCo scientists will do their very best to use that technology to design the next generation of seed. But look at biotechnology, biotechnology has been out there for 25 years to – more than that. And we are still using more crop protection today than we ever have. Why is that? The seeds are clearly better. But because we're racing up against Mother Nature, and that's what we expect will happen. So, my view is that both will have to head down on R&D differentiation of technology. Both will be needed for farmers. And so this does not change that perspective in my view, because there'll be two separate companies. They may even have more collaboration and partnership opportunities because they're separate."

6. Assessment of future NGT product development (plants)[53]

In an article in Seed World[54] on World Agri-Tech in San Francisco, March 20, 2024, the author asked Gusui Wu, Head of Seeds Research at Syngenta: "Over the past 10 years, there has been incredible progress in CRISPR thanks to enormous private and public investment. Yet, has the technology yet fully delivered on its potential? And what should we expect ahead?" Wu admits: "It's probably fair to say we have not seen the kind of big impact, large scale commercialization of gene-edited products in the market. And the venture funding has plateaued in the last few years in gene editing in ag".[55]

Can we expect the hoped-for breakthrough, including large-scale cultivation, in the coming months or years? No clear conclusions can be drawn from the available data. The pipeline of "plants in development" has also been extensive in recent years. However, it is unclear what has become of many projects.

In order to better assess the further development of the sector, it is important to understand how its economic structure is organized. Although there has not yet been any large-scale commercialization of gene-edited plants, the CRISPR business (also) in the agricultural sector is already a billion-dollar industry. Based on the fundamental CRISPR patents, which are still the subject of legal disputes, rents are being extracted by various downstream companies.[56] Patent holders, companies founded by them that manage the patent portfolio, start-ups, testing traits and developing new variants of CRISPR and finally product development companies that have acquired exclusive or non-exclusive licenses are all part of this complex web of financial investments and licensing agreements. All parts of this value chain are committed to maintaining and expanding rent extraction.

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53 For the following see: Erica Borg & Amedeo Policante (2025) The Gene Editing Business: Rent Extraction in the Biotech Industry, Review of Political Economy, 37:4, 1510-1545, DOI:10.1080/09538259.2024.2401480

54 https://www.seedworld.com/us/2024/03/27/positioning-investments-in-crispr-technologies-for-crops-of-the-future-what-we-heard-at-world-agri-tech/ (December 30, 2025)

55 Another reason for the declining interest among investors could be that venture capital may not be the best fit for agriculture: Agriculture's long development cycles, regional specificity, and limited exit opportunities make it poorly suited to VC's five-to-seven-year return expectations: Jorge Fernandez-Vidal, Silverio Alarcon, Financing agricultural innovation: Challenges and alternatives to venture capital in the AgTech sector, Food Policy, Volume 136, 2025, 102967, https://doi.org/10.1016/j.foodpol.2025.102967.

56 Rentiers acquire a portion of the profits generated during retirement on the basis of rights (e.g., intellectual property rights, land ownership). The license fees for CRISPR are also derived from property rights. The special feature here is that this profit must first be generated through labour and successful product marketing. In this respect, it is speculation on future profits. However, these potential rents are already being traded as assets, for example on the stock exchange. Speculation on future realizable rents is extensive in the field of CRISPR and mobilizes a lot of financial capital, which is invested in start-ups and platform companies.

Why is CRISPR-Cas considered indispensable for future plant development?

One fundamental promise makes the CRISPR-Cas assemblage particularly attractive for industry. Contrary to the recombinant technologies of the first wave of genetic engineering, it can be industrially produced, commercialized as a standardized tool, and put to work on virtually any DNA segment. This significantly reduces the time and costs involved in genetic modification. Accordingly, CIBUS Inc. uses the term "industrialization of plant breeding". "Given its potential to expand and accelerate laboratory processes of genetic modification, reducing the labour time embodied in genetically modified organisms, the CRISPR assemblage has been celebrated as 'the Model T of genetics':[57] an easily scalable technology that has the potential to generate a bio-Fordist revolution." (Borg, Policante 2025, 1513)

It is the promise of significantly accelerating genetic modifications that makes CRISPR-Cas an indispensable tool in the competitive field of plant development.

Who gets access? Under what conditions?

After their discovery and further development, CRISPR biotechnologies were quickly brought under the control of a small group of powerful economic actors.[58] Therefore, the claim that CRISPR is a democratic process should be viewed critically.[59]

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57 Specter, M. 2015. 'The Gene Hackers.' The New Yorker, 15 November, 52 – 61.

58 Technological change results from complex processes of co-production of knowledge that always involve a multitude of nameless people across time and space. The global rush for CRISPR patents then appears as the last chapter of a much longer history by which powerful groups have enclosed and privatized the wealth produced by diffused processes of (also publicly funded) research and knowledge creation (Borg, Policante 2025, 1519).

59 Montenegro de Wit, M. 2020. Democratizing CRISPR? Stories, practices, and politics of science and governance on the agricultural gene editing frontier. Elem Sci Anth, 8: 9. DOI: https://doi.org/10.1525/elementa.405

There is an ongoing legal dispute between four major groups:[60]

The **first group**, "CVC", is composed of the inventors of the first uses of the CRISPR system (primarily Jennifer Doudna of the University of California-Berkeley, and Emmanuelle Charpentier of the University of Vienna). In 2016 the groups of the University of California and the University of Vienna, and the respective inventors (Doudna, Charpentier) and associated companies (ERS genomics, Caribou Biosciences, CRISPR Therapeutics, Intellia Therapeutics) announced that they "have entered into a global cross-consent and invention management agreement for the foundational intellectual property covering CRISPR/Cas9 gene editing technology". Thus these companies and inventors can be largely treated as a single unit for most licensing purposes.

The **second group**, "Broad", is led by the Broad institute (of the Massachusetts Institute of Technology and Harvard University), which was the first to have a patent issued for the use of the CRISPR system in eukaryotes.

The two **remaining groups**, Sigma-Aldrich and Toolgen, have both applied for patents applying CRISPR technology to eukaryotes, and there are thus four groups competing for coverage of the use of CRISPR in eukaryotes. Currently Toolgen does not have any issued foundational patents. Sigma Aldrich has patents covering using CRISPR to lead to integration of introduced DNA in eukaryotes. Sigma-Aldrich and Toolgen's more foundational claims on the general use of CRISPR-Cas9 in eukaryotes are still ungranted, and legal disputes are ongoing.

The CRISPR patent landscape therefore remains an unstable, controversial, and changing terrain that is at the center of an increasingly global political and legal debate.[61]

The ongoing uncertainties surrounding the ownership of genome editing technologies are hampering the activities of companies working on commercial applications of CRISPR-Cas9.[62] Some of these companies have negotiated licenses with both CVC (California-Vienna-Charpentier) and the Broad Institute. Others have so far preferred not to enter into any licensing agreements until all uncertainties have been clarified.

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60 https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf, p. 54. (December 30, 2025)

61 https://news.berkeley.edu/2025/05/12/federal-appeals-court-sends-crispr-cas9-patent-case-back-to-patent-office-for-reconsideration/. For a detailed overview of the CRISPR-patent-landscape on plants see: https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf (December 30, 2025)

62 In order to use CRISPR-Cas9 or new variants (Cas 12a, Fulcrum™ from Pairwise, etc.), companies must purchase licenses for which they must pay fixed annual fees as well as royalties for all future products developed using this technology.

Regardless of this dispute, the sheer number of patents will require any commercial actor to obtain licenses for multiple patents from multiple groups. There is no true patent pool to simplify the process of licensing.

As Borg and Policante (2025) explain, licensing agreements in the biotech sector serve a dual purpose:

- They enable the capture and distribution of rents.
- They raise expectations for future CRISPR-based products, the commercialization of which is expected to guarantee a continuous flow of license payments. These promising prospects attract speculative investments and support the financial valuation of CRISPR companies, even if no (significant) profits have been generated yet (see below).

Agricultural license landscape[63]

- Agricultural applications of Cas9 would likely require licenses from CVC (California-Vienna-Charpentier) and at least one other group.[64] The CVC group's foundational patents cover only Cas9.
- The CVC group has granted some exclusive licenses (thus a legal monopoly) in specific areas of the agricultural field, primarily to Corteva. Corteva holds an exclusive CVC license for agriculture and non-exclusive Broad licenses and acts as a major sublicensor.
- Other players (e.g. BASF, Syngenta, Bayer-Monsanto) hold non-exclusive rights.

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63 https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf, p. 53. For a detailed overview of the agricultural license landscape see IGE-publication, table 6.5.1, p. 58. (December 30, 2025)

64 "Both the University of California and the Broad Institute – together with hundreds of other institutions controlling patented CRISPR constructs – have agreed to make their intellectual properties available to academic organisations pursuing basic research through AddGene, a non-profit repository of CRISPR technologies. Since 2013, AddGene has shipped hundreds of thousands of CRISPR plasmids to five thousand organisations in over a hundred countries. Through this policy, CRISPR companies support basic research by enabling free access to their patent monopoly. This is often presented as a charitable concession by patent owners applying forms of 'ethical licensing'. It is a concession, however, that has the additional advantage of encouraging forms of scientific experimentation with CRISPR gene editing that may eventually lead to further revenues. Stimulating basic research provides further opportunities for enclosing the resulting knowledge. Moreover, even if basic research is not subject to rent extraction, any spin-off company intending to capitalise on that research is likely to become a source of royalty income to at least one of the CRISPR patent holders." (Borg, Policante 2025, 1528)

- A recent wave of licensing deals has expanded the application of genome editing technologies across a wide range of crops, geographies, and collaboration models. Broad leads in the identification of alternative CRISPR systems.[65]
- Pairwise's Fulcrum™ platform features prominently, with agreements involving Solis agriscience, genXtraits, CIMMYT, International Rice Research Institute (IRRI), ENZA ZADEN, and Corteva.[66] Since Pairwise focuses on (presumably high-priced) niche products such as seedless cherries, blackberries, and lettuce, it is reasonable to ask whether the company's business model consists primarily of product development or rather the licensing of its technology.

65 "Many of the patents held by Corteva apply only to Cas9 and the use of a single guide RNA, and there are many other suitable Cas proteins aside from Cas9. (...). Much of what is done by CRISPR-Cas9 is also achievable with other RNA guided systems such as CRISPR-Cas12. (…) In recognition of the near-interchangeability of CRISPR-Cas9 with these other systems, the trend has been for more recent, non-foundational patents, to reference all these systems (or a generic system capable of cutting/modifying specific nucleic acid sequences) in the claims when appropriate. Additionally, Broad has been striving to identify alternative Cas9 proteins and systems, and is currently the leader in the identification of these alternatives (…). Despite the aforementioned wide variety of suitable systems, it remains possible that most of them will end up being held by only a few entities. This, combined with the trend for non-foundational patents to cover all systems similar to CRISPR, may mitigate the effects of the large variety of suitable systems and only lead to a modest drop in license costs.", https://www.ige.ch/fileadmin/user_upload/recht/national/e/IPI%20CRISPR%20IPLandscape%20Plants%202025.pdf, p. 55. (December 30, 2025)

66 https://infogm.org/en/pairwise-shapes-the-food-of-the-future-with-ngt/ (December 30, 2025)

Rent extraction

A rapidly expanding infrastructure of rent extraction is already being erected on top of the harshly disputed territory, fragmented into multiple patent enclosures. This imbricated infrastructure – which enables the extraction and circulation of CRISPR rents – can be schematically conceptualized as being composed of three interdependent strata (see Figure for a visual representation).

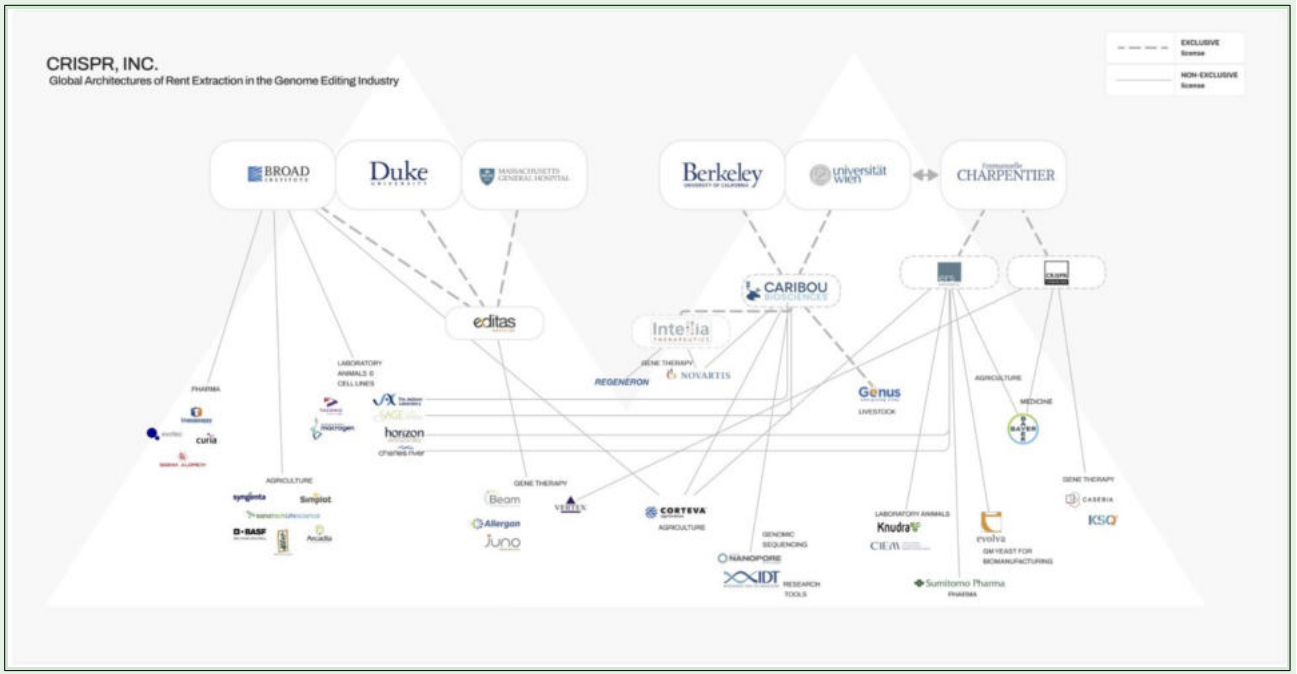

Figure: CRISPR, INC. - Global Architectures of Rent Extraction in the Genome Editing Industry. Source: Borg and Policante 2025, 1522.

Note: The chart portrays the global architecture of the genome editing industry as of April 2024.

First level: Institutions that have obtained some degree of control over CRISPR-Cas9

The multiple institutions that have obtained some degree of control over CRISPR-Cas9 technologies through patents and intellectual property rights constitute a primary stratum, including: public academic institutions such as the University of California and the University of Vienna; private, tax-exempt, nonprofit organizations such as the Broad Institute; and individuals such as Emmanuelle Charpentier. These actors are currently locked in a struggle for control over the CRISPR-Cas9 assemblage as a foundational technology for the emerging genomic industry. They form shifting and unstable alliances and groupings, which currently pit the University of California and Vienna against the Broad-MIT-Harvard system.

Second level: Platform companies

To finance this long-standing battle for property rights, each of these institutional groups has established its own platform companies: spin-offs from companies that act as intermediaries between patent holders and the biotechnology industry complex and are designed to facilitate licensing processes and

the collection of royalties. Caribou Biosciences, Inc. has obtained "an exclusive worldwide license with the right to sublicense in all fields for the fundamental CRISPR-Cas9 patent family jointly owned by UC, Vienna, and Dr. Emmanuelle Charpentier."[67] ERS Genomics and CRISPR Therapeutics control a similar exclusive patent portfolio through their direct connection to Emmanuelle Charpentier (Borg, Policante 2025, 1522).[68] These platform companies have attracted significant capital investment since their inception (ibid., 1522–1523).[69]

Third level: Companies using CRISPR-Cas9 to develop (marketable) products

Agricultural corporations such as Bayer-Monsanto, BASF, Syngenta, Vilmorin & Cie, and J. R. Simplot have mostly acquired non-exclusive sublicenses that enable them to use CRISPR-Cas9 in the production of goods that are themselves patentable. Only Corteva holds an exclusive CVC license for agriculture and non-exclusive Broad licenses and acts as a major sublicensor.

Most of these sublicensing agreements establish a fixed sublicensing fee to be paid annually and per cent royalties on any revenues resulting from the commercialization of commodities and services developed with the licensed 'genome-editing platform technology'.[70]

Platform companies (but also Corteva with it's exclusive licence) collect fees and royalties from sublicensing companies, conveying a variable share of these CRISPR rents to the patent holders placed higher up in the global architecture of rent extraction. From this point of view, they essentially operate as financial intermediaries.

However, profit extraction in this corporate structure is complex and labor-intensive: Multiple forms of technoscientific work – by accountants, asset managers, lab technicians, molecular biologists, and more – are needed to monetize those assets either directly (by developing a marketable commodity from them) or indirectly (by licensing them out to other companies). While platform companies such as Editas and Caribou have not been able to generate profits through the commercialization of CRISPR-Cas9, they constitute operative elements of a much larger and increasingly stratified architecture of rent extraction.

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67 https://www.sec.gov/ix?doc=/Archives/edgar/data/1619856/000161985623000037/crbu-20221231.htm (December 15, 2025)

68 Editas Medicine, part of the Broad Institute, has been granted an exclusive license for gene editing applications in human cells.

69 In terms of market capitalization in December 2023, CRISPR Therapeutics dwarfs all others at $5.56 billion, followed by Editas at $896.78 million and Caribou at $502.29 million. However, a look at the 10-K filings of these US-based companies reveals that they are far from profitable and do not expect to ever become profitable (ibid.).

70 https://www.sec.gov/ix?doc=/Archives/edgar/data/1619856/000161985623000037/crbu-20221231.htm (December 15, 2025)

This condition is neither novel nor exceptional to the global biotech industry. 'Accumulation through intellectual rentiership' has been shown to be crucial to the industrial strategies set in place by major high-tech corporations characterized by low profitability margins, such as Amazon, Tesla and Uber (ibid., 1524).

What are possible consequences of these developments?

Although the corporate structure and rent extraction described above do not necessarily indicate the future commercialization of NGT plants, other developments can certainly be anticipated:

1. High product prices

It can be assumed that CRISPR products – whether medicines or seeds – will be expensive: "Ultimately, this intricate web of licensing and sublicensing deals – each implying the circulation of royalties and rents – can only be sustained by imposing high profit margins on gene therapies and gene-edited organisms." The first CRISPR-therapy, "Casgevy™," is currently priced at $2.2 million per treatment." (ibid., 1520). In the case of seeds, the trends observed in the first generation of genetic engineering are likely to continue.[71]

2. The business of promises most go on[72]

The persisting contradiction between the high financial valuation of companies such as Pairwise or Caribou Biosciences and their lack of market revenues is partly dependent on investors' belief in the often-rehearsed promise of an impending CRISPR revolution in agriculture (and medicine). Licensing and sublicensing deals – with their elaborate promises of future 'milestone payments' and 'royalty streams' upon commercialization – represent more formalized promissory statements, which support the financial valuation of the companies.

Linked to these high expectations is the narrative that CRISPR is a "simple," "safe," "targeted," and "precise" instrument. This narrative is presented to the public through a myriad of different platforms. According to the dominant narrative in public outreach, gene editing through CRISPR eliminates uncertainties

71 https://thebreakthrough.org/issues/food-agriculture-environment/seed-prices-have-soared-is-intellectual-property-the-problem (December 30, 2025)

72 "From investors' perspective, we should remain optimistic about next five years or next 10 years in terms of the innovation and the investment opportunities." (Gusui Wu, Head of Seeds Research at Syngenta, https://www.seedworld.com/us/2024/03/27/positioning-investments-in-crispr-technologies-for-crops-of-the-future-what-we-heard-at-world-agri-tech/). (December 30, 2025)

that characterized earlier GMO technologies by replacing the messy insertion of foreign DNA through "precise" and increasingly "super-precise"[73] interventions into DNA sequences.[74]

The enduring promise of technoscientific control over the metabolic processes of living organisms is enough to attract billions in financial investment and philanthropic-capitalist grants, which contribute to the construction of complex biotechnological entities – consisting of machines, knowledge, ideas, regulations, patents, databases, genome arks, proteins, enzymes etc. – mobilized by the biotech industry.[75] Whether these investments in gene editing will yield significant profits in the future remains to be seen; however even without large-scale commercialization of CRISPR products human health or the environment may be adversely affected.

Meanwhile, in the absence of present profits, the control of foundational patents on CRISPR-Cas9 sustains the volatile financial valuation of CRISPR platform companies. These CRISPR assets must be monetized not only to generate revenues in the present, but also to support highly speculative promises of future revenues, which play a key role in financial valuation (Borg, Policante 2025, 1524 – 1525).

3. More patents

Rent remains a contested and unstable social process of appropriation that must be constantly policed, reproduced and reinforced to persist over time. Rent extraction therefore requires continuous bureaucratic and juridical work of law-making, enforcement and policing. The expanded reproduction of architectures of rent-extraction employs a growing army of lawyers, lobbyists and technical experts who appropriate a substantial portion of the rents generated by intellectual property monopolies.

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73 Ledford, H. 2020, Feb 10. Super-precise CRISPR tool enhanced by enzyme engineering. *Nature* 574 : 464 – 465. DOI: http://dx.doi.org/10.1038/d41586-020-00340-w

74 The metaphor of CRISPR/Cas9 as a highly accurate "gene-editing" tool (also termed as technology or software) for gene editing is now generally accepted and is communicated not only by the media but also by scientists themselves: https://www.technologyreview.com/2024/11/02/1106579/how-a-breakthrough-gene-editing-tool-will-help-the-world-cope-with-climate-change/ (December 30, 2025)

75 Even if CRISPR itself fails, the promise of steering evolution is a long-standing goal of biological science and its allure is unlikely to fade, granting ever-new rounds of investments in molecular biology and the biotech sector (Lewontin, R. 2001. 'It Ain't Necessarily So: The Dream of the Human Genome and Other Illusions.' New York Review of Books, p. xxii).

Extracting future rents, however, depends on the capacity of CRISPR platform companies to continuously reproduce and expand their patent holdings. Millions of dollars are spent every year to preserve those patents' capacity to continue generating rents in the future, warding off four fundamental threats: rival challenges, patent circumventions, regulatory shifts and political contestations.

Because intellectual monopolies need to be constantly propped up and secured, patent litigation is on the rise: "The early 2000s saw a sharp rise in patent litigation both in the United States and in the EU; while, in the first half of the 2010s, patent litigation slowed down only to pick up again with the beginning of the Covid-19 pandemic. This increase in litigation has been associated with the rising number of patents and the increasing complexity of the global patenting system. (…) As the business strategies of many of these companies heavily rely on architectures of rent-extraction founded on intangible assets such as brands and patents, infringement litigation has emerged as both a prominent strategy of capital accumulation and an offensive mechanism that discourages competition" (ibid., 1526 – 1527).

The introduction of CRISPR-based techniques offers opportunities to extend the power of big ag: "For instance, patents on many transgenic crops originally introduced in the 1990s have already expired, eroding the monopolistic positions held by companies such as Monsanto. By introducing a new generation of genome-edited organisms, agribusiness companies can restore their monopolistic positions and revive their rent-extractive practices. The adoption of CRISPR technologies may also open new frontiers of capital accumulation. Several countries that have limited the commercialisation of transgenic crops will not extend the same regulations to the new generation of genetically modified organisms" (ibid., 1533).

> *"A paradigmatic example of how genome editing technologies enable the extension of rent-extractive practices is represented by the growing practice of "gene editing GM traits." For instance, Inari, Inc. has already patented "INHT31 soybean plants comprising an edited MON-89788 soybean trait." This is the trait originally associated with Genuity®, Monsanto's variety of glyphosate-tolerant soy introduced in 2007. According to Inari, "the suite of GM traits to be delivered through gene editing will have the same functionality as those currently on the market, which have been proven effective by growers".[76] In this way, Roundup-Ready crops – and many of the environmental, economic, and social questions associated with their protracted use – are being reinvented as innovative CRISPR crops, protected by newly coined patents." (ibid.)*

The more patents are applied for and granted, the more important technical and legal knowledge becomes for breeding companies. The results of a patent research and their associated risks need to be interpreted, placed in the appropriate economic context, and risk mitigation strategies need to be established. This can be done by in-house legal and patent experts, or external patent attorneys.

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76 https://inari.com/inari-to-bring-growers-proprietary-gm-traits-in-tandem-with-novel-gene-edits/ (December 15, 2025)

As stated in the report by Technopolies commissioned by the EU Commission, "[t]he challenges associated with the **increasing number of process or technology patents** was specifically addressed indicated in interviews and the literature. Since the first foundational CRISPR/Cas patent applications in 2012, there has been an increase in NGT related patent applications and "*a large number of applications [were] filed within a short timeframe. (...)*." As a result, multiple patents with closely related subject matter were granted which adds to the complexity of the IP landscape. According to interviewees, simply reading patent applications does not provide clarity in this complex situation which has been described by interviewees as "confusing", "disturbing", "not providing clarity", or as "hampering breeding programs". However, the challenges of overlapping patents is not specific to the plant industry but occurred also in other technology sectors. In certain cases, **overlapping patents or patent thickets** (complex webs of dependencies between patents) can limit innovation due to the fact that the cost or ability of actors to pursue follow-up innovation is reduced. Strategic patenting practices such as defensive portfolios or exclusive arrangements, may affect market dynamics and access to technology."[77]

What about the future?

In order to assess further market developments, it is not only helpful to understand the complicated architecture of rent extraction in the CRISPR business. As Shah et al. emphasize, a more honest discussion about the possibilities, limitations, and complexities of the technology would also be necessary.

> *"The lack of a substantial debate about the complexities and uncertainties of gene editing in the postgenomic era (…) contributes to putting CRISPR governance on the same path as the governance of transgenic GMOs. For advocates of gene-edited crops, the narrow narrative about the ease and precision of CRISPR may come with short-term benefits by strengthening the case for biosafety and for transformative promises regarding food security, malnutrition, and poverty in the Global South. In the long run, however, this narrative stands in the way of anticipatory governance that is substantially reflective about the prospects of realizing these promises. As much as an emphasis on the ease of CRISPR highlights technological opportunities of inserting desired traits into crops, the complexity of the gene highlights the likely difficulties in realizing promises of precise molecular control of traits. Complementing the ubiquitous narrative of the ease of CRISPR-edited crops with an open debate about the complexity of the gene would provide a more substantial picture of the state of scientific knowledge that would allow a better-informed evaluation of both promises and fears surrounding gene-editing technologies."*[78]

77 https://webgate.ec.europa.eu/circabc-ewpp/d/d/workspace/SpacesStore/e374dbb4-9cf9-4799-8d18-98a459a08c34/download, p. 84 (December 30, 2025)

78 Shah, E, et al. 2021. The complexity of the gene and the precision of CRISPR: What is the gene that is being edited?. Elem Sci Anth, 9: 1. DOI: https://doi.org/10.1525/elementa.2020.00072, p. 9.

Table 1 New GMOs in Cultivation

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References	Further remarks
Maize	Tolerance to glufosinate herbicide and resistance to corn rootworm pests (DP915635)	Transgenic, CRISPR	Corteva	USA	USA, Canada (2022), Food and Feed (EU)	Must be labelled as GMO in the EU according to current EU genetic engineering legislation. Import approval (food and feed) in the EU (see reference).	https://eur-lex.europa.eu	
Maize	Tolerance to glufosinate herbicide and resistance to lepidopteran insect pests (DP910521)	Transgenic, CRISPR	Corteva	USA	USA, Canada (2022), Food and Feed (EU), Argentina (2025)	Must be labelled as GMO in the EU according to current EU genetic engineering legislation. August 2024: Positive scientific opinion (EFSA) published (see reference). Import approval (food and feed) in the EU (see reference).	https://ec.europa.eu	
Tomato	Increased GABA-content	CRISPR	Sanatech Life Sciences Co., Ltd.	Japan	Japan, Philippines (2024), Singapore (2025)	Sanatech has expanded distribution in Japan and has completed all the regulatory paperwork to introduce its tomato in the Philippines. Sanatech is also looking to bring its edited tomato to the US. Sanatech Seed Co., Ltd. (now Sanatech Life Sciences Co., Ltd.)'s genome-edited high-GABA tomato has been confirmed by the Singapore Food Agency (SFA) to be exempt from the GMO pre-market approval process (the approval process required for the sale of genetically modified crops and genome-edited crops deemed equivalent to genetically modified crops). (Notification received on October 30, 2025).	https://www.nishoren.org	Genome-edited GABA tomatoes have been reported as mini-tomatoes and medium-sized tomatoes (both claimed to be "high GABA"), but only mini-tomatoes (Sicilian Rouge High Gaba) are on the market. Sicilian Rouge High GABA is marketed as fruit/vegetables and as processed products in the form of puree and dried tomatoes. Their dried High GABA tomatoes have been on the market since April 2025. All of these products have been submitted as “food with functional claims” due to their high concentration of GABA, and are being marketed as health food products. However, food with functional claims is just a notification system and is accepted as long as all the documents are in order. There is no independent verification by a government body or anyone else. Genome-edited tomatoes are sold through the online store of the sales company and over-the-counter in some supermarkets in the Kanto/Tokyo region. The tomatoes were also sold in supermarkets in the Kyushu region, but sales have been discontinued due to opposition from civil society and other factors. The product has been confirmed to be approved in the Philippines, but sales there or in the US or any other countries have not been confirmed (Martin J. Frid, Consumers Union of Japan, by mail, 2 May 2025).

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Maize	High Yield	CRISPR	Origin Agritech Ltd.	CHN	China	2024: The commercialization of Origin's gene-editing corn is expected to begin in 1-2 years.	https://originagritech.com
Maize	Resistance against Maize Lethal Necrosis Disease	CRISPR	Corteva, CIMMYT	USA, MEX	Various African countries (no more information available)	2025: Phase II Launch of Genome Editing for Resilient Crops: CIMMYT convened scientists, regulators, private sector leaders, and development partners to launch Phase II of the Genome Editing for MLN Resistance Project. The workshop marked progress in tackling Maize Lethal Necrosis, improving groundnut safety, and enhancing pearl millet shelf life through precision breeding. A field visit to Naivasha's MLN screening facility showcased promising results in MLN-resistant maize.	https://www.facebook.com/CIMMYT
Maize	Waxy Corn	CRISPR	Corteva	USA	USA, Brazil, Argentina, Chile, Japan	The Canadian Biotechnology Action Network concluded (2021) that this product is not in commercial production and not designed for immediate release (see reference). This conclusion is confirmed by research from the Consumers Union of Japan (CUJ) (2025). According to the notification to the Consumer Affairs Agency of Japan, the product has not yet been placed on the market. Corteva stated, that the waxy corn has been grown in the US for research and pre-commercial trials, but was not distributed or marketed (2023). (Martin J. Frid, Consumers Union of Japan, by mail, 2 May 2025).	https://cban.ca
Maize	High Yield	CRISPR	Weimi Biotechnology (Hainan) Co., Ltd., Huazhong Agricultural University	CHN	China	2024: Mutated ZmNL4 gene to improve corn yield traits (KN-NL4-2).	https://apps.fas.usda.gov
Maize	Dwarf maize	CRISPR	Inari Agriculture Inc.	USA	USA	2023: Field trials in Belgium.	https://www.health.belgium.be
Maize	Dwarf maize	CRISPR	Corteva	USA	No information	2024: According to the company: To be expected in 2027.	https://investors.corteva.com
Maize	Production of anthocyanin in response to pathogen infection	CRISPR	INSIGNIUM AGTech, Beck's	USA	USA	Field trials in the US (at least for two years). 2025: Insignum AgTech says the technology got a boost recently when Purdue Strategic Ventures, affiliated with Purdue University, made a follow-on-investment during the company's latest round of fundraising. The company is working to bring this first product to market by partnering with cooperating seed companies. Already looking ahead, Insignum AgTech plans to expand into canola and soybeans using similar technology.	https://www.farmprogress.com
Maize	Multiple disease resistance	CRISPR	Corteva	USA	No information	2025: According to the company: To be expected in 2028.	https://investors.corteva.com
Maize	Improved yield and altered plant architecture	CRISPR	Inari Agriculture Inc.	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited maize with increased yield and altered plant architecture. Inari is developing maize lines with increased yield and modified plant architecture that have been edited using a Cas enzyme system. Planned activities include, but would not be limited to seed and grain production that would require import, interstate movement, and unconfined environmental release.	https://www.aphis.usda.gov

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Maize	Improved root architecture and ear morphology	CRISPR	BAYER Crop Science	GER	USA	2025: APHIS confirmation of the regulatory status of genome edited maize with improved root architecture and ear morphology. Intended activity: For movement, import and release.	https://www.aphis.usda.gov
Maize	Maize with pericentric chromosomal inversion	CRISPR	Pioneer Hi-Bred International Inc.	USA	USA	2025: APHIS confirmation of the regulatory status of genome-edited maize with a chromosomal inversion for conventional breeding. Intended activity: Interstate movement and release.	https://www.aphis.usda.gov
Soybean	Improved digestibility	CRISPR	Agricultural Research Corporation (EMBRAPA)	BRA	Brazil		https://www.embrapa.br
Soybean	Reduced lecithin	CRISPR	Agricultural Research Corporation (EMBRAPA)	BRA	Brazil		http://ctnbio.mctic.gov.br
Soybean	Reduced raffinose and stachyose sugar	CRISPR	GDM	ARG	Brazil	2022: One of the approvals was for a low-sugar soy designed to help animal digestion that could be launched in 2024/2025.	https://www.reuters.com
Soybean	High-oleic	CRISPR	Shandong BellaGen Biotechnology Co.	CHN	China	2023: China's first safety certificate for plant gene editing has been issued by the Ministry of Agriculture and Rural Affairs (MOA) recently, approving that gene editing in China has entered the fast lane for the sector's development and industrialization, which will further guarantee food security. High oleic acid soybean by Shandong BellaGen Biotechnology Co received the gene editing safety certificate, valid for five years until April 2028, read a document issued by the MOA. BellaGen is the first company in China to initiate industrial-scale plant gene editing.	https://www.globaltimes.cn
Soybean	High yield	CRISPR	Suzhou Qihe Biotechnology Co., Ltd. (Qi Biodesign)	CHN	China	2024: Mutated GmLn gene to improve soybean yield traits (QH64112).	https://apps.fas.usda.gov
Soybean	Improved physiological traits	CRISPR	China Seed Group Co., Ltd	CHN	China	2024: Mutated GmE1 and GmE1Lb genes to improve soybeans physiological traits (E001SYFT).	https://apps.fas.usda.gov
Soybean	Improved protein content	CRISPR	Amfora	USA	USA	2024: The U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) has granted Amfora, Inc. an exemption for its gene-edited, ultra-high protein soybeans. Amfora's gene-edited soybeans are not subject to the regulations in 7 CFR Part 340 and can be marketed without undergoing further review by the USDA.	https://www.isaaa.org
Soybean	Different traits	CRISPR	Inari Agriculture Inc.	USA	No information	2025: Closest to commercialisation are our first-generation high-yielding soybeans. Our customers will bulk up products for commercialisation soon, and in the meantime, their farmers can see our edited plants this summer at demo plots across the US.	https://www.agtechnavigator.com

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Soybean	Drought tolerance	CRISPR	GDM	ARG	No information	2025: GDM, a leading seed company in Argentina, is developing a gene-edited soybean variety that maintains growth under water stress by disabling a gene responsible for the plant's drought-response inhibition. The resulting variety is expected to show improved productivity in dry conditions, such as those experienced during 'veranicos' – short droughts with high temperatures – in southern Brazil. Commercial launch is planned for the 2027/2028 harvest, with early demand anticipated in water-stressed regions like Rio Grande do Sul.	https://www.plantetp.eu
Soybean	Drought tolerance	CRISPR	La Semilla Co. Ltd.	KOR	USA	2025: APHIS confirmation of the regulatory status of genome edited soybean with drought tolerance. Intended activities for these soybean mutant plants within the United States include the importation, interstate movement, and environmental release (field trials).	https://www.aphis.usda.gov
Soybean	Improved yield	CRISPR	The Traits Company	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited soybean with improved yield. Launched in April 2022 with a $25 million investment from GDM, a global leader in crop genetics – The Traits Company has rapidly advanced innovation in soybean trait development. Powered by this transformative investment and unparalleled access to GDM's elite soybean germplasm, the company has made groundbreaking strides in trait discovery. Encouraged by its early successes, The Traits Company recently expanded its research and development capabilities significantly. This includes the addition of a 25,000-square-foot high-tech research facility, a 5,000-square-foot greenhouse, and collaborations with multiple field-testing centers. Building on its foundational focus on soybeans, the company's crop portfolio now includes major row crops such as corn, wheat, and sunflower.	https://www.gdmseeds.com
Soybean	Increased yield, modified plant architecture	CRISPR	Inari Agriculture Inc.	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited soybean for increased yield and modified plant architecture. Planned activities include import, interstate movement, and unconfined environmental release.	https://www.aphis.usda.gov
Soybean	Herbicide resistance	CRISPR	Inari Agriculture Inc.	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited soybean with herbicide resistance. Planned activities include, but would not be limited to seed and grain production that would require import, interstate movement, and unconfined environmental release.	https://www.aphis.usda.gov
Soybean	Reduced raffinose content	CRISPR	GDM	ARG	USA	2025: APHIS confirmation of the regulatory status of genome edited soybean with reduced raffinose content. GDM wants to conduct field trials to evaluate the efficacy of genetic modification and subsequent commercial introduction.	https://www.aphis.usda.gov

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Soybean	Improved architecture	CRISPR	BAYER Crop Science	GER	USA	2025: APHIS confirmation of the regulatory status of genome edited soybean with improved architecture. Intended activity: Movement and release.	https://www.aphis.usda.gov
Cotton	Herbicide tolerance	CRISPR	Bioheuris	ARG, USA	Brazil	2025: APHIS confirmation of the regulatory status of genome edited soybean with herbicide resistance. Planned activities include, but would not be limited to seed and grain production that would require import, interstate movement, and unconfined environmental release.	https://www.mdpi.com
Wheat	Powdery mildew resistance	CRISPR	Suzhou Qihe Biotechnology Co., Ltd. (Qi Biodesign), Chinese Academy of Sciences	CHN	China	2024: China has approved the safety of gene-edited wheat for the first time as Beijing cautiously moves forward with commercial growing of genetically modified food crops.	https://www.reuters.com
Wheat	Herbicide tolerance	CRISPR	Suzhou Qihe Biotechnology Co., Ltd. (Qi Biodesign), Institute of Genetics and Developmental Biology, Chinese Academy of Sciences	CHN	China	2024: Mutated TaALS gene herbicide-tolerant wheat TaALS-4.	https://apps.fas.usda.gov
Wheat	High Yield	CRISPR	Inari Agriculture Inc., InterGrain	USA, AUS	No information	2024: Australian seed breeder InterGrain earlier this year imported several thousand wheat seeds created by U.S. agritech company Inari, including hundreds of new genetic variations. These seeds are now growing in a testing greenhouse in southeast Queensland. Seeds from those plants will be used to grow more plants, producing enough seeds to plant at more than 45 trial sites across the country in the 2025 growing season.	https://www.reuters.com
Wheat	High fiber	CRISPR	Neocrop Technologies	CHL	Chile, Argentina	2025: Chilean startup Neocrop Technologies has used the new CRISPR/Cas genetic engineering technique to develop wheat with fiber in white flour. According to the company's website, the Chilean regulatory authority SAG and the Argentine regulatory authority Conabia have decided that this wheat is not subject to genetic engineering legislation in their countries and may be cultivated and marketed without risk assessment. This is the first time that CRISPR wheat has been approved in the Americas. Neocrop plans to begin initial field trials this fall.	https://neocroptech.com
Wheat	Improved Yield and Modified Plant Architecture	CRISPR	Inari Agriculture Inc.	USA	USA	2025: APHIS confirmation of the regulatory status of genome editied wheat with improved yield and modified plant architecture. Planned activities include import, interstate movement, and unconfined environmental release.	https://www.aphis.usda.gov

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Canola	Disease resistance	Rapid Trait Development System™ or RTDS® that integrates crop specific cell biology platforms with a series of gene editing technologies	CIBUS Inc.,	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited canola for disease resistance. Once the intended changes are identified, plant lines are regenerated and transferred to the greenhouse for sexual reproduction. Lines displaying the desired phenotype and genotype are advanced for seed propagation. Controlled field trials are being conducted to assess agronomic characteristics of lines bearing genotypes of interest with check varieties used as controls. These tests will continue as more lines are advanced through Cibus' breeding program with the objective of determining the most promising lines for commercial introduction. Target initial commercial launch date: 2029	https://www.aphis.usda.gov
Canola	Herbicide resistance	Rapid Trait Development System™ or RTDS® that integrates crop specific cell biology platforms with a series of gene editing technologies	CIBUS Inc.,	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited canola for herbicide resistance. Once the intended changes are identified, lines of seed-bearing plants will be regenerated and transferred to the greenhouse. Spray tests to confirm herbicide tolerance will be performed and the segregant lines showing tolerance will be advanced for seed propagation. Controlled field trials will be conducted to assess agronomic characteristics of lines bearing genotypes of interest with unmodified varieties used as controls to establish equivalency with the objective of determining the most promising lines for commercial introduction. Target initial commercial launch date: 2028	https://www.aphis.usda.gov
Rice	Improved rice quality traits	CRISPR	Biotechnology Company Limited, Jiangsu Academy of Agricultural Sciences, Beijing Qi-Biodesign Suzhou Qi-Biodesign Biotechnology Company Limited	CHN	China		https://apps.fas.usda.gov
Rice	Herbicide tolerance (HT1)	Rapid Trait Development System™ or RTDS® that integrates crop specific cell biology platforms with a series of gene editing technologies	CIBUS Inc., Loveland Products	USA	Ecuador	2025: These traits (HT1, HT3) are progressing on schedule toward targeted initial commercial launch in Latin America, beginning in 2027, followed by expansion to the United States in 2028, and then Asia closer to 2030.	https://www.investing.com
Rice	Herbicide tolerance (HT3)	Rapid Trait Development System™ or RTDS® that integrates crop specific cell biology platforms with a series of gene editing technologies	CIBUS Inc., Albaugh LLC, RTDC Corporation Limited, Loveland Products	USA	Ecuador	2025: These traits (HT1, HT3) are progressing on schedule toward targeted initial commercial launch in Latin America, beginning in 2027, followed by expansion to the United States in 2028, and then Asia closer to 2030.	https://www.investing.com

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Rice	Herbicide tolerance	CRISPR	Bioheuris	ARG, USA	Argentina, USA	The technology is already being tested in rice and sorghum fields in Brazil and the United States. While not yet in the commercial phase, they have passed technical and regulatory challenges. The company obtained approval from CONABIA (National Advisory Commission for Agricultural Biotechnology) in Argentina and similar approvals in countries like the United States, Brazil, Chile, and Colombia. BioHeuris projects that the rice and sorghum varieties will be available in the market by 2026 or 2027. 2025: APHIS confirmation of the regulatory status of genome edited rice with herbicide resistance. The company has planned activities including, but not limited to, seed and grain production, interstate movement, importation, and unconfined environmental release.	https://news.agropages.com
Rice	High-yielding (Kamala, DRR Dhan 100)	CRISPR	Indian Institute of Rice Research (ICAR-IIRR), Hyderabad	IND	No information	2025: The variety named as DRR Dhan 100 Kamala, was developed from a popular high yielding green rice Samba Mahsuri. According to the developer the new variety can be harvested 15-20 days ahead of its original. The yield is almost 25% more, which is about eight tonnes more per hectare. The new variety delivers significantly higher yields than the original variety. The variety was formally announced in New Delhi on Sunday (May 4, 2025) by Union Agriculture Minister Shivraj Singh Chouhan.	https://www.thehindu.com
Rice	Salt-tolerant (Pusa DST Rice 1)	CRISPR	Indian Agricultural Research Institute (IARI), Delhi	IND	No information	2025: The variety Pusa DST Rice 1 is from Maruteru 1010 (MTU1010), which is widely used by farmers across the country. According to the developer, the variety named as Pusa DST Rice 1 is a 'salinity tension tolerant' crop. When cultivated under areas that have national average of salinity, the new variety produced 9.66% additional yield than MTU1010. Similarly, in alkaline conditions, the new variety gave 14.66% more yield than its original and under 'salinity tension' conditions, the yield of the new variety was 30.36%. The variety was formally announced in New Delhi on Sunday (May 4, 2025) by Union Agriculture Minister Shivraj Singh Chouhan.	https://www.thehindu.com
Rice	Resistance against bacterial blight	CRISPR	Institut de l'Environnement et de Recherches Agricoles	BFA	Field trials	Approval was given for field testing in 2024.	https://acbio.org.za
Peanut	Reduced 2S Albumin Proteins	CRISPR	BetterSeeds LTD.	ISR	USA	2025: APHIS confirmation of the regulatory status of genome edited peanut with reduced 2S Albumin Proteins. BetterSeeds intends to move genome edited lines freely and release them into the environment, eventually as commercial products.	https://www.aphis.usda.gov

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Teff	Edited to resist lodging	CRISPR	Donald Danforth Plant Science Center, Ethiopian Institute of Agricultural Research (EIAR), Corteva Agriscience	ETH	Awaiting approval for field trial	In 2024, the United States Department of Agriculture (USDA) cleared the genome-edited teff as not subject to biotechnology regulation under its SECURE Rule (Danforth Center, 2023), enabling multi-year field trials to begin in the US. The BMGF awards a US$4.9 million grant to the Donald Danforth Plant Science Center and the EIAR to refine gene-edited teff varieties in greenhouses and diverse field sites, and to train Ethiopian scientists in transformation and editing techniques (FertilizerDaily, 2024). In 2025, Ethiopian scientists received advanced training in the US on gene editing, teff transformation, and trait evaluation to support knowledge transfer (Danforth Center, 2025). Current status: Awaiting approval for field trials.	https://acbio.org.za
Sugar cane	Improved digestibility (Canaflex I)	CRISPR	Agricultural Research Corporation (EMBRAPA)	BRA	Brazil		https://www.embrapa.br
Sugar cane	Increased sucrose content (Canaflex II)	CRISPR	Agricultural Research Corporation (EMBRAPA)	BRA	Brazil		https://www.embrapa.br
Sugar beet	Herbicide resistance	CRISPR	United Beet Seeds (UBS)	BEL	USA	2025: APHIS confirmation of the regulatory status of genome edited sugar beet with herbicide resistance. The activity planned by UBS include, but are not limited to, importation, interstate movement and unconfined release into the environment to evaluate the efficacy of introduced mutations for herbicide tolerance in field trials, general yield performance and ultimately, sales and commercial distribution. European Company. United Beet Seeds (UBS) is a joint venture, launched in September 2024, between Groupe Florimond Desprez and DLF Seeds A/S and is specializing in all aspects of sugar beet seed research, production, processing and commercialization.	https://www.aphis.usda.gov
Sorghum	Herbicide tolerance	CRISPR	Bioheuris	ARG, USA	USA	2025: AATF (African Agricultural Technology Foundation) and BioHeuris have announced a two-year partnership agreement aimed at raising productivity through genome-edited crops such as sorghum through research and development, regulatory approval, and uptake in Africa. The agreement will enable the two organizations to conduct trials, commercialise herbicide-tolerant sorghum products, and introduce weed-control traits to sorghum varieties cultivated in Africa. In addition, the partnership agreement will identify and develop other genome-edited crops targeting traits of importance to farmers in Africa. 2025: APHIS confirmation of regulatory status of genome edited sorghum with herbicide resistance. The company has planned activities including, but not limited to, seed and grain production, interstate movement, importation, and unconfined environmental release.	https://www.aatf-africa.org

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Sorghum	Resistance against Striga	CRISPR	Kenyatta University	KEN	Field trials	Striga-resistant sorghum, undertaken by Kenyatta University. Exempted from biosafety regulations, approved for contained research in 2023, and field trials took place at the Kenya Agricultural and Livestock Research Organisation (KALRO) in western Kenya in 2024 (AfriCentre, 2024b). In field trials.	https://acbio.org.za
Cassava	Resistance against bacterial blight	CRISPR	National Root Crops Research Institute (NCRI), BMGF, National Sceince Foundation, Donald Danforth Center	NGA	Field trials	Cassava – edited for bacterial blight disease, undertaken by the National Root Crops Research Institute (NCRI) in Nigeria in partnership with the BMGF (funder) and National Science Foundation (Rock et al., 2023), as well as the Danforth Center. Current status: In field trials.	https://acbio.org.za
Gray poplar	Increased biomass accumulation	CRISPR	Living Carbon	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited gray poplar with increased biomass accumulation. Intended activity: Nursury production, field testing, and environmental release.	https://www.aphis.usda.gov
Mustard	Low-pungent, pest and disease resistant	CRISPR	Delhi University's Centre for Genetic Manipulation of Crop Plants (CGMCP), Indian Council of Agricultural Research	India	No information	2025: The mustard was undergoing the second year of trials in 16 locations across North and Central India in the current 2025-26 crop season. If the results are good, this variety – a canola-quality low-pungent mustard that is simultaneously resistant to major fungal pathogens and pests – would be ready for release by around August 2026.	https://indianexpress.com
Lettuce	Extended shelf-life, non-browning	CRISPR	Green Venus	USA	USA, Canada	2025: A limited number of seeds were sold in small packets for home gardeners in the US from the company's website in 2025.	https://cban.ca
Lettuce	Increased biomass, faster maturation	CRISPR	Green Venus	USA	USA	2025: APHIS confirmation of the regulatory status of lettuce with increased biomass and faster maturation. This novel lettuce variety has been modified to enhance biomass (fresh weight) by at least 10% at harvest. Also, the modified lettuce will reach its typical fresh weight one to two weeks sooner than conventional lettuce varieties without affecting its flowering time or other agronomic attributes. GreenVenus' modified enhanced biomass lettuce seed and plants will be moved interstate, released into the environment as part of field trials and ultimately commercialized.	https://www.aphis.usda.gov
Lettuce	Reduced browning	CRISPR	Green Venus	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited lettuce with reduced browning.	https://greenvenus.com

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Salad Greens	Reduced bitter compounds	CRISPR	Pairwise, Bayer Crop Science	USA	USA, Canada	In 2024, Bayer was getting ready to launch gene-edited mustard greens, engineered using CRISPR, for use in packaged salad mixes. However, in May 2025, Bayer told CBAN that it had "no specific target date for commercialization in Canada." May 2025: "At this time, they [gene-edited salad greens] are not currently being commercially grown or sold in Canada or the United States, and we have no specific target date for commercialization in Canada." (CBAN No GMO Salad Report, June 2025)	https://cban.ca
Pepper	Drought tolerance	CRISPR	ToolGen	KOR	USA	2025: ToolGene is currently conducting field trials on their CRISPR-developed drought-tolerant bell pepper, which is estimated to be commercialised in the next 3 to 5 years. 2025: APHIS confirmation of the regulatory status of genome-edited pepper with drought tolerance.	https://www.plantetp.eu
Tomato	Disease resistance	CRISPR	Meiogenix SAS	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited disease resistant tomato. Planned activities include interstate movement and release into the environment for R&D trials and ultimately for breeding programs and commercial cultivation.	https://www.aphis.usda.gov
Tomato	Improved water use efficiency	CRISPR	BetterSeeds LTD.	ISR	USA	2025: APHIS confirmation of the regulatory status of genome edited tomato with improved water use efficiency.	https://www.aphis.usda.gov
Tomato	Enhanced Fruit Nutritional Content	CRISPR	GeneNeer Ltd.	ISR	USA	2025: APHIS confirmation of the regulatory status of genome edited tomato for enhanced fruit nutritional content. The company wants to conduct field trials in the US and proceed with product commercialization.	https://www.aphis.usda.gov
Tomato	Altered Fruit Quality	CRISPR	KAGOME Co. Ltd.	JPN	USA	2025: APHIS confirmation of the regulatory status of genome edited tomato with altered fruit quality. The modified tomato will be released into the environment, moved across state lines.	https://www.aphis.usda.gov
Tomato	Decreased plant stature	CRISPR	Phytoform Labs Ltd.	GBR	USA	2025: APHIS confirmation of the regulatory status of genome edited tomato with decreased plant stature. The modified tomato will be imported, released into the environment, moved interstate and ultimately sold/ distributed commercially.	https://www.aphis.usda.gov

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Tomato	Improved Heat Tolerance	CRISPR	Plantik Bioscience	FRA	USA	2025: APHIS confirmation of the regulatory status of genome edited tomato with improved heat tolerance. The proposed activities involve importing seeds from the designated tomato lines for field trials in the USA. These trials are intended to evaluate the performance of heat-tolerant tomato varieties, and the resulting data will guide the future availability of the trait for introgression into breeding programs, with potential licensing and eventual commercialization.	https://www.aphis.usda.gov
Tomato	Increased sugar content	CRISPR	Grand Green Co.	JPN	JPN	2025: Grand Green, a Nagoya-based company specializing in crop breeding, registered "GG-T1" tomato, which has increased sugar content through genome editing, as a food product. This brings the total number of genome-edited foods registered in Japan to 10. In addition to developing genome-edited crops in-house, the company also provides genome editing technology to seed distributors and food companies through collaborative research. For GG-T1, the company apparently deleted the function of the inhibitor gene (INVINH1) of the enzyme "invertase," which catalyzes the reaction that hydrolyzes sucrose into fructose and glucose to provide sugar to the fruit, in a medium-sized cultivar developed in-house. According to the published materials, the CRISPR/Cas9 system was introduced using a particle gun, causing a 28-base deletion. It has been confirmed that genome editing does not result in the creation of new allergens or toxic substances.	https://window-to-japan.eu
Cucumber	Improved and altered product quality	CRISPR	Pairwise	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited cucumber with improved and altered product quality. Four different traits (CBI-deleted). Pairwise wants to conduct field trials followed by commercial product development and release.	https://www.aphis.usda.gov
Cowpea	Made suitable for mechanized harvesting	CRISPR	BetterSeeds LTD.	ISR	USA	BetterSeeds was set to plant their enhanced Cowpea seeds in the United States in the Spring of 2023, in order to test its potential for mass scale cultivation. BetterSeeds, Israel's largest and leading plant genome editing company developed EDGE (Efficient Delivery of gene Editing) technology which solves the biggest hurdle preventing the wide adoption of CRISPR technology for crop improvement, and YIELDMAX - a proprietary trait platform intended to adapt crops to sustain the challenges arising from climate change.	https://www.prnewswire.com
Potato	Higher tuber set	CRISPR	Simplot Plant Sciences	USA	No information	Simplot had stated (2022) that it could enter the Canadian market in fresh and processed food as early as 2024 but it is not confirmed to be in commercial production or on the market.	There is no indication that it is on the market nor commercially grown in Canada. (Lucy Sharratt, Canadian Biotechnology Action Network, by mail, 2 May 2025).
Potato	Reduced content of glycoalkaloids (including solanine) and resistance to black spotting ("non-browning")	CRISPR	Simplot Plant Sciences	USA	Canada	Simplot stated (2024) that it could enter the Canadian market in fresh and processed food as early as 2025 but has not confirmed release.	There is no indication that it is on the market nor commercially grown in Canada. (Lucy Sharratt, Canadian Biotechnology Action Network, by mail, 2 May 2025).
Potato	Non-browning	CRISPR	Instituto Nacional de Tecnología Agropecuaria (INTA)	ARG	Argentina	2023: Field trials (at least for two years).	https://www.argentina.gob.ar

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Potato	Hybrid potato	CRISPR	Ohalo Genetics Inc.	USA	No information	2025: Rather than replant tubers from prior harvests, farmers can directly sow true seed and benefit from varieties with unprecedented agronomic performance with Ohalo's Boosted Potato. Ohalo's approach is to supply both seeds and finished products, with commercial trials underway and a broad rollout expected in the next 1–2 years.	https://www.vantrumpreport.com
Potato	Improved and altered Product Quality	CRISPR	Pairwise	USA	USA	2025: APHIS confirmation of the regulatory status of genome edited potato with improved and altered product quality. Pairwise wants to conduct field trials followed by commercial product development and release.	https://www.aphis.usda.gov
Potato	Starch potato with disease resistance	CRISPR	Project Oppotunity	SWE	No information	2025: Project Oppotunity informs that they have has successfully conducted the first field trials in Sweden and Denmark with starch potatoes that have been improved via CRISPR-CAS to increase resistance to late blight infection. In parallel, seed multiplication took place to harvest more and larger seed potatoes, enabling evaluation of the effects of these improved late blight resistance events in dedicated field trials in 2026.	https://www.oppotunity.eu
Camelina	Increased oil content	CRISPR	Nufarm	USA	USA, Argentina, Chile, Canada	2025: Last July [2024], Nufarm announced a license agreement with Yield10 Bioscience Inc., which gave us significant rights to Yield 10's Omega-3 technology. Directly after, Nufarm agreed to immediately begin negotiating the purchase of substantially all of Yield10's assets, including ownership of Yield10's camelina assets in both the omega-3 sector and most assets in the bioenergy sector. Nufarm successfully acquired substantially these assets in January 2025.	https://nuseed.com
Camelina	Increased Omega-3	CRISPR	Nufarm	USA	USA, Chile	2025: Last July [2024], Nufarm announced a license agreement with Yield10 Bioscience Inc., which gave us significant rights to Yield 10's Omega-3 technology. Directly after, Nufarm agreed to immediately begin negotiating the purchase of substantially all of Yield10's assets, including ownership of Yield10's camelina assets in both the omega-3 sector and most assets in the bioenergy sector. Nufarm successfully acquired substantially these assets in January 2025.	https://nuseed.com
Camelina	Increased Omega-3	CRISPR	Yield10 Bioscience Inc., Rothamsted Research, Nufarm US Inc., BioMar Group	USA	USA	2025: Last July [2024], Nufarm announced a license agreement with Yield10 Bioscience Inc., which gave us significant rights to Yield 10's Omega-3 technology. Directly after, Nufarm agreed to immediately begin negotiating the purchase of substantially all of Yield10's assets, including ownership of Yield10's camelina assets in both the omega-3 sector and most assets in the bioenergy sector. Nufarm successfully acquired substantially these assets in January 2025.	https://nuseed.com

Table 2 New GMOs in Development

Last update: December 30, 2025

Crop	Trait	Technique	Developer	Country (of Developer)	Cleared for market access	Remarks	References
Pennycress (Thlaspi arvense)	Increased oil content	CRISPR	CoverCress Inc., Bayer Crop Science, Bunge, Chevron	USA	USA	Since 2024: Farm Adoption Program allows producers to test CoverCress in their operations with no economic risk. Cover Cress provides the seed free of charge, which can then be treated as a typical cover crop for a few years until a decision is made to move forward with it as a cash crop. 2025: CoverCress is still in its early stages of commercialisation. It currently operates on 6,000 acres – double that of last season. It targets planting on 10,000 acres this fall.	https://cdn.prod.website-files.com
Pennycress (Thlaspi arvense)	Reduced levels of erucic acid, fiber and glucosinolates in its seeds, improved resistance to seed shatter	CRISPR	CoverCress Inc., Bayer Crop Science, Bunge, Chevron	USA	USA	2025: CoverCress is still in its early stages of commercialisation. It currently operates on 6,000 acres – double that of last season. It targets planting on 10,000 acres this fall.	https://www.agtechnavigator.com
Pennycress (Thlaspi arvense)	Herbicide resistance, altered seed and pod characteristics, earlier maturation, increased yield	CRISPR	CoverCress Inc., Bayer Crop Science, Bunge, Chevron	USA	USA	2025: Multiple APHIS confirmations of the regulatory status of genome edited traits in pennycress. CCI plans to conduct field trials followed by commercial product development and release.	https://www.agtechnavigator.com
Pennycress (Thlaspi arvense)	Different traits (Altered Root System Architecture, Altered Root Biomass)	CRISPR	Cquesta Inc.	USA	USA	2025: APHIS confirmation of the regulatory status of different traits in pennycress. The company wants to conduct field trials with the pennycress. The company just completed a $6 million funding round. It sees a lot of potential in the large acreage planted to canola in Canada. The first product the company will bring to market in two to three years is enhanced roots in cover crops. Then it plans soybeans and canola as its first large acreage crops in three to five years. Other crops like corn will follow in five to seven years.	https://www.producer.com
Alfalfa	Improved nutrient composition, better digestibility, high yields	TALEN	CIBUS Inc. (Calyxt), S&W Seeds, Alfalfa Partners	USA	USA	2025: Cibus has successfully completed the FDA's Plant Biotechnology Consultation Program for its altered lignin alfalfa trait, developed in partnership with S&W Seed Company. The FDA confirmed it has no further questions regarding the use of this gene-edited alfalfa in food or feed applications. S&W Seed Company plans to commercialize two initial variety offerings – a fall dormancy five variety and a fall dormancy seven variety – marking the first commercial gene-edited alfalfa varieties in the United States.	https://investor.cibus.com
Avocado	Non-browning	CRISPR	Green Venus	USA	No information		https://cdn.shopify.com
Almond	Improved agronomic property	CRISPR	Ohalo Genetics Inc.	USA	USA	2025: FruitionOne is the world's first self-fertile Nonpareil almond variety. This groundbreaking innovation allows almond growers to eliminate traditional pollenizer trees when planting Nonpareil almond orchards and is estimated to double mature orchard profitability. FruitionOne trial orchard plantings are underway. FruitionOne will be available for early orders in 2025 with first commercial deliveries beginning in 2027.	https://www.ohalo.com
Banana	Non-browning	CRISPR	TROPIC Bioscience	UK	Philippines, Colombia, Honduras, USA, Canada	2025: "Our non-browning banana variety is now commercially available, and will be launching to consumers in the US and Canada in 2026. With regulatory approval granted in several growing regions, Tropic are well positioned to provide delicious varieties to markets around the world."	https://tropic.bio

Table 2 New GMOs in Development

Last update: December 30, 2025

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Banana	Disease resistance	CRISPR	Elo Life Systems	USA	Honduas	2025: Banana varieties with resistance to the deadly fungus Tropical race 4 (TR4) are currently being developed by Elo Life Sciences using gene editing technology. These gene-edited bananas are presently grown in greenhouses and are being tested with large TR4 inoculations to validate their editing strategy. Now, farms in Latin and Central America (e.g. Honduras) are involved in conducting field trials of these edited bananas.	https://www.frontiersin.org
Orange	HLB-resistant	CRISPR	Soilcea	USA	USA	2025: With support from the United States Department of Agriculture (USDA) and the National Science Foundation's Small Business Innovation Research Programs, Soilcea has developed a Carrizo rootstock variety – CarriCea T1 – that is resistant to Huanglongbing (HLB). "We are starting to exponentially scale our trees to have more numbers, and so really where we're at now is field trial scale, but by the fall of next year or the spring of 2027 we're going to have full-scale production where we can start putting hundreds of thousands of trees in the ground each year," Lagos shares. "It's definitely a sequential process. We're scaling up production while growers are getting experience with these trees, so hopefully then in two years they're going to be really ready to replant the industry."	https://centralfloridaagnews.com
Wine grapes	Wine grape cultivars that possess natural preservation properties	CRISPR	Green Venus	USA	USA	2025: APHIS confirmation of the regulatory status of GreenVenus' genome edited wine grapes with reduced PPO. Green Venus intends to move these GE grapes across state borders to assess field performance, release to the environment via open field trials and ultimately commercialize the grapes for broad cultivation in the United States.	https://www.aphis.usda.gov
Strawberry	Remontant strawberry	CRISPR	Simplot Plant Sciences	USA	Canada	Simplot stated (2024) that it could enter the Canadian market in fresh and processed food as early as 2025 but has not confirmed release (May 2025).	There is no indication that it is on the market nor commercially grown in Canada. (Lucy Sharratt, Canadian Biotechnology Action Network, by mail, 2 May 2025).
Strawberry	Hybrid strawberry	CRISPR	Ohalo Genetics Inc.	USA	No information	2025: Ohalo has partnered with industry leaders to form the Ohalo Strawberry Consortium, a groundbreaking collaboration to develop consumer-preferred, more flavorful strawberries and bring them to market as true seed. Ohalo has introduced a novel proprietary hybrid breeding system that eliminates the need for vegetative propagation by producing uniform strawberry seed. For the first time ever, truly uniform seed can be planted to quickly germinate field-ready strawberry seedlings.	https://www.ohalo.com
Blackberry	Seedless Blackberry	CRISPR	Pairwise	USA	Honduras (field trials)	2024: Pairwise announced to advance these berries into the next phase of product development, including outdoor field trials. They work toward scaling up and making them available to the public in a few years. Further traits in progress: thornlessness, compact growth.	https://www.pairwise.com

Table 2 New GMOs in Development

Last update: December 30, 2025

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Watermelon	Natural sweetener	CRISPR	Elo Life Systems	USA	No information	2025: Elo Life Sciences begins field trials to produce monk fruit molecule in watermelons with a goal to launch a new high intensity sweetener juice and powder in 2026.	https://elolife.com