

An Introduction to Corn

By Emerson D. Nafziger and Don Bullock

History of Corn as a Crop

Corn (*Zea mays*) is, perhaps more than any other crop of worldwide importance, a product of human selection and improvement. The corn crop was domesticated more than 7,000 years ago in Central America, and the domestication process was dramatic and ingenious. The development of most food crops originated with wild ancestors that were selected over a long time to produce more food of higher quality. Evidence suggests that the domestication of corn (probably from a wild grass known as teosinte) was so complete that corn cannot exist in the wild and few, if any, wild relatives still exist. From its center of origin, corn (called maize throughout most of the world) spread to become the major food staple of most people living in the Americas in pre-Columbian times.

When Europeans came to the Western Hemisphere, they found corn growing from the Caribbean Islands to New England. Several different types of corn were being produced, from flour corns with very soft starch in their kernels to the hard-kernel “flint” corns. Great Plains and Eastern Woodland dwellers were dependent upon corn, seed of which likely had reached the interior of North America by way of trade with people living in the Southwest, including modern-day Mexico.

The development of modern Corn Belt hybrids, which have made corn such a successful crop, began with a genetic “accident” several hundred years ago. The European settlers in the southeastern United States discovered a type of corn growing there that was different from the short-growing flint corn common in the northeastern United States. The plants were taller, the ears were larger, and the kernels generally were dented on their outer end. When the two types of corn were grown near each other, some of the plants resulting from cross-pollination had good traits from both types of

corn. They produced larger yields than the flint corn but had some of the flints’ good kernel characteristics. Farmers in the middle Atlantic region continued to grow these superior types.

As settlers moved west during the early 1800s, they carried these superior corn varieties with them to plant on the newly opened land. Fields of such varieties consisted of many plants that varied in maturity, plant height, and kernel traits. Innovative farmers learned that if they kept ears from the better plants for seed, the next generation of corn plants retained some of the better characteristics, and consequently, produced higher yields. Some of these varieties became known for their originators (Reid’s Yellow Dent).

At the turn of the century, plant scientists confirmed genetic principles that revolutionized plant breeding. Early studies showed that when two different individual plants were crossed, their progeny usually performed better than either parent, a trait known as “hybrid vigor.” Crosses between individuals from different corn varieties expressed hybrid vigor, and such hybrids produced much higher yields compared with inbreds. The first commercial hybrid seed corn was grown in Iowa in 1923. The cross was forced by hand-removal of the tassel (male flower) on the seed plants, so that pollen to fertilize the kernels on those plants had to come from the second variety grown in the same field. Although this method of seed production was labor intensive and yields of the seed parents were not always good, the production of hybrids spread rapidly in the 1930s and 1940s. Today, virtually all corn produced in the United States is grown from hybrid seed. Breeding efforts are directed toward improvement of populations (such as in the early varieties), from which superior inbreds are selected to serve as hybrid parents.

Importance of Corn in the World

Although corn originated in a subtropical climate, it has adapted to many climates around the world, from the lowland tropics to cool areas more than 7,000 ft (2,100 m) above sea level. Much of the corn grown in other parts of the world, especially in temperate climates such as in western Europe, originated from U. S. Corn Belt hybrids, with genetic improvement to adapt it to local conditions.

Corn is the most important “coarse grain” crop (i.e., a crop used mostly as livestock feed rather than as human food) in the world. In 1994, a record year for corn production, 555 million metric tons (MMT) of corn was