PLANT BIOTECHNOLOGY TIMELINE

Plant biotechnology is a precise process in which scientific techniques are used to develop more plants. Many researchers view plant biotechnology as the next step in the refinement of genetic enhancement techniques that began thousands of years ago with the domestication of wild plants for food production.

4000 BC-1600 AD: Early farmers, like those in Egypt and the Americas, saved seeds from plants that produced the best crops and planted them the next year to grow even better crops.

1700-1720: Thomas Fairchild, the forgotten father of the flower garden, creates Europe's first hybrid plant.

1866: Austrian monk Gregor Mendel publishes important work on heredity that describes how plant characteristics are passed from generation to generation.

1870-1890: Plant researchers cross-breed cotton to develop hundreds of new varieties with superior qualities.

1871-early 1900s: Researcher Luther Burbank develops the Russet Burbank Potato, and later goes on developes several new hybrid fruits, including plums, berries, prunes and peaches.

1908: First U.S. hybrid maize produced by G.H. Shull of Carnegie Institute through self-pollination.

1919: Word “biotechnology” coined by Hungarian engineer Karl Ereky.

1930: Inspired by writings of Luther Burbank, U.S. Congress passes the Plant Patent Act, enabling the products of plant breeding to be patented.

1933: Hybrid maize becomes available commercially in the United States, causing maize yields to triple over the past 50 years.

1953: James Watson and Francis Crick describe the double helix structure of deoxyribonuleic acid (DNA), providing more insight into how DNA carries genetic information.

1960s: After decades of work, Norman Borlaug creates dwarf wheat that increases yields by 70 percent, launching the Green Revolution that helps save millions of lives.

1973: Stanley Cohen and Hubert Boyer successfully splice a gene from one organism and move it into another, launching the modern biotechnology era.

1978: Boyer's lab creates a synthetic version of the human insulin gene.

1982: The first biotech plant is produced — a tobacco plant resistant to an antibiotic. The breakthrough paves the way for beneficial traits, such as insect resistance, to be transferred to plants.

1985: Field trials for biotech plants that are resistant to insects, viruses and bacteria are held in the United States.

1986: The EPA (Enviromental Protection Agency) approves the release of the first crop produced through biotechnology — tobacco plants. A coordinated framework for the regulation of products derived from biotechnology is established.

1991: The USDA's (U.S. Department of Agriculture) Animal and Plant Health Inspection Service (APHIS) publishes guidelines for field trials of biotech crops.

1994: A biotech FlavSavr ™ tomato developed to have more flavor and a longer shelf-life than conventionally grown tomatoes, is approved by the Food and Drug Administration (FDA).

1995-96: Biotech soybeans and maize are approved for sale and biotech cotton is commercialized in the United States. Biotech crops become the most rapidly adopted technology in the history of agriculture.

1996: Farmers in six countries plant biotech crops on 4.2 million acres (1.7 million hectares).

1999: German and Swiss scientists develop golden rice, fortified with betacarotene, which stimulates production of vitamin A that can prevent some forms of blindness.

2000: The first entire plant genome is sequenced, Arabadopsis thaliana, providing researchers with greater insight into the genes that control specific traits in many other agricultural plants.

Farmers in 13 countries plant biotech crops on 44.2 million hectares, a 25-fold increase over 1996.

2001: U.S. and Canadian scientists develop a biotech tomato that thrives in salty conditions, a discovery with the potential to create tomatoes and other crops that can grow in marginal conditions.

The European Community releases a 15-year, $64 million study that involves more than 400 research teams on 81 projects. It finds that biotech products pose no more risk to human health or the environment than conventional crops.

EPA renews registration for Bacillus thuringiensis (Bt)maize and cotton, citing that they do not pose any health or environmental risks.

2002: The National Center for Food and Agricultural Policy (NCFAP) study finds that six biotech crops planted in the United States — soybeans, maize, cotton, papaya, squash and canola — produce an additional 1.8 million tons of food and fiber on the same acreage, improve farm income by $1.5 billion and reduce pesticide use by 210,000 tons.

Reprinted from the Council for Biotechnology Information web site. 2003.