

● **1984**

Since 1984, our global focus on plant biotechnology R&D has been centered in Research Triangle Park, N.C. Over the years, Syngenta experts have leveraged innovations in biotechnology to develop novel traits to help farmers grow more with limited land and resources. Through world-class science, global reach and commitment to our customers, we are working to increase crop productivity, protect the environment and improve health and quality of life by *bringing plant potential to life*.

www.syngenta.com



syngenta®

Seed Product Innovation at Syngenta

A History of Innovative Research & Development

syngenta®

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- **2011**
- **2012**
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- **2015**
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- **2017**

1984

Syngenta legacy company, Ciba-Geigy, opens the doors of its Agricultural Biotechnology Research Center in Research Triangle Park, N.C.

1993

In samples collected from sour milk, Ciba-Geigy scientists isolate a bacterial strain and confirm its activity against black cutworm, a major corn pest. It is identified as Vip3A, an insecticidal protein with a unique mode of action against insect pests. It will subsequently be commercialized as the Agrisure Viptera® trait for corn and the VipCot trait for cotton.

1995

U.S. regulatory agencies deregulate Bt176, widely known as Bt corn, the first genetically engineered corn seed product ever to be sold to and planted by U.S. corn growers. Ciba-Geigy scientists developed the Cry1Ab gene used in Bt176, which confers resistance to the European corn borer, a devastating insect pest.

1996

Ciba-Geigy and Sandoz merge to form Novartis, at the time a world leader in agrochemicals and other products.

2000

Syngenta is formed by merging the agribusinesses of Novartis and AstraZeneca. Syngenta, which means “bringing people together,” becomes a world-leading agribusiness committed to sustainable agriculture through innovative research and technology.



2002

Syngenta is one of the first of two groups to sequence the rice genome. Syngenta researchers use this data to develop Golden Rice and a comprehensive marker map for corn.

2004

Syngenta donates enhanced Golden Rice seeds and genetic lines to the Golden Rice Humanitarian Board. The increased pro-Vitamin A levels in the enhanced Golden Rice are more than 20-fold over the original Golden Rice. This product and the nutritive benefits it provides can save lives, prevent night blindness and help millions of children in developing countries.

2005-2006

The Agrisure® traits portfolio is launched, bringing its first two commercial traits to market - Agrisure GT (2005) and Agrisure RW (2006), which confer glyphosate tolerance and corn rootworm control, respectively.



2007

Syngenta scientists submit MIR162 for regulatory approvals. MIR162, a unique insect control event for corn that will ultimately be commercialized as the Agrisure Viptera trait, contains the Vip3A protein and protects against one of the broadest ranges of above-ground insect pests to date.

2008

Syngenta opens the Syngenta Beijing Innovation Center, a biotech research and technology center, in Beijing, China. Its focus is on early-stage evaluation of genetically engineered traits and advanced breeding for key crops such as corn, soy and rice in the areas of yield improvement, drought resistance and disease control.

EPA approves the VipCot cotton trait, the first commercial registration of any Vip3A-based product.

2009

Science magazine names Syngenta as one of the Top 20 Biotech and Pharma Employers.

2010

Syngenta joins Sustainability Consortium as founding member.

The Syngenta Beijing Innovation Center and the Syngenta operations in Research Triangle Park, N.C., begin expansion efforts.

MIR162, marketed as the Agrisure Viptera trait, receives USDA regulatory approval for cultivation.



Syngenta launches water-optimized Agrisure Artesian® hybrids, which manage water more effectively. The gene-based, native technology was discovered and deployed after years of advanced breeding efforts.



2011

USDA approves Enogen® corn enzyme technology, the first biotech corn output trait designed to enhance ethanol production.



2012

Syngenta acquires U.S. biotechnology company Pasteuria Bioscience Inc. to complement Syngenta’s existing chemical nematicides.

Syngenta buys DevGen, a global leader in hybrid rice and RNAi technology.

2013

USDA deregulates and approves Agrisure Duracade® trait, event 5307, for corn rootworm control. Combined with the Agrisure® RW trait, it provides dual modes of action for control of corn rootworm, the single most destructive pest in corn.



Syngenta opens the doors of the Advanced Crop Lab at the Syngenta RTP Innovation Center, a first-of-its-kind greenhouse and research facility with more than an acre under glass and 46 growth environments that simulate weather around the globe.

Syngenta Principal Research Scientist and Science Fellow Dr. Mary-Dell Chilton is named a World Food Prize Laureate for her discovery of *Agrobacterium tumefaciens*, the vehicle by which modern agricultural biotechnology is conducted.

Syngenta launches The Good Growth Plan sustainability program, which addresses the overall food security challenge within six measurable commitments to boost crop and resource efficiency, rejuvenate ecosystems and strengthen rural communities.



2014

Enogen is recognized as *Agrimarketing's* Product of the Year, chosen for the benefits it delivers to farmers, ethanol plants and rural communities.

2015

Mary-Dell Chilton is inducted into the National Inventors Hall of Fame and the USDA Hall of Heroes for her cutting-edge work in biotechnology.

Syngenta wins the INFORMS Franz Edelman Award for developing new analytics tools to help seed breeders reduce the time and cost required to develop high-yielding crops. The award demonstrates the advances in plant breeding that—when deployed in connection with biotechnology—are helping farmers improve productivity.

2016

Syngenta announces the discovery of newly identified water-optimizing corn genes, which are deployed in the second wave of Agrisure Artesian hybrids.

Mary-Dell Chilton is honored by the National Academy of Inventors for her achievements in the field of plant biotechnology.

Enogen Cellerate™ process technology, which converts corn kernel fiber into cellulosic ethanol, is launched. This process technology helps ethanol plants produce more ethanol from the same kernel of corn, increase total yield of distillers corn oil and improve the protein content of feed co-products.

Syngenta opens a \$94 million expansion in Research Triangle Park, N.C., representing a new infrastructure record for the company globally.

2017

Syngenta researchers establish that haploid induction, which helps shave years off the seed breeding process in corn, is triggered by a defect in an enzyme coded by the *Matrilineal* (MTL) gene. The findings are published in the scientific journal *Nature*.

Syngenta launches Enogen Feed for the beef and dairy markets. This in-seed innovation benefits growers producing grain or silage for livestock feed.



ChemChina acquires Syngenta in a transaction that helps ensure continuing choice for growers and continued R&D investment across technology platforms and crops. It also allows for further expansion of Syngenta's presence in emerging markets, and notably, in China.

1980s

1990s

2000s

2010s

