Introduction

Maize and common beans were introduced as crops some 1,000 years ago to the land we now call Iowa (Asch and Green, p.85). Long before the introduction of corn into Iowa soil, humans had already begun to move from hunter-gatherers toward more intensive methods of food production. Prehistoric farmers developed and domesticated varieties of native plants such as lamb’s quarters, sunflowers, and marshelder. These native crops can shed light on how we might develop methods of agriculture that are more sustainable.

In 1989, the Leopold Center for Sustainable Agriculture funded a project in which University of Iowa archeologists examined the native prehistoric plants of Iowa. The goal of the study was to identify prehistoric crops in order to better understand past agricultural practices. Prehistoric cropping systems may provide insight into the search for future alternative cropping systems in Iowa.

The study found that seven primary plants used as crops in ancient Iowa. Most of them are considered weeds today; only one of these is still grown as a crop in Iowa. The study focused on crops cultivated 2,000 years ago, before Europeans settled in the Iowa region.

**Sunflower (Helianthus annuus)**

Of all the prehistoric crop plants found in the study, only the sunflower remains a crop today. Sunflowers were and are produced for their oil and edible seeds. When native Iowans first began domesticating sunflowers, they probably selected their crop seeds from the wild sunflowers that had the largest seeds, the largest heads, and seeds that remained in the head after the plant reached maturity. By doing this, native peoples increased the seed size by 1,000% (Kindscher, p. 126). Cultivation of the sunflower spread through Iowa with the migration of people.
Sunflowers today are very hardy and will grow well with full sun in most types of disturbed soils. Wild sunflowers grow on waste and cultivated ground, low meadows, prairies, and along roadsides and railroads. They flower from July to September, and the seeds ripen from September to October. They typically have many small flowering heads. Domesticated sunflowers have one or a few large heads.

**Goosefoot or Lamb’s Quarters**
(*Chenopodium berlandieri* ssp. *jonesianum*)

The domesticated subspecies of lamb’s quarters grown in ancient Iowa is now extinct. However, the species of lamb’s quarters currently found in Iowa corn and soybean fields is related to the ancient crop. The most common species today is *Chenopodium album*, an introduced variety similar to the native plant. Both the seeds and leaves of lambs quarters were eaten in ancient times.

Today, lamb’s quarters is found in crop fields, gardens, waste areas, and forest edges both in full sun and partial shade. Lamb’s quarters today grows very easily from seed. It does not need orderly cultivation. The plant has the potential to reach a height of eight feet. Lamb’s quarters starts to flower in June and fruits shortly thereafter. Another burst of flowering and fruting from a second crop may occur in late summer (Duke, p. 192).

Lamb’s quarters is an opportunistic plant; it can be encouraged to grow in a selected spot, or it can be grown in a part of the garden that is seldom used.

**Marshelder (Iva annua var. macrocarpa)**

Marshelder (also called Sumpweed) may have been the first native plant domesticated for agricultural purposes. The marshelder seeds are oily and serve as a concentrated source of food energy. The seed is covered with a thin, dry pericarp (a protective covering) that is difficult to remove.

Prehistoric people developed the wild marshelder into a domesticated variety with larger seeds and greater yields. The size of the seeds has increased by about 1,000% since prehistoric times. Marshelder is similar to wheat in that it needs to grow in dense stands with high populations in order to produce a crop that is large enough to be harvestable.

Marshelder today grows on open, moist, and recently disturbed ground in the flood plains. Flowering occurs in August; seeds ripen in October. Harvesters can easily strip the seeds from the plant. Marshelder is currently found in southern Iowa.

**Erect Knotweed (Polygonum erectum)**

Erect knotweed was a cultivated and probably domesticated crop. Now, it grows in abundance in cattle and hog pastures and feedlots and along dirt and gravel roads in flood plains. Erect knotweed flowers and fruits throughout the summer and into the fall until a killing frost.
synchronized flowering period late in the growing season results in simultaneous ripening of a quantity of seed during October. Erect knotweed can be harvested by pulling up the plants by the roots and shaking or stripping off the fruits (Asch and Greene, p. 56).

**Little Barley (Hordeum pusillum)**

The starchy grains of little barley, much smaller than those of domesticated Old World barley, ripen in June. In processing the grains for consumption, it would have been important to thoroughly separate the bract—the papery coverings around the grain—from the grain. There is a sharp, hair-like awn attached to one side of the bract. The bristly awns can easily penetrate the mouth (Asch and Greene, p. 64).

Little barley is often found on waste ground, along roadsides, and in overgrazed pastures. It is now found most often in northwestern Iowa. Because little barley grains were so small, large plots were needed for adequate harvest. Thus, little barley was important to pre-maize agriculture because it signified the beginning of more intensive cropping practices.

**Maygrass and Reed Canary-Grass (Phalaris Caroliniana and arvadinaeae)**

There is some question about whether the seeds found in prehistoric Iowa sites are those of Maygrass (a southern species) or Reed canary grass (which is thought to be an Iowa native).

Maygrass is an annual grass. It is a starchy, seeded plant thought to have been an important agricultural crop. Maygrass was planted in fall, allowed to overwinter, and then harvested in late spring. It was probably an important late-spring/early-summer food source (Kindscher, p. 234).

Reed canary grass is a perennial whose seed-set is often poor. It grows spontaneously in wet or moist soils at the margins of lakes and streams and in marshes. It spreads by creeping rhizomes to produce dense stands. Reed canary grass is naturally abundant in Iowa. It is often planted to control erosion in waterways and is grown as forage for livestock.

**Gourds and Squashes (Curcurbita pepo)**

Gourds and squashes were probably the first cultivated plants in the Midwest. "Buffalo gourd," which was domesticated in the Midwest, and other cultivated varieties may actually have originated in the tropics. This group of plants includes those that we know today: pumpkins, summer and winter squash, acorn squash and ornamental gourds. The Bottle gourd was used primarily as a container.
Discussion Questions

1. People thrived without agriculture for thousands of years. In what ways are hunting and gathering preferable to agriculture? What factors might have moved people into food production?

2. Many of the plants that prehistoric Iowans cultivated for food are now considered “weeds.” Why are some plants referred to as weeds? What could be some other uses of these plants? Why did prehistoric Iowans choose these plants?

3. Shirley Shirley explains in her book Restoring the Tallgrass Prairie, “Little knowledge has been passed down on how to recognize plants of our native heritage. We are often not aware of our losses and their value until they are gone”(p. 4). How can knowledge of crop developments by ancient people be applied to the farming technology of today? Tomorrow? Why should we study these plants?

Developmental Exercises

1. Using a weed identification guide, see if you can find any of the plants discussed in this fact sheet around your school or home.

2. Plan and make a field trip to a natural prairie site. Investigate how the natural plants grow and coexist with other introduced vegetation.

References


This fact sheet was prepared and reviewed by Iowa archeologist William Green, the Leopold Center for Sustainable Agriculture, and Shelly Gradwell, Iowa State University graduate student. For more information, contact the Leopold Center, (515) 294-3711, or William Green, Office of the State Archeologist, (319) 335-2389.


July 1995

Recycled Paper