

Maize and Plant Genetics

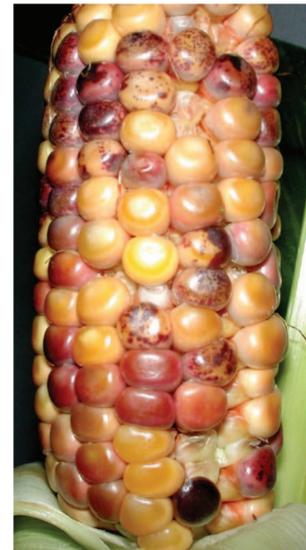
There is greater genetic diversity in maize than in any other cultivated plant.

Soon after the rediscovery at the turn of the 20th century of Mendel's experiments on inheritance in peas, scientists applied the concepts to the study of maize. They created the first genetic map and the first collection of characterized mutations, elevating maize to the status of the first "model" plant.

Barbara McClintock was a visionary in maize genetic research. One of the foremost biologists of all time, and the first female member of the National Academy of Sciences, McClintock discovered that genomes were unstable and that genetic material could move around within cells. She won a Nobel Prize for her work in 1983. This was the first Nobel Prize awarded for work with plants.

Maize was the foundation of the hybrid seed industry, and continues to be the most profitable grain both in the United States and worldwide. Maize yields per acre have increased dramatically for many decades due to the cooperative efforts of crop breeders, farmers, agronomists, and scientists. Support from the National Corn Growers Association, U.S. Department of Agriculture, National Science Foundation, and Department of Energy has made the continuing pattern of improved yields and higher production efficiency possible.

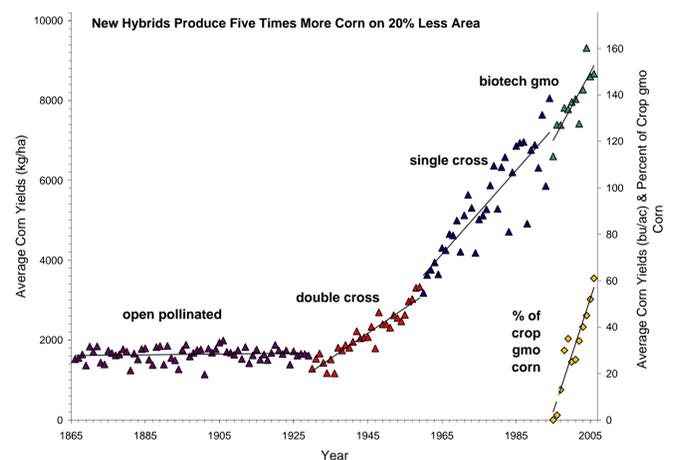
Seeds that store the genetic diversity of maize are preserved in several facilities around the world. The largest center that preserves corn seed is the International Maize and Wheat Improvement Center in Mexico (CIMMYT), which has nearly 11,000 samples of maize. In the United States, the major corn seed repositories are the National Center for Genetic Resources Preservation in Colorado and the USDA's North Central Regional Plant Introduction Station in Iowa. There are many varieties of corn with intriguing names such as 'Bloody Butcher,' 'Howling Mob,' 'Georgia Cow Corn' and 'Yellow Horsetooth.'



The spotting on this ear (right) is caused by a mobile genetic element similar to the those studied by McClintock (left).



Image Courtesy of Schnable Lab, Iowa State University



Single cross hybrid corn (pictured left) is more vigorous and yields more than either of its parents (planted on either side).

In the last twenty years, biotechnologies such as transgenic plant production have been applied to maize to increase yield with lower farmer costs and chemical inputs. The novelty of this approach has led to continuing controversy about possible negative impacts of transgenic plants, although none have yet been proven.

