

# Growing Sweet Corn in Arizona

Sweet corn grown with completely filled rows of tender sweet kernels highlights any gardening venture. It also adds a delicious and nutritious food for the table. Getting perfect ears to the table requires a large investment in space, water, fertilizer and insect control.

This native American food crop is not the most efficient crop but gardeners grow it so consistently that it ranks second only to tomatoes in popularity of vegetables. To appreciate the reasons for its culture, the gardener should understand some of its history and botany.

## History

Sweet corn of today bears some resemblance to corns of 100 years ago but the similarities to its ancestors are nearly unrecognizable. Botanists are not sure of corn's exact origin, but cobs and seeds have been found dating back thousands of years. For centuries, Native Americans have grown, sorted and selected corn for different uses. It wasn't until the Europeans arrival that there was interest in sweet corn, or corn with sugary, shriveled grains. It is believed that Native Americans had sweet corns by natural crosses but chose not to keep the seeds.

As early as the first decade of the 19<sup>th</sup> century, there have been references to true sweet corn. Since then it remained fairly similar until the 1960's when breeders developed Xtra Sweet hybrids and the newer Everlasting Heritage lines. The rate of breeding of newer varieties is so furious that varieties become frequently outdated by newer and seemingly better varieties. Varieties will be discussed later.

## Botany

Corn is an annual herb belonging to the grass family. Once the cycle of growth, flowering and seed production finishes, the plant dies. It grows vertically into a single stalk. The fibrous root system typifies grasses in general. In addition, corn will grow large brace roots from the base to stabilize and anchor it more securely.

Corn plants bear two types of flowers. Pollen producing flowers, called tassels, grow at the top of the plant. Tassels are specialized male flowers that produce great quantities of pollen for wind



pollination. Pollen production lasts for 12–20 days. This time period ensures pollen is available to the female flower when it is ready to be pollinated. The female flower has all the ovaries aligned on a central cob. Leading out from each individual ovary is a single strand through which a single pollen grain must migrate and fertilize the ovary. The collective name for this bundle of strands is called the silks. The silks protrude from the protective husks ready for the pollen grains to fall on them. This time period is the most critical for gardeners. If the temperature is high, the pollen stays viable for a shorter time and the silks dry out sooner resulting in poor pollination.

## Culture

Growing sweet corn is often considered an art more than a science. Successful gardeners often jealousy hold the secrets to their success. Most agree that timing is most important: timing of planting, irrigation, fertilizations, insect control and harvest.

Plant sweet corn in a well-drained soil. Select a site that has adequate sunlight and relatively low weed pressures. Drip irrigation or furrow irrigation is necessary to deliver sufficient water at timely intervals.

8/99

AZ1141

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Corn planted in beds should be planted in blocks with each plant 6" apart. The rows can be up to 20" apart and 4–6 inches between plants within the row. Plant seeds about 1 inch deep from the soil surface. Corn should not be planted in one long row, but in several shorter rows to facilitate pollination. Small quantities should be planted in a circle producing 6–10 plants.

## When to Plant

Corn should be planted after the last frost in the spring or approximately 75–100 days before the first frost in late summer or fall. Altitude affects weather conditions, so consult the Extension office in your county or experienced gardeners for planting dates. Bulletin 110095, *Ten Steps to a Successful Vegetable Garden*, also gives planting times for different localities. The lower elevation desert of Arizona can yield two crops per year with a spring planting and then a late summer planting.

Several successive plantings, at weekly intervals, will lengthen the harvest period.

For early spring plantings, a mulch of clear plastic laid over the seed rows warms the soil. This helps germination and early root growth, however, beware of increased weed growth under clear plastic mulch. Using mulches may provide corn to be harvested 7–10 days earlier.

## Water and Fertilizer

Corn is a heavy water user. Corn leaves should not “roll” due to water stress. The soil around the roots should not be allowed to dry completely. Any stress is devastating especially when the tassels and silks are forming. Any time before flowering is equally important. Stress during the growing period can quickly dry leaves reducing the plants’ efficiency.

Corn is a crop with high nitrogen fertilizer requirements. During soil preparation prior to planting, broadcast and mix into the soil one pound of ammonium phosphate per 100 square feet. This initial fertilizer application will carry the plant through the early stages of growth. When the plant reaches the 3–5 leaf stage, begin feeding nitrogen fertilizer once per week for two to three weeks until the flowering period begins.

Nitrogen fertilizers include: ammonium sulfate (21%), urea (45%), ammonium nitrate (34%), bloodmeal (15%), and cottonseed meal (7%). The feeding should be light but enough to maintain a dark green color in the leaves. The approximate amounts for the five are listed in pounds per 100 square feet: 1/2 pound ammonium sulfate, 1/4 pound urea, 1/3 pound ammonium nitrate, 1 pound bloodmeal, 2 pounds cottonseed meal.

## Pests and Diseases

Corn hosts a wide array of insect and disease pests. Cutworms, corn borers and corn earworms are regular pests of corn. Bacterial wilt, viruses, and corn diseases may cause problems in years of unusual weather patterns.

Cutworms are nocturnal larvae that feed on the stem and “cut” young plants at the soil surface.

Corn borers are larvae living in the whorls of leaves, where they fed on young tender leaves before emerging. The first indication shows as newly emerging leaves looking tattered.

Corn earworms feed on the kernels of developing ears. The adult moth lays her eggs on or near the silk. When the eggs hatch, the larvae begin feeding on the silks or husk during their journey into the cob. Typically, the damage is minimal and near the top of the ear. If the earworm is a major pest, however, the ears can be salvaged by cutting off the damaged parts. Corn with tight husking reduces earworm damage. When choosing a variety, this can be an important consideration.

Bacterial wilt, viruses and corn smut occur occasionally. Many varieties are bred for resistance to wilt disease. Viruses are transmitted by insects. The smut normally appears as grayish growths on any part of the plant. After the growths erupt, there is a dry black mass of spores that taint any corn left. Sanitation by removing or burning older stalks helps keep the long-lived disease spores from staying in the soil for the next season.

## Harvest

Sweet corn flavor peaks when the kernels are plump, shiny and squirt out “milk” when pierced with a fingernail. When the silks dry and wither, carefully peel the husk for inspecting and testing for kernel perfection.

The best time to harvest is just before the corn is to be eaten. The old adage of picking corn after the water is boiling holds true. Sweet corn kernels quickly start to convert sugars into starches after picking. In most varieties, the conversion from sugar to starch is complete in just a few hours. The exceptions are the Super Sweet, Xtra Sweet, or Shrunken varieties.

## Varieties

Sorting through the varieties available in seed catalogs can be both mouth-watering and frustrating. Almost every variety seems to be the best. In choosing corn, knowledge of the varieties proves helpful. For example, some need to be planted in isolation from other varieties or the cross pollination negates certain characteristics.

In the 1960's, breeders introduced varieties with "Xtra Sweet" in the name. The first was "Illini Xtra Sweet" followed by "Early Xtra Sweet" and others. This was the first breakthrough slowing the conversion of sugars into starches after picking. The genetics governing this retardation was accomplished with a double recessive gene, one gene from the female flower and one from the pollen-producing male flower. If the pollen comes from another variety without the particular recessive gene, the supersweet character and holding capacity are lost, turning the kernels to bad tasting starch. That means the gardener may plant only one variety but if neighbors planted other varieties, the cross pollination could make it just an ordinary sweet corn or worse tasting.

Most sweet corns are hybrids and thus the seed can't be saved for next season. To guide gardeners through the myriad of varieties, it is suggested they

look for the following characteristics to help make a decision. Try corns that mature in 65–80 days. Check for stated resistance to diseases or insects, tight husking character and stalk height if space is limited.

Sweet corn varieties may be classified by the type of endosperm that is the primary food storage for the corn seed and affects planting and eating quality. Sugary (su) types have the best vigor and germination and average sugar content. The sugary enhanced (se) types were developed in the 1970's and are less vigorous than the su types but are sweeter and have more appealing flavor, texture and tenderness. The supersweet or shrunken ( $sh_2$ ) varieties are very sweet tasting and have longer shelf-life; however, the seed quality is weaker and it is more difficult to establish a stand. The  $sh_2$  type of sweet corn requires isolation from su and se type plantings.

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