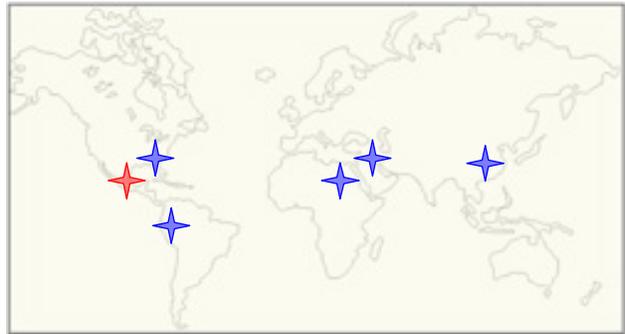


Corn and the Red River Gorge: The Other Side of Plant Domestication

The places people first domesticated native plants are scattered all across the globe. Archaeologists call these places **hearths** of plant domestication.

The five most familiar hearths – Mexico (corn), Peru (potatoes), the Middle East (wheat and barley), Africa (soybeans and millet), and east Asia (rice) – are those where people first domesticated the foods we commonly eat today.



World hearths of plant domestication

A sixth, and less well-known, hearth is Eastern North America. More than 3,000 years ago, native groups domesticated eight weedy annuals. Called the **Eastern Agricultural Complex (EAC)**, these plants produce nutritious seeds that are good sources of oils and fats (like sunflower) or starchy carbohydrates (like goosefoot). Sites in Kentucky's Red River Gorge contain some of the earliest and best-preserved evidence of plant domestication in this hearth.

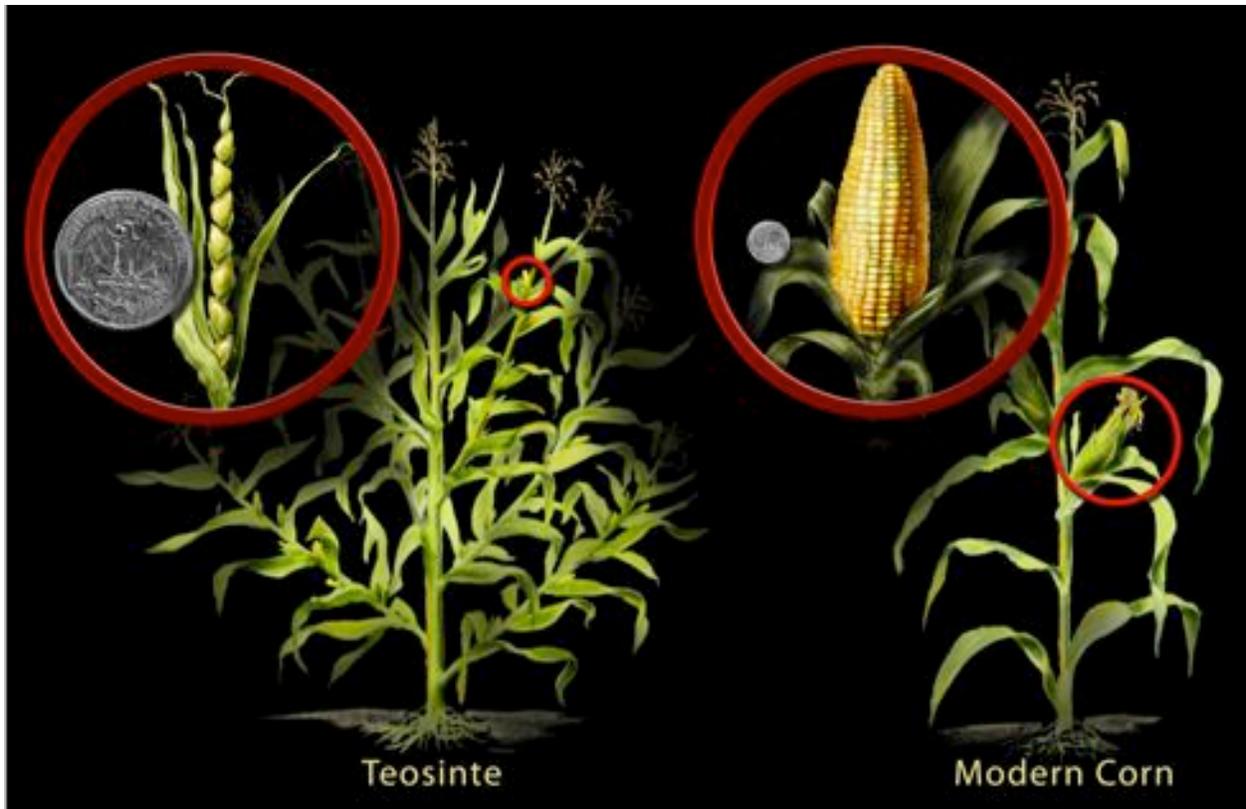
Through a process called **diffusion**, domesticated plant cultivation can spread across long distances to places where the plant is not native. People share the seeds, as well as the knowledge needed to grow the plants and prepare the foods. Plants will thrive in a new environment if it meets the plant's growing requirements or if people can adjust the environment to meet the plant's needs. In this way, people may continue to change and manipulate the plant, producing new varieties over time.

Several plants domesticated elsewhere came to prehistoric Kentucky through diffusion. One example is **corn** or **maize** (*Zea mays*). Corn moved across several thousand miles over the course of as many years from Mexico (the red star shown above) to Kentucky. It probably came via the American Southwest in two waves separated by several hundred years.



The "Three Sisters" (L-R): squash, corn, and beans

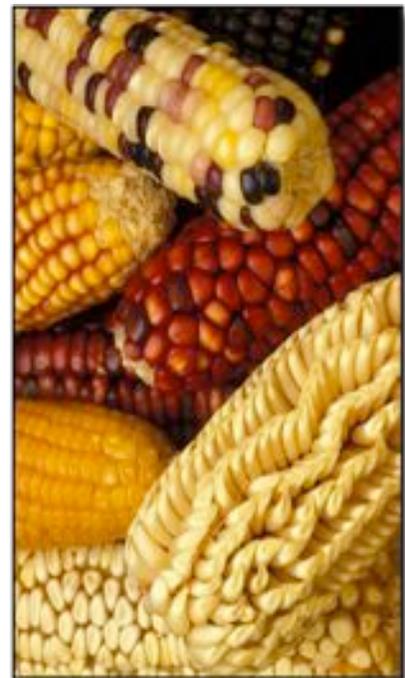
Corn is the domesticated descendent of a wild tropical grass called **teosinte**, which is native to Mexico. It took thousands of years of human cultivation to change wild teosinte into modern corn. Because humans have so altered the plant from its wild form, corn cannot continue to grow without the direct input of humans.



Differences in branching, cob size, seed number, and husks in wild teosinte and domesticated corn

There are three main kinds of corn. Flint corn comes in many colors and has a hard outer shell. Popcorn is a kind of flint corn. Dent corn is field corn, fed to livestock and put to industrial uses. Sweet corn contains more sugar. People eat it on or off the cob. Today, there are scores of corn varieties, reflecting the regions where they were first grown and the people who grew them.

Corn is one of the world's most productive grain crops, meaning each plant produces numerous edible seeds. Nutritionally, it supplies abundant carbohydrates and some protein essential for good nutrition, but it lacks the amino acids lysine and methionine. Processing corn with wood ash (lye) to produce hominy reduces some of its essential amino acids, but increases its lysine and (the B vitamin) niacin content. Dishes that use corn and beans together are good sources of vegetable protein because beans contain lysine. Squash, often grown with corn and beans, contributes calories, vitamins, and minerals not found in the others, and its seeds are a source of protein and oil.



Varieties of flint corn



The earliest evidence for corn in the middle Ohio Valley comes from sites in Ohio and Tennessee, where archaeologists found charred fragments of corn kernels and cobs. These date to between A.D. 200 and 300. The earliest traces of corn in Kentucky are charred kernels found at a site in Madison County, dated A.D. 600.

Charred prehistoric corn kernels

Upon its arrival, Kentucky's native peoples did not immediately grow corn for food - that took between six and eight centuries. Before it became a major foodstuff, archaeologists think corn played an important role in ritual and ceremony.

In eastern and central Kentucky, native peoples turned to corn farming with a passion around A.D. 1000. Other than squash, sunflower, and perhaps goosefoot, they stopped growing the EAC plants from their gardening heritage. Growing corn changed their foodways, and their lifeways, forever.

In eastern and central Kentucky, native farmers grew Eastern 8-Row flint corn. Its kernels, typically large and crescent-shaped, are arranged in eight rows around the cob. The planting system they used – **intercropping**, or planting complementary crops together in the same field – was a sophisticated, sustainable, and productive agricultural system. It depended on the same kind of knowledge about crops and soil management as farming does today.

Pairing a cereal grain with a legume is found in almost every agricultural community through time worldwide. In prehistoric Kentucky, the cereal grain was corn and the legume was beans. Add squash and you have what many Eastern North American native peoples still refer to as the "Three Sisters."

They planted the Three Sisters together in hills spaced in a regular pattern. Corn was the engine of the system, given its productivity. Its stalks served as the physical support for the bean vines. Beans added nitrogen to the soil, which increased corn production. Squash, planted between the hills, reduced weed pressure and shaded the ground, retaining soil moisture.



After harvesting, native peoples stored corn in above-ground cribs or hung cobs inside their homes, the husks braided together. They prepared corn in many different ways. They picked it green and roasted the ears in coals. As hominy, they made soups or gruels and fried, baked, or boiled breads. Set in water to sour, they ate "pickled" corn, and after parching it, they pounded corn into a meal they used when traveling.

Corn was deeply intertwined with many aspects of native social, cultural, political, and economic spheres. Corn husks were made into masks, moccasins, mats, and baskets;

they used cobs for fuel and game darts. For Eastern North American native people, corn was (and in some cases, still is) intimately tied up in ceremony and religious practices and beliefs. Corn could represent mother or father. The Green Corn Ceremony, held in late summer, was and remains a celebration of thanksgiving, of prayers and feasting and dancing. For some groups, it also was associated with annual cleansing and purification of the person and the community.



In central and eastern Kentucky between A.D. 1000 and 1750, Fort Ancient farmers lived in villages scattered across the uplands and along the major river valleys. Archaeologists have found little evidence, however, for their farming villages in the Red River Gorge.

The Gorge at this time appears to have been a place where small groups of Fort Ancient people came to hunt. During the winter, they would stay in its many rockshelters. Archaeologists have found uncharred Fort Ancient corn husks, cobs, and kernels in only a few rockshelters. Thus, in this place where people had domesticated native plants several millennium before, hunting parties brought corn they had grown near their villages to the Gorge to supplement their diet.

In the historic period, European-Americans and their slaves learned about corn from indigenous groups. Pioneers brought native varieties of corn with them to Kentucky. Like their Indian contemporaries, corn was the dominant crop on the frontier and a pioneer dietary mainstay. Since, at first, Bluegrass soils were too fertile to plant wheat, pioneers sowed corn in roughly cleared fields without affecting yields, unlike other crops.

Pioneers initially grew corn as the Indians did, multi-cropping it with beans in hills. Documents describe how pioneers planted their fields “in check.” First, they plowed four-foot furrows one way and then plowed four-foot furrows perpendicularly the other, planting seeds at the intersections. Later, they hoed the intersections into hills. They, too, prepared corn as hominy and corn bread.

Later in history, people lived on small farms in the Gorge, growing corn, among other crops. They took their harvest to mills, where it was ground into flour and meal. Pioneer farmers fed dent corn to their livestock. Rockshelters served as places where some farmers turned their corn into moonshine.

Today, as in the past, most corn grown in the U.S. is dent corn, used to feed livestock, and sweet corn remains a popular food. However, we use corn in many other ways. An ingredient in alcoholic beverages, corn now also is used to make ethanol, a gasoline additive. Corn syrup sweetens a host of our foods, like soft drinks, cakes, and ice cream. Corn starch strengthens fabrics and textbook bindings, makes plastics biodegradable, and is in aspirin and cosmetics. Corn oil is used in inks.

Corn is an amazing plant. Different from other crops, it is one of the best examples of interdependence – corn relies on humans for its existence, and we rely on corn for our existence. Corn belongs with people.