

Home Gardening Series

Sweet Corn

Craig R. Andersen
Associate Professor and
Extension Specialist -
Vegetables

Environment

Light – sunny
Soil – deep, well-drained loam
Fertility – rich
pH – 6.0 to 7.0
Temperature – warm
Moisture – average

Culture

Planting – after danger of frost
Spacing – 9-12 x 24-36 inches
Hardiness – tender annual
Fertilizer – heavy feeder

Sweet Corn – *Poaceae* *Zea mays*

Sweet corn is a member of the grass family and with sweet sorghum is the only member of that family we intentionally grow in the garden. The earliest written record of corn (maize) is found in the *Popul Vuh*, the sacred book of the Quiche Indians of western Guatemala. The records date back to the eighth century. Modern-day maize agronomists sometimes divide corn into popcorn, sweet corn, dent corn, pod corn, flour corn and flint corn, but this is an arbitrary, not a natural, classification. Sweet corn is distinguished from other corns by its high sugar content when in the milk, by its early dough stages and by its wrinkled, translucent kernels when dry.

Sweet corn is a warm-season vegetable that can be easily grown in



any garden with sufficient space. It is especially popular with home gardeners because it is a vegetable that tastes appreciably better when it is harvested fresh from the garden. Successive plantings will yield continuous harvests.

There are three distinct types of sweet corn that may be divided according to their genetic background: standard (normal sugary), super sweet (shrunken 2) and sugar enhanced (sugary enhancer).

*Arkansas Is
Our Campus*

Visit our web site at:
<http://www.uaex.edu>

Cultivars

Cultivar	Type	Days to Maturity	Seed/ 100 Ft of Row	Disease Resistance or Tolerance	Remarks
Silver Queen	su	94	2 oz	Maize dwarf mosaic virus	Large, white ears, excellent quality, widely adapted.
Jubilee	su	84	2 oz	Maize dwarf mosaic virus	Good yields, large yellow ears, good quality.
Bodacious	se	75	2 oz		Sweet yellow kernels.
Incredible	se	85	2 oz		Sweet yellow.
Kandy Korn	se	89	2 oz		Burgundy stalks, red husks.
Honey and Pearl	sh2	78	2 oz		All-American Selection, bicolor.
How Sweet It Is	sh2	80	2 oz		White super-sweet type, plant in warm soil, All-American Selection.
Sweet G90	su	85	2 oz		Popular late-maturing bicolor.
Merit	su	79	2 oz		Popular bicolor.
Mirai 301bc	syn	76	2 oz		Triple sweet bicolor.
Honey Select	syn	79	2 oz		All-American Selection.

Standard sweet corn varieties contain a “sugary gene” that is responsible for the sweetness and creamy texture of the kernels.

Super-sweet varieties contain a unique gene that makes the kernels sweeter than those of the standard varieties. The sugar of the super-sweet varieties is also converted to starch more slowly, preserving the sweetness for a longer time. The kernels of the super-sweet varieties have a crispy texture and contain low amounts of the water-soluble polysaccharides that impart the creamy texture to other sweet corn varieties. Although this lack of creamy texture is not especially noticeable in fresh corn on the cob, it affects the quality of frozen and canned corn.

Sugar-enhanced varieties homozygous (100 percent sugary enhanced) and heterozygous (75 percent normal “sugary” kernels and approximately 25 percent super-sweet kernels) contain multiple gene combinations that impart a creamy texture and increase sweetness. The sugar content is not as high, however, as that of the super-sweet varieties, but the texture is better.

Standard sugary (su) sweet corn is the first to be planted in the spring. Seed will germinate in cool soils (near 60 degrees F). Isolate this type from popcorn, field and sh2 sweet corn or the flavor will be starchy. Sugar-enhanced (se) sweet corn has less seed vigor and requires warmer soil temperatures to germinate. Isolate this type from popcorn, field and sh2 sweet corn for the best flavor. Super-sweet (sh2) sweet corn has high-sugar shrunken kernels that are weaker and need warmer soils (above 60 degrees F) to germinate. Isolate this type from popcorn, field

corn and su sweet corn or the flavor will be starchy. Synergistic (syn) has genes from su, se and sh2 all together. For best flavor, isolate this type from all other popcorn, field, su and other sh2 sweet corn.

Cultural Practices

Planting Time

Sweet corn requires warm soil for germination (above 55 degrees F for normal sugary sweet corn varieties). Early planting should be made in mid-March if weather permits. Sugar enhancer and super-sweet varieties will not germinate in cool soil and should not be planted until soil temperatures are above 60 degrees F. Sweet corn may be planted from early spring to early August. The success of the crop will be limited by cold weather at the beginning or the end of production.

For a continuous supply of sweet corn throughout the summer, plant an early variety, a second early variety and a main crop variety in the first planting. For example, you may want to select a 70-day maturity, an 80-day maturity and a 90-day maturity variety. Make a second planting and successive plantings of your favorite main crop or late varieties when three to four leaves have appeared on the seedlings from the previous planting.

Spacing and Depth of Planting

Plant the kernels (seeds) 1/2 inch deep in cool, moist soil and 1 to 1 1/2 inches deep in warm, dry soil. Space the kernels 9 to 12 inches apart in the

row. Plant two or more rows of each variety side by side to ensure good pollination and ear development. Allow 30 to 36 inches between rows.

Plan your garden arrangement and planting schedule to prevent cross-pollination between your sweet corn, field corn and popcorn. If sweet corn is crossed with field corn or popcorn, it will not develop a high sugar content and will be starchy. Isolation of the sugary 2 types (the super-sweet corn) from all other corn is necessary to allow the full potential of sweetness of the kernels to develop. Cross-pollination between yellow and white sweet corn varieties affects only the appearance of the white corn, not the eating quality.

Soil Preparation

A deep, well-drained, fertile sandy loam soil is the ideal soil type. The soil pH needs to be above pH 6.0. If the soil pH is too low, liming the soil will be necessary. Use a soil test to determine specific requirements of the crop. Corn benefits from deep plowing before planting and cultivation during the growth of the crop. This will promote a strong root system and help prevent lodging (falling over) of the cornstalks.

Care

Sweet corn will require about 1 to 1.250 pounds of nitrogen per 100 feet of row to produce a crop. Corn is moderately sensitive to salts, and care must be taken to avoid salt injury. The most effective way of applying fertilizer is to band it 2 inches to the side and 2 inches below the seed. Half of the nitrogen should be applied preplant and the other half when four to five leaves are fully expanded. Sweet corn benefits from a split application of fertilizer. This is quite important on sandy soils with low organic matter content because nitrogen is easily leached from these soils.

Phosphorus and potassium should be applied before the crop is planted. The most effective way of applying phosphorus is banding it at the rate of 1.10 to 1.2 pounds per 100 feet of row. If soil potassium levels are high, excess application will not improve the crop.

Cultivate shallowly to control weeds. Although corn is a warm-season crop, lack of water at critical periods can seriously reduce quality and yield. If rainfall is low, irrigate thoroughly during emergence of the tassels, silking and maturation of the ears.

Hot, dry conditions during pollination result in missing kernels, small ears and poor development of the tips of the ears. When the plants are 12 to 18 inches high, side-dress with nitrogen fertilizer.

Some sweet corn varieties produce more side shoots or “suckers” than others. Removing these side shoots does not improve yields.

The practice of removing the tassels from the stalk is a research and breeding practice and is not a gardening practice.

Harvesting

Each cornstalk should produce at least one large ear. Under good growing conditions (correct spacing, freedom from weeds, insects and diseases, adequate moisture and fertility), many varieties will produce a second ear. This second ear is usually smaller and develops later than the first ear.

Sweet corn ears should be picked during the “milk stage” when the kernels are not fully mature. This stage occurs about 20 days after the appearance of the first silk strands. The kernels are smooth and plump, and the juice in the kernels appears milky when punctured with a thumbnail. Sweet corn remains in the milk stage less than a week. As harvest time approaches, check frequently to make sure the kernels do not become too mature and doughy. Other signs that suggest when the corn is ready for harvest are drying and browning of the silks, fullness of the tip kernels and firmness of the unhusked ears.

To harvest, snap off the ears by hand with a quick, firm, downward push; twist and pull. The ears should be eaten as soon as possible, processed or refrigerated. At summer temperatures, the sugar content in sweet corn quickly decreases and starch content increases.

Cut or pull out the cornstalks immediately after harvest and put in a compost pile. Cut the stalks in one-foot long lengths or shred them to hasten decay.

Common Problems

Corn earworms are a problem in sweet corn every year. Early plantings are not badly infested, but later harvests will usually have severe earworm damage unless timely control measures are followed. Corn earworm moths deposit eggs on the developing silks or on the leaves near the ear. The tiny caterpillars follow the silk down into the ear, where they feed on the tip. Once the worm is inside the protective husk covering, there is no effective control. A suggested insecticide must be applied before the worms enter the silk channel. For good control in heavy infestations, make several applications two to three days apart from the time silks appear until they turn

brown. To restrict worm infestation, tighten the tip of the husk with a rubber band or clothespin after the silk appears or insert mineral oil (one-half medicine dropper full) in the silk tube to decrease damage.

European corn borers damage stalks, tassels and ears. As their name suggests, corn borers bore into the plant. The stalks break off when damage becomes severe. Corn borers may also bore into the cob and be found after cooking. Apply a suggested insecticide at five-day intervals, beginning with eggs hatching in mid-May. Spraying applications for corn earworms will adequately control the corn borers.

Flea beetles often attack early in the spring as the corn plants emerge through the soil. They can be quite damaging in large numbers and may also carry Stewart's bacterial wilt disease. A suggested insecticide must be applied early to control flea beetles.

Stewart's wilt is a bacterial disease spread by the flea beetle. This disease causes yellow streaks in the leaves, stunted growth and death of young plants of susceptible varieties. The disease generally is not severe after cold weather or when resistant varieties are planted.

Smut is caused by a fungus that invades the kernels. It develops as a swollen black pustule (gall) in the ear and sometimes infects the tassel. Some sweet corn varieties are more tolerant of smut than others. Smut occurs most frequently on white varieties and is often severe when kernels are extremely dry and during tasseling. Remove and destroy smut galls while they are moist and firm. Do not discard these galls in or near the garden. Place in the garbage or burn them. The smut is not poisonous, and in certain areas, it is cultivated and eaten as one would use a mushroom. Break off the infected part of the ear. The remainder is suitable for eating.

diseases – Stewart's wilt, a bacterial disease spread by flea beetles; smut (especially on white varieties); stunt (transmitted by leafhoppers).

insects – corn earworm, European corn borer, flea beetles, Japanese beetles (eat silks), corn sap beetles (damage kernels after husk is loosened).

cultural – Poor kernel development (failure to fill out to the tip) caused by dry weather during silking stages, planting too close, poor fertility (especially potassium deficiency), too few rows in a block, resulting in poor pollination. Lodging (falling over) from too much nitrogen.

Harvesting and Storage

days to maturity – 63 to 100

harvest – When the husk is still green, silks dry brown, kernels full size and yellow or white color to the tip of the ear; at the milky stage (use thumbnail to puncture a kernel – if liquid is clear the corn is immature, if milky it's ready, and if no sap, you're too late). Cover unharvested ears checked by this method with paper bag to prevent insect or bird damage. Experienced gardeners can feel the outside of the husk and tell when the cob has filled out. Corn matures 17 to 24 days after first silk strands appear, more quickly in hot weather, slower in cool weather.

approximate yields (per 10 feet of row) – 5 to 10 pounds or roughly 10 to 20 ears.

amount to raise per person – 20 to 30 pounds or about 40 to 60 ears.

storage – refrigerate immediately to prevent sugars from turning to starch; cold (32 degrees F), moist (95 percent relative humidity) conditions; will keep 4 to 8 days, but standard varieties will become starchy after a few days.

preservation – frozen on cob or off; canned.

Frequently Asked Questions

Q. How long does it take sweet corn to develop from the first appearance of silk to harvest?

A. About five days are required for complete pollination after the first silk appears. Harvesting begins approximately 20 to 24 days after first silking.

Q. The germination of some varieties is low. How can I get a better stand?

A. The sweet corn seeds are shrunken, especially the super-sweet types, and do not germinate as well as smooth seeds. Do not plant too early in the spring, wait until the soil is warm, about 65 degrees F. Sow the seed more thickly, and thin if necessary. A fungicide seed treatment may also be helpful.

Q. Why didn't my sweet corn ears fill out to the tips?

A. Several conditions can cause poor kernel development at the tip of the ear: dry or cool, wet weather during silking and pollination; planting too close; poor fertilization, especially lack of potassium; and poor natural pollination. These conditions may be overcome by watering in dry weather, planting at recommended spacing (9 to 12 inches apart in the row), proper fertilization and planting short rows in blocks of two or more for self-pollination.

Q. What is the best way to grow early corn?

A. Choose an early maturing normal sugary (su) variety, plant early and shallow (about 1 1/2 inches deep) and cover the row with clear polyethylene film. Remove the film, or cut slits, and carefully pull the plants through before the weather becomes too hot. Floating row covers can also be used effectively for early corn production.

Q. Should garden corn be planted in several short rows rather than in one or two long rows?

A. Yes. Corn is a wind-pollinated plant. Planting corn in blocks rather than in long rows makes it easier for the plants to pollinate one another during tasseling.

Q. Should the suckers, or side shoots, which emerge near the ground level on sweet corn be removed?

A. It is not necessary, but modern cultivars of sweet corn have been developed to have a minimum number of tillers.

Q. How long does it take for most sweet corn varieties to produce edible ears?

A. Most sweet corn varieties will mature between 65 to 90 days after seeding. Maturity rate varies from season to season depending on temperatures.

Q. Why are ears of corn underdeveloped at the tip end?

A. This condition may be caused by nutrient deficiency, cool temperatures during ear maturity and low moisture. Corn is pollinated by wind-borne pollen from the male flowers or tassels at the top of the plant to the female flowers or silks about midway up the stalks. Each kernel develops from an individually pollinated silk. Kernels which develop near the middle and base when conditions occur, such as those mentioned above, are pollinated first and will take precedence over those pollinated last. This often results in failure of the kernels near the tip to develop properly or in irregular kernel development.

Q. Is there a best time of day to harvest sweet corn?

A. Harvesting during early morning is recommended to ensure the sugar will be at its highest level if the corn is mature but not overripe. Cool the corn quickly to prevent loss of sugar.

Q. How often should sweet corn be fertilized to produce high yields of good quality corn?

A. Fertilize sweet corn lightly before planting. It should be fertilized again when the plants are approximately 4 inches tall and when they are 8 to 10 inches tall. Approximately 1/4 pound of complete fertilizer for every 10 feet of garden row is sufficient.

Q. This year my sweet corn produced yellow and white kernels on the same cob. What is wrong?

A. This could be caused by the bicolored varieties, such as Honey and Cream. New varieties, such as those with a super sweet character, produce white and yellow kernels on the same cob.

Q. What is meant by advertisements in catalogs referring to "Super Sweet" varieties of sweet corn?

A. Newly developed "Super Sweet" hybrid varieties may contain up to 40 percent more sugar than some standard varieties. Super Sweet hybrids carry a gene (sh2) which results in high sugar content. The super-sweet character is lost if the corn is pollinated by ordinary sweet corn or field corn, so plant the super sweet hybrids away from any other types of corn. Another type is the SE or sugar enhanced sweet corn.

Q. What is the difference between roasting ears and sweet corn?

A. Roasting ears is field corn harvested at an immature stage. Field corn is preferred by some because the ears are larger and the corn is not as chewy.

Q. My sweet corn produced normally. However, as the ear formed, the tip of it became covered with a large, white mass that grew until it broke open and exposed a black, powdery mass.

A. This is corn ear smut, a type of fungus carried in the seed. To avoid this, use only high-quality seed from a reputable source. There is no chemical control for this disease, only genetic resistance.

Q. My sweet corn grew for a while and then had a mosaic appearance. The corn did not develop properly. The ears that formed were poorly filled.

A. This is maize dwarf mosaic virus. It overwinters in johnsongrass around a garden. To control the problem, remove the johnsongrass, and follow a good insect control program. Some varieties are more resistant to this disease than others.

Q. The centers of my corn plants are full of little green insects. What do I do about them?

A. Corn leaf aphids infest the sworl of young corn plants. The plants will tolerate large numbers of these aphids. If plants begin to wilt or die, spray with malathion. Use as directed on the label.

Q. Are there any earworm-resistant varieties of sweet corn available?

A. No. Some varieties are less bothered by corn earworms than others, but none are truly resistant. Sweet corn varieties which have a tight shuck near the silk end are less bothered by earworms than those with loose, open ends.

Q. I planted corn in my garden this fall and it turned out beautifully, but the corn ear worms ate more corn than I did. What can I do to prevent this?

A. Spray or dust the ear silks with Sevin (carbaryl) to prevent adult insects from entering and laying eggs. Begin dusting and spraying at an early stage and repeat every two days. A drop of mineral oil on the silks is recommended to prevent earworm damage.

Printed by University of Arkansas Cooperative Extension Service Printing Services.

DR. CRAIG R. ANDERSEN is associate professor and Extension specialist - vegetables, University of Arkansas Division of Agriculture, Cooperative Extension Service, Fayetteville.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director, Cooperative Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.