

Growing Sweet Corn in South Dakota

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Sweet Corn

Sweet corn is a delicious vegetable enjoyed by both kids and adults. It is popular in the mid-to-late summer and is often bought at stands on street corners and grocery stores throughout small towns in South Dakota. What many people don't know, however, is that sweet corn is a remarkably easy vegetable to grow yourself. All you need are a few essential materials and some basic knowledge to grow your own delicious sweet corn.

The first step in growing sweet corn is buying seeds. Quality seeds can be found at almost any home garden store, and should be clean and disease-free. When purchasing seeds, be sure to buy only one variety of sweet corn, because cross-pollinating can occur between different varieties resulting in poor quality corn. In South Dakota, sweet corn can be planted from May to early July, or when soil temperatures reach 50°F. However, waiting until soil temperatures reach 60-75°F provides optimal growing conditions for the seedlings. Plant seeds ½-1 inch deep and space seeds in the same row 8-10 inches apart. Spacing between rows of sweet corn should be 30-36 inches. Be sure to plant the tall-growing sweet corn far enough away from shorter growing plants to ensure they are not shaded out. Seedlings will be seen emerging out of the ground 5-10 days after planting, depending on the soil temperature and moisture.

Before planting the seeds, ensure that the garden soil is worked to clear weeds and is moist. After planting, lightly pack the soil to obtain better seed to soil contact, which ensures even germination of the corn seeds. Thoroughly water the freshly planted area, and

place labelled markers in front of the sweet corn rows.

Sweet corn needs adequate nutrients and water throughout the season in order to grow and mature properly. Nitrogen, phosphorus and potassium are the three main nutrients needed by sweet corn. South Dakota soils often provide sufficient potassium for sweet corn. However, additional nitrogen and phosphorus may be needed in order to grow the best quality sweet corn. A soil test will indicate what nutrients need to be applied. Phosphorus and about one-half of the needed nitrogen should be worked into the garden before planting. This allows the nutrients to be worked into the soil and to be easily absorbed by the plants. The remaining nitrogen should be applied once the plants have 6 to 8 leaves and are about knee-high. If choosing to fertilize, generic lawn fertilizers with 20 to 30% nitrogen work very well. Be sure to check that the fertilizer doesn't have added herbicides that can kill the sweet corn.

Most garden vegetables, including sweet corn, require 1 to 1 ½ inches of water per week in order to grow and mature. It is essential for healthy plants that the watering is conducted in a consistent manner. Inconsistent and uneven watering can cause sweet corn plants to not mature correctly and can result in an undesirable crop. A sprinkler or garden hose is a great water source for sweet corn when rain isn't in the weather forecast.

Sweet corn get ready for harvesting 60-95 days after planting. The ripeness of sweet corn can be evaluated by the softness of the kernels. An ear is ripe when a kernel can be broken open with a fingernail and a white milky liquid comes out. Once the sweet corn fully

ripens, it is easily harvested from the garden by hand. Fresh, ripe sweet corn is best stored in the refrigerator, where its environment is cool and humid.

Diseases of Sweet Corn

Common Smut

Description: Common smut is a disease that can be found nearly everywhere that corn is grown, including small gardens. Fortunately, it does not kill corn plants, but causes the ears to be undesirable and inedible. Common smut of sweet corn is caused by the fungus, *Ustilago maydis*. This disease is most common when plants are injured by hail, insects or birds. The most recognizable symptom associated with smut is the presence of tumor-like galls located on corn tassels, ears, stalks, and leaves (Fig. 1). Galls are made up of both fungus and host tissue, and vary in size and color. The galls themselves are not dangerous to humans, in fact young galls are a delicacy in Mexico.



Fig. 1. Corn smut on an ear of sweet corn
Photo credit: Emmanuel Byamukama

Management: Gardeners who grow smaller amounts of sweet corn can manage infections by cutting out the smut galls promptly throughout the season and destroying them before they produce their overwintering structures (spores called teliospores). Rotating the sweet corn patch to different parts of the garden each year can also help keep disease pressure low.

Common Rust

Description: Common rust is frequently seen in sweet corn and can limit your sweet corn crop, but is rarely a serious problem for home gardeners. Common rust of sweet corn is caused by the fungus *Puccinia sorghi*. The most common symptoms associated with rust are seen in late summer to early fall and include raised, rusty red-brown pustules on the upper leaf surfaces of

sweet corn plants (Fig. 2). The pustules are typically 1-3 mm in size and turn dark brown to black when mature. Rust does not over winter in northern climates; spores are blown in from developing crops further south.



Fig. 2. Common rust infection on sweet corn leaf.
Photo credit: E. Byamukama

Management: Planting sweet corn early and reducing stress from drought can help prevent common rust infections. Management during the season is rather ineffective for gardeners. Rust-resistant varieties are available.

Insect Pests of Sweet Corn

Corn Rootworm

Description: Corn rootworms are small grubs that feed on the roots of corn plants. Heavy feeding by rootworms can be identified by lodging of sweet corn plants in heavy wind or rain storms. When the grubs mature, they are identified as small yellow green beetles with black stripes on their back (Fig. 3). Mature beetles are often seen during mid to late summer and lay eggs around the base of the corn stalk where they overwinter.



Fig. 3. Adult western corn rootworm
Photo credit: Tom Hlavaty, USDA Agricultural Research Service, Bugwood.org

Management: Unfortunately, in season management strategies for corn rootworms are limited for gardeners. Removal and eradication of infested corn residue from years before can help reduce and prevent further infections. Rotating the sweet corn patch to different areas of the garden is also effective in keeping rootworms at bay.

European corn borer

Description: The European corn borer is a major pest of sweet corn, but it can also feed on many other crops in your garden. The caterpillar of the European corn borer is about one-inch long and brown-to-tan colored with a brown head and dark spots down its back (Fig. 4). The caterpillar feeds on all parts of the sweet corn plant, but real damage occurs when the caterpillars feed on the ears. The caterpillars mature and pupate into adult moths during the mid-summer. Corn borer moths are 3/4 to 1-inch wide by 1-inch long and range in color from light brown to gray. The moths lay eggs on the undersides of corn leaves. Larvae hatch from the eggs and begin feeding on the corn plants.



Fig. 4. European corn borer larva
Photo credit: Keith Weller, USDA Agricultural Research Service, Bugwood.org



Fig. 5. Corn earworm larva
Photo credit: R.L. Croissant, Bugwood.org

Management: Corn borers can be easily eradicated by natural environmental factors including hot and dry weather, and heavy rains. The insects dry out in the hot weather or drown in the heavy rain periods. Planting short season varieties of sweet corn earlier in the year can help reduce infestations.

Corn Earworm

Description: Corn earworm is a major threat to sweet corn production, feeding directly on the ear. Earworms are common at the end of the season, moths measure have a wing length of 1 to 1.5 inches. The adults are variable in color from olive green, to tan, to dark reddish brown, while the young larvae are greenish with black heads and visible black hairs on the body (Fig 5). Earworm are mostly active during the evening and night. Larva can reach 2 inches in length.

Management: Corn earworm may be controlled by numerous natural enemies such as ladybird beetles and birds. Also, the insects dry out in the hot weather or drown in the heavy rain periods. Early planting in the spring and planting short season varieties of sweet corn help reduce infestations. In the fall, gardeners may get rid of earworm's overwintering pupae by turning the soil and exposing them to freezing temperatures. Insecticides can be effective if applied directly onto the fresh silks.

Sap Beetles

Description: Sap beetles, otherwise known as 'Picnic beetles,' are the small black beetles seen feeding on the ears, kernels, and tassels of sweet corn. They also are often seen feeding on many other fruits in the garden. They mature from small, white, worm-like maggots into dark-brown-to-black, ovular shaped beetles that are 1/8 to 1/4 inch long (Fig 6a). The small



Fig. 6a. Adult sap beetles damaging the kernels of an ear of corn
Photo credit: Eugene E. Nelson, Bugwood.org



Fig. 6b. Larvae of a sap beetle species damaging kernels of an ear of corn
Photo credit: Eugene E. Nelson, Bugwood.org

white maggots can also be seen feeding on sweet corn kernels and other garden fruits (Fig. 6b).

Management: Sap beetles are attracted to the corn from existing damage on corn plants, so preventing damage can help prevent infestation. Picking fruit at or just before ripeness can also reduce sap beetles by limiting the amounts of overripe fruits. Eradicating or removing infested sweet corn residue can also help reduce or prevent future infestations.

Other Sweet Corn Pests

Animals

Significant damage can be caused to gardens by animal pests including deer, gophers, rabbits, birds, raccoons, and many others. The best way to keep all animal pests out is to construct a wire fence surrounding the entire perimeter of the garden. Woven wire or chicken wire fence works great and can be purchased at many home garden stores.

Raccoons: Raccoons are specifically notorious pests of sweet corn. They are attracted to sweet corn patches by the smell of the maturing tassels. Once a raccoon has found a sweet corn patch, it is very difficult to keep them out, so prevention is key. If raccoons are a severe problem in your sweet corn patch, an electrified wire fence surrounding the patch works great at keeping them out. Other management strategies include playing a radio near the patch all night, and planting vegetables with extensive foliage like beans, pumpkins or squash near or around the patch may help keep less-determined raccoons at bay.

Birds: Birds can be helpful to gardens by eating insect pests, but they can also do harm by causing damage to maturing sweet corn ears. Damage can be prevented early in the season by placing a mesh fence directly over the newly sprouted corn crops. Once corn starts to mature, noisemakers or aluminum pie plates may help scare birds away from the maturing sweet corn ears but will need to be moved frequently (daily) for best effect. If bird damage is severe, placing paper bags over sweet corn ears can help protect them from birds until they fully mature.

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