



Department of Horticulture

Purdue University Cooperative Extension Service • West Lafayette, IN

Growing Sweet Corn

B. Rosie Lerner and Michael N. Dana

Sweet corn is a favorite among home vegetable gardeners. Improved hybrid cultivars are easy to grow. They yield well, taste sweeter, and store longer than old time cultivars. Sweet corn is best adapted to larger gardens since only one or two ears are produced per plant and several rows are recommended to ensure adequate pollination. However, even small plantings can be successful if planted in blocks rather than rows.

Sweet corn is available as yellow, white, or bicolored ear types. Cultivars vary in their days to maturity; they are classified as early, mid-, and late season. Late season cultivars generally are the best quality. Many of the new cultivars are higher in sugar content and retain their sweetness longer.

Soil Preparation

Sweet corn thrives best in deep, naturally rich, easily worked soil. However, any well-drained soil is suitable. Sandy soils are best for early crops since sandy soils warm up faster in the spring than heavy soils. Sweet corn will adapt to a wide range of soil pH. However, optimum growth is obtained at pH 6.0 to 6.5.

Prepare the soil about 6 inches deep, using either a spade, plow, or rototiller. Break up the clods to insure good contact between the soil and the seed, then rake the soil to level the surface.

Fertilizer

In the absence of a soil test, apply 3 to 4 pounds of 12-12-12 or similar analysis fertilizer per 100 square feet to establish a basic fertility level. Side-dressing with a high nitrogen fertilizer late in the growing season is also advisable. For an accurate recommendation of your soil's fertilizer needs, have your soil tested before applying fertilizer.

Planting

Sweet corn is a warm season crop requiring a minimum soil temperature of 50°F (60-95°F is optimum) for seed

germination. Seed should not be planted earlier than 10 days to 2 weeks after the average date of the last killing frost. If planted too early, poor stands, retarded growth, or frost-killed seedlings may result. However, it may be worthwhile to risk the chance of frost in order to get an early crop.

Starting out with fresh purchased seed each year is advisable. Sweet corn seed is relatively short-lived (2 years), even under ideal storage conditions. Saving seed from last year's hybrid crop is not recommended since seed from hybrid plants shows considerable variability and usually produces inferior plants and ears.

If poor germination does occur, don't replant the "skips" or missing plants. The plants that develop from the replanted kernels will be crowded and shaded by the older plants and then yield poorly. Replants would not be ready for pollination at the same time as the original planting. If the stand is very poor, it is best to replant the entire area.

Plant the kernels 1 inch deep in heavy soils and no deeper than 2 inches in very light sandy soils. Space the rows 2 to 3 feet apart. Plant early cultivars 8 to 10 inches apart in the row and late cultivars 9 to 12 inches apart. Corn can also be planted in "hills" or mounds instead of rows; use 5 or 6 seeds per hill and then thin to 3 strong plants per hill. Space hills about 3 feet apart.

For a steady supply of sweet corn throughout the season, include early, mid-season, and late cultivars in your initial planting. Successive plantings of mid- or late season cultivars about every two weeks will help stretch the harvest season.

Corn is wind pollinated, so plant four or more short rows of sweet corn side-by-side rather than one or two long rows. This will help insure good pollination and ear development. Inadequate pollination results in poorly filled ears.

Types of Sweet Corn

Sweet corn is a genetic mutation of field corn, producing kernels consisting mostly of sugar rather than starch. However, sugar in the kernels rapidly converts to starch after its prime harvest stage. Recent sweet corn hybrids have been bred for even higher sugar concentrations and slower conversion of sugar to starch. Several different types of mutations and gene combinations can result in sweet corn. The following types are most commonly available:

1. Standard Sweet - *su su**;
2. Partially modified types - at least 25% of the kernels are modified as follows:
 - a. Synergistic or Sugary Supersweets - *su sh2**, e.g., Honeycomb, golden Nectar, Sugar Time, and Sugar Loaf;
 - b. Sugar Enhanced or EH - *su se**, e.g., Platinum Lady, Silver Prince, Kandy Korn EH, Mainliner EH, White Lightning, Earliglow EH, Golden Sweet EH, Seneca Sentry, and Tendertreat EH;
3. Fully Modified types - *su se** on all kernels, e.g., Miracle, Remarkable, Double Treat, Double Delicious, and Divinity;
4. Single gene replacements for *su* - usually *sh2**, e.g., Illini Chief Xtra Sweet, Crisp N' Sweet, Candyman, Early Xtra Sweet, Northern Sweet, Candy Bar, Burpee Sugar Sweet, and Dinner-Time;
5. Multiple gene replacements for *su* - *ae*, *du*, and *wx** are combined to replace *su*, e.g., ADX Hybrids, and Pennfresh ADX.
6. A relatively new type of sweet corn known as "triplesweet" has both sugar enhanced (*se*) and supersweet (*sh2*) kernels on the same ear, e.g. Honey Select, Serendipity, Bon Appetit.

*Genes responsible for sweetness.

Although the new hybrid types of sweet corn retain higher levels of sugar for longer periods of storage, they do have some disadvantages. Some, especially types 3, 4, and 5, may be slow to germinate and have reduced seedling vigor.

Lighter, warmer soils, which can be irrigated, are recommended for growing these types. Many new hybrid seeds are lighter, smaller, and more shriveled and should be planted shallower than normal seed. New hybrid seeds are also more difficult to dry and to keep disease free; therefore, their cost will be higher than that of standard sweet corn.

Cross-Pollination and Isolation Requirements

Corn pollen is carried by the wind from the tassels to the silks. Different types of corn can cross-pollinate and contaminate one another. All sweet corn types must be

isolated from other types of corn including field corn, popcorn, and ornamental corn because their pollen will turn sweet corn starchy. The shriveled characteristic of sweet corn is dominant, so popcorn pollinated by sweet corn will be sweeter and probably shriveled. The color yellow is also dominant, so yellow corn that is pollinated by white corn will remain yellow. However, white corn that is pollinated by yellow will turn yellow.

Cross-pollination among some of the genetically different types of sweet corn can have undesirable results. For example, sweet corn types 4 and 5 must be isolated from each other and from all other types of sweet corn because pollen from the other types will make the kernels starchy like field corn. In addition, pollen from types 4 and 5 can make standard sweet corn starchy. Types 2a and 2b will regress to normal sweetness when pollinated by standard type pollen. Type 6 does not require isolation from other sweet corn types. In order to preserve the intended sweet quality of the corn you are planting, isolation is recommended to prevent cross-pollination with other types. Isolation can be achieved in several ways.

Distance. Since pollen is carried by the wind rather than insects, distance can be used as an effective barrier. A distance of 250 feet between different types will result in some contamination, but not enough to materially affect the quality of the produce. A distance of 700 feet should give complete isolation; however, complete isolation is only necessary for scientific and plant breeding purposes.

Maturity. The number of days to maturity can be used to prevent different types from being at a pollinating stage at the same time. Maturity isolation can be achieved by staggering planting dates or by selecting cultivars that mature at different times. A minimum of 14 days should separate the tasseling time of the different types.

Barrier/Border Rows. A considerable amount of contaminating pollen can be diluted by planting two to five border rows between different types. Most of the cross-pollination would occur in these border rows so that isolation distances could be reduced.

Wind Direction. Isolation can be enhanced, although not fully achieved, by avoiding the prevailing wind direction.

Irrigation may be needed during periods of dry weather. Supplement natural rainfall to provide 1 to 1-1/2 inches of water per week. Check the amount by catching it in cans placed throughout the watered areas or by digging down to see if the moisture has penetrated at least the top 6 inches of the soil.

Be sure to keep weeds under control by regular cultivation; it is easy to control weeds when they are small. Use a shallow cultivation to avoid harming the corn roots. Weeds between corn plants may be a problem, so hoe in a little soil to smother the weeds.

Research has shown that removal of corn side shoots (suckers or tillers) not only offers no advantage, it may actually reduce yields.

Side-dressing with a high nitrogen fertilizer is recommended to supplement the initial fertilizer application. Apply 1 pound of ammonium nitrate (33-0-0) or 1/3 pound of actual nitrogen per 100 foot row. Make the first side-dressing when plants are 8 to 10 inches tall, and repeat 1 week after tassels appear.

Diseases

The main diseases of sweet corn are smut and Stewart's disease (bacterial wilt). Damage from Stewart's disease can be reduced by using cultivars resistant or tolerant to the disease. Most new hybrid sweet corn cultivars are quite resistant. Flea beetles carry the bacteria that cause Stewart's disease, so control flea beetles when the plants first emerge. Select corn cultivars resistant to leaf blight and smut. Anthracnose may be a problem in some Indiana areas. It is recommended that seed be dusted with Thiram or Captan (most purchased seed is already treated). This treatment controls seed rot and seedling blight after planting, but has no effect on other diseases.

Insects

Corn borer, corn earworm, and flea beetle are the chief insects to be controlled in sweet corn. Follow the spray or dust schedules the restrictions on the label.

Proper timing in applying insecticides is important if you want worm-free corn. Carbaryl (Sevin) can be used to control corn earworm. On early and mid-season varieties, four to seven applications will give 85 to 90% worm-free ears. Make the first application when 10% of the silks are out, and repeat every other day until 90% of the silks

have wilted. On late varieties, the earworm may be almost impossible to control with any kind of spray program.

Harvesting

It is very important to harvest sweet corn at the proper stage of maturity. The critical time is the milk stage, a stage when the juice in the kernel appears milky when you puncture the kernel with your thumbnail. Sweet corn remains in the milk stage for a relatively short period, so check the ears frequently. Corn that is too young will ooze a watery material, while ears that are too old will have a tough, doughy kernel. During the milk stage, the unhusked ear should feel firm, have full kernels at the tip of the ear, and have brown, dry silks. Generally, ears should be ready about three weeks from silking time.

When harvesting, break the shank (stem of the ear) close to the ear without breaking the main stock or tearing the shank from the stalk. Grasp the ear near the base and bend it down sharply, or bend it to one side with a rotary motion of the wrist. At first it may be best to hold the shank with one hand and the ear with the other.

After picking, use the sweet corn immediately for fresh eating, canning, or freezing. At high temperatures, the sugar in sweet corn is quickly converted to starch, giving it a bland taste. Although many new cultivars have extended storage quality, most older cultivars will lose 50% of their flavor within 12 hours of picking if left unrefrigerated. If sweet corn must be stored before use, keep the temperature as close to 32°F as possible.

Fall Cleanup

End the garden season by cleaning up the garden area and removing plant debris. Sow a cover crop of 2 pounds of rye for every 1000 square feet of garden area. Manure and compost can also be added to the soil to help increase its fertility.

For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.
