



Sweet corn

by Cindy Haynes, Eldon Everhart, and Richard Jauron

Although “corn” includes dent, flint, flour, and popcorn, most people in the United States think first of sweet corn—*Zea mays* var. *rugosa*. Sweet corn differs from field corn by a single gene called the sugary or *su* gene. The three main types of sweet corn are standard (*su*), sugar-enhanced (*se*), and shrunken-2 (*sh2*). These types vary in sweetness, keeping quality after harvest, and cold soil vigor.

Due to consumer demand, plant breeders over the past decade have significantly improved sweet corn quality. Knowledge of the different types is necessary in order to obtain maximum quality.

Standard sweet corn (*su*) cultivars have been grown for many years and possess the traditional sweet corn flavor and texture. Unfortunately, the ears of standard sweet corn cultivars retain their quality for only 1 or 2 days. In addition, standard cultivars do not store well once harvested.

The **sugar-enhanced** (*se*) cultivars produce ears with tender kernels that have a higher sugar content than *su* cultivars. The soft kernel pericarps make the corn tender and easy to chew. The harvest and storage periods of *se* types are slightly longer than for standard sweet corn.

The common name of the **shrunken-2** (*sh2*) cultivars is derived from the shrunken or wrinkled appearance of the dried kernels. Sometimes referred to as “super sweets” the shrunken-2 cultivars possess the longest harvest and storage periods and have the highest sugar content. However, *sh2* cultivars do have some disadvantages. The seed coats on this type are relatively thick, giving the kernels a tough or crunchy texture.

Yields are generally lower than standard sweet corn. They also are slow to germinate and have reduced seedling vigor.

Cultivars

When purchasing sweet corn seed, home gardeners can select cultivars that produce yellow, white, or bicolor ears. New novelty cultivars produce multicolored (‘Indian Summer’) or reddish kernels (‘Ruby Queen’).

Name/type	Season*	Color
Standard		
Seneca Horizon	early	yellow
Silver Queen	main-late	white
Sugar-enhanced		
Alpine	main-late	white
Bodacious	main	yellow
Delectable	main	bicolor
Incredible	main	yellow
Jackpot	main	bicolor
Kandy Korn	main	yellow
Legend	early	yellow
Precious Gem	main	bicolor
Seneca Sensation	early-main	white
Silver King	main	white
Temptation	early	bicolor
Tuxedo	main	yellow
Wizard	main	bicolor
Super sweet		
Candy Store	main	bicolor
Challenger	early-main	yellow
Confection	early-main	bicolor
Early Xtra Super Sweet	early	yellow
Honey ‘N Pearl	main	bicolor
How Sweet It Is	late	white
Illini Gold	main	yellow
Northern Super Sweet	early	yellow
Northern Xtra Sweet	early	yellow
Phenomenal	main	bicolor
Silver Xtra Sweet	main	white

*Season descriptions refer to days to maturity—early (less than 70 days), main (70 to 84 days), and late (more than 84 days).

Planting

Sweet corn performs best in fertile, well-drained soils in full sun. Sweet corn is a warm season crop. It does not germinate well in soils with temperatures below 55–60° F. Seed rots easily in cold, wet soil. A soil pH of 6.0 to 6.5 is desired for optimal performance. Based on a soil test, add sulfur to lower the pH of soils above 7.0.

Standard sweet corn cultivars may be planted in late April in central Iowa. Generally, sugar-enhanced cultivars should be planted 1 week later than standard sweet corn. Shrunk-2 cultivars should not be planted until mid-May in central Iowa because their seeds germinate poorly when soil temperatures are below 65° F.

For a continuous supply of sweet corn, plant early-, main-, and late-season cultivars or plant every 2 or 3 weeks. The last practical date for planting early cultivars is July 1.

Use only fresh seed. Planting old seed is likely to result in poor plant stands. Seed is usually treated with fungicide to reduce damping-off problems.

Sow seed at a depth of 1 inch in heavy soils. In light, sandy soils, the planting depth may be 2 inches.

Spacing

Space the seeds 8 to 12 inches apart in rows 30 to 40 inches apart. Sweet corn also may be planted in “hills” of 4 to 5 seeds approximately 3 inches apart. Hills should be spaced 30 inches apart with 30 to 36 inches between rows.

Overcrowding can be a major challenge for home gardeners. No one likes to pull and discard seedlings. However, having too many seedlings in a row is as bad for individual plants as a weed-filled row. Spacing corn farther apart generally results in more usable ears as well as some “suckers” or side shoots. Suckers are common on many sweet corn cultivars. They do not weaken the main stalk and should be left in place. With adequate fertility, these suckers may increase yield.

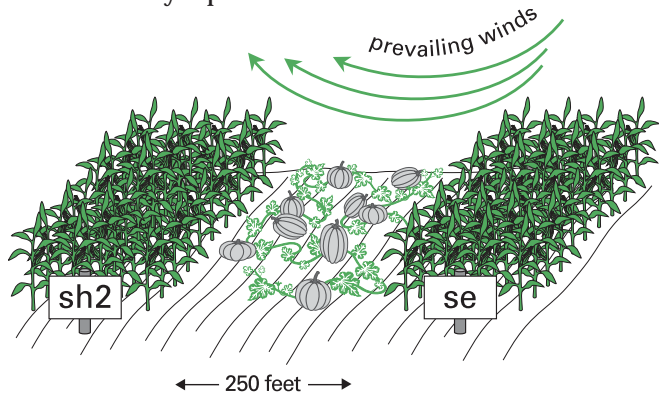
When planting large amounts, a rate of 12 to 15 pounds of sweet corn seed per acre is recommended.

Pollination

Sweet corn is wind pollinated. To encourage pollination, plant several short rows or blocks rather than 1 or 2 long rows. Poor pollination results in poorly filled ears.

Different types of corn can cross-pollinate with resulting changes in sugar levels, color, taste, texture, and other characteristics. To avoid cross-pollination, all sweet corn types must be isolated from field corn, popcorn, and ornamental corn. Shrunk-2 (*sh2*) cultivars also must be isolated from sugar-enhanced (*se*) and standard (*su*) sweet corn cultivars. It is not essential to isolate sugar-enhanced cultivars from standard sweet corn.

Isolation can be achieved by planting the different types at least 250 feet from one another and by avoiding prevailing winds. Another method is to stagger planting dates or to select varieties that mature at least 14 days apart.



Fertilization

Corn needs a relatively high level of nitrogen plus moderate amounts of potassium and phosphorus. Fertilizer applications should be based on soil test results.

If a soil test has not been done, apply 2 to 3 pounds of a balanced fertilizer such as 10-10-10 for each 100 square feet. Spread evenly over the soil and work into the top 3 to 4 inches before planting.

When the corn is knee-high, apply 1 pound of ammonium nitrate or 2 pounds of calcium nitrate per 100 feet of row in a band along one side of each row. Plants in sandy soils may need to be sidedressed a second time just prior to tasseling.

Estimated yield

Average yield with good management practices should be about 11 to 13 ears per 10-foot row, or 8 dozen ears per 100-feet of row.

Care during the growing season

Weed control and sufficient, timely moisture are essential for maximum production and quality. Shallow cultivation and organic mulches are the best methods to control weed competition. Cultivation should be shallow to prevent damage to the roots. Organic mulches will conserve moisture as well as control weeds.

Sweet corn requires approximately 1 inch of water (rainfall or irrigation) per week for normal development. Water sufficiently to moisten the soil to a depth of 6 inches and thus encourage deep rooting. The most critical periods for water are during pollination and ear development.

Do not remove the tassels at the top of the plant. The tassels are the male part of the plant that produce the pollen. The fine, yellow dust (pollen) shed by the tassels falls onto the silk of the cob, which is the female part of the plant. Each silk thread is attached to a kernel. If no pollen falls onto the silk, no kernel will form. Shaking the plants when the pollen is being shed can help increase pollination.

Potential problems

■ **Weather**—High temperature or drought stress during tasseling will result in poor pollination and few kernels on the ears.

■ **Insects**—The corn earworm is the worst insect problem. Corn earworm populations will start to build up in early summer and are usually highest from early July until mid-September. Worm-free corn is not critical because the tip portion on the ear, where most of the damage occurs, can be removed before cooking. This fact may need to be shared with customers if you are growing corn for farmers' markets. Aphids, flea beetles, and nematodes (small parasitic roundworms that attack plant roots) also may cause damage.

■ **Animals**—Deer, raccoons, birds, and other small animals can severely damage corn plots, especially when they are near wooded areas. Electric fencing can be an effective deterrent. Two wires are generally recommended with one wire 6 inches above the ground.

Installation is relatively easy, but the cost is high. The fence can be activated at dusk and turned off at day-break. Electric fences should be used with care and caution signs installed. All fence lines must be weed free so vegetation does not touch the electric wires and short them out.

Birds tend to invade sweet corn fields a few days before corn is ready for picking. Because they are often attracted by insects, good insect control can be a deterrent. The corn ear worms and sap beetles tend to open the tips and make it easier for birds to feed on the kernels.

■ **Diseases**—Sweet corn tends to have few—or sporadic—disease problems. Common smut is a fungus disease characterized by whitish galls usually erupting from ear tips around silking time. When broken open or when “ripe” the galls release millions of powdery black spores. Smut is usually more severe on plants heavily fertilized with nitrogen. The severity is increased by mechanical injury to plants and by injury from hail. Control involves avoiding highly susceptible cultivars, avoiding mechanical injury to plants during cultivation and spraying, and providing adequate (but not excessive) soil fertility.

Gardeners can further minimize disease problems by purchasing seed only from reputable seed sources, using crop rotation, avoiding sequential planting in adjacent areas, destroying crop residue, planting resistant varieties, following recommended planting dates, and fertilizing wisely.

Additional information about disease and insect identification and control is available from Iowa State University Extension offices.

Harvest and storage

Sweet corn is ready to harvest approximately 15 to 23 days after the silks emerge. Corn matures faster in hot weather and slower in cool weather.

Sweet corn should be harvested when the silks are brown and dry at the ear tip. This is the milk stage—when punctured with a thumbnail, the soft kernels produce a milky juice. Sweet corn remains in the milk stage for a short time. In hot weather, sweet corn may remain in prime condition for only 1 or 2 days. Over-mature corn is tough and doughy.

Many cultivars produce two ears per plant. The top ear usually ripens a day or two ahead of the lower one. To harvest the ears, hold the stalk below the ear. Twist the tip of the ear toward the ground until it breaks off.

Standard sweet corn cultivars may lose 50 percent of their sugar within 12 hours of harvest if not refrigerated. Unhusked sweet corn can be stored in the refrigerator at 32° F for 4 to 8 days. New high sugar varieties are slower to convert sugar to starch and may be harvested over a longer period of time. The high sugar types also have a longer storage life. Sweet corn may be canned or frozen for year-round use.

When harvesting for direct market sales, harvest only a one-day supply and keep as cool as possible. One option is to cool ears to 32° F within an hour of harvest. Remove field heat from ears by passing them through a 40° F water bath, then pack the ears in crates, top with ice, and store at 32° F and 90 percent relative humidity. If not refrigerated immediately, ears should be stored in the shade or a cool, dark location to reduce heating from the sun. Do not store ears in large piles, as heat from respiration will raise the temperature of the corn.

How to grow “baby corn”

Many cultivars are suitable for producing the immature “baby corn” that is found in salad bars and gourmet food stores. However, a few, like ‘Babycorn’, ‘Bonus’, and ‘Candystick’, are grown specifically for miniature ears. Baby corn is harvested when the ears are 2 to 4 inches long and 1/3 to 2/3 inch in diameter at their base. Most sweet corn cultivars reach this stage 1 to 3 days after the silks become visible. Experimentation is the best way to determine when to harvest baby corn.

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Prepared by Cindy Haynes, Eldon Everhart, and Richard Jauron, extension horticulturists; Diane Nelson, extension communication specialist; and Creative Services, Instructional Technology Center, Iowa State University.

For more information

The following publications are available from local ISU Extension offices.

Canning Vegetables, PM 1044

Freezing Fruits and Vegetables, PM 1045

Garden Soil Management, PM 820

Managing Iowa Wildlife:

Problem Birds Around Homes and Farmsteads, PM 1302d

Raccoons, PM 1302e

White-tailed Deer, PM 1302g

Midwest Vegetable Production Guide for Commercial Growers, FG 600

Organic Mulches for Gardens and Landscape Plantings, RG 209

Planting a Home Vegetable Garden, PM 819

Preserve Food Safely, N 3332

Questions about Composting, RG 206

Small Plot Vegetable Gardens, PM 870A

Starting Garden Transplants at Home, PM 874

Watering the Home Garden—Use of Trickle Irrigation, PM 823

Where to Put Your Vegetable Garden, PM 814

Additional information also is available from these Web sites.

ISU Extension publications

<http://www.extension.iastate.edu/pubs>

ISU Food Safety (home food preservation)

<http://www.extension.iastate.edu/foodsafety>

ISU Horticulture

<http://www.extension.hort.iastate.edu>

Questions also may be directed to ISU Extension Hotline by calling 515-294-3108 during business hours (10 a.m.–12 noon, 1 p.m.–4:30 p.m. Monday–Friday).

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