

Corn (Sweet)

Cultivars

Contact Manitoba Agriculture and Food's Vegetable Specialist for variety recommendations.

Climate and Soil Requirements

Minimum soil temperature for germination depends on the cultivar and its gene type. In general, Normal (su) cultivars require 13°C, Sugar Enhanced (se) cultivars require 16°C and Supersweet (sh2) cultivars require 18°C.

Mid – Late sweet corn varieties produce good yields on well drained heavier soils with good organic matter content. Early season varieties produce well on enriched lighter soils such as sandy loams.

Seeding and Spacing

Row Spacing: 30-36 inches (75 cm – 1 metre)

In-Row Spacing: 8-10 inches (20-25 cm)

Rate: 10-15 lb/ac

Depth: 1.5 to 3 inches (4-7.5 cm)

Smaller, earlier maturing varieties can be planted at higher densities while the larger, later varieties require more room to grow and develop. If only one row width is practical, it is more critical to use wider spacing to accommodate the larger, main-season plants.

Fertility

Refer to Tables 1 through 9 for this crop. For general recommendations in the absence of a soil test, refer to Table 10 in the fertility section.

A portion of the nitrogen and phosphorus required should be applied at seeding in one of two ways:

1. In a band 2 inch to the side and 2 inch below the seed. The rate of application in the band should not be more than 67 lb/ac or a total of

107 lb of nitrogen-plus-potash (K₂O)/acre in 30 inch (75 cm) rows. If urea is the nitrogen source, not more than 35 lb/ac nitrogen or 70 lb/ac of nitrogen-plus-potash/ha should be applied, in 30 inch (75 cm) rows.

2. In a band directly with the seed. With this placement, not more than 8 lb nitrogen-plus-potash/ac should be applied, in 20 inch (75 cm) rows. Do not place urea with the seed. A major portion of the nitrogen should be applied preplant or side-dressed before the corn is 12 inches high. A major portion of the potash may be broadcast and worked in either in the fall or before seeding in the spring.

As phosphate does not move readily in the soil, and since it is required early in the plant's growth, it is best banded at the time of planting. As a result, there may be little need for the broadcast application of phosphate, depending upon the soil test rating.

Excess nutrient levels may occur when high rates of fertilizer are used on continuous corn. Soil testing to a depth of 24 inch (60 cm) is strongly recommended to monitor nutrient levels and avoid over-fertilization.

Pest Management

Red-Winged Black Birds and Crows

Acetylene exploders (bird bangers) are effective, but birds will soon resume feeding when exploders are not operating. For full effectiveness, start using the bangers before the corn becomes attractive for feeding and move them around frequently. Plant away from marshy and wooded areas. Cultivars with ears well-covered by husks are somewhat resistant to blackbirds.

Diseases

Leaf Blights, Stalk Rots and Ear Rots

Follow a crop rotation which allows three years before replanting the field to corn; rotate with crops other than cereals and grasses. Maintain balanced soil fertility and avoid high nitrogen levels.

Common Smut

To prevent spread of smut, cut off and destroy smut balls before they open. Follow a two-year crop rotation.

Head Smut

To prevent introduction of head smut, plant treated seed. If disease is found in a field, rotate with non-grassy crops such as legume and mustard type crop.

Seed Decay, Damping Off, Seedling Blight

Treat seed with a recommended fungicide, as directed.

Three-Leaf Dieback

Seedlings may die before or shortly after emergence, resulting in a poor stand. Two fungi are responsible: *Penicillium* occurs as a contaminant on the seed, whereas *Pythium* is common in most soils. Seeds planted into cool soils and Sh2 varieties are most susceptible.

To prevent three-leaf dieback, use one of the fungicide seed treatments found in the Fungicide/Bactericide table in the *Guide to Vegetable Crop Protection 2003*.

Rust

This fungal disease becomes noticeable towards the end of summer. Cool weather (16°–23°C) with overnight dew favours disease progress. Epidemics arise from spores blown in by winds from infected corn crops south of the border. There is a range of rust resistance in sweet corn cultivars. Rust infections occurring after the plant has silked are unlikely to result in yield losses. If rust is present in the field prior to silking, apply one of the fungicides recommended for control.

Insects

Seedcorn Maggot and Wireworms

Seedcorn maggot flies are attracted to fresh manure and rotting organic matter. Incorporate manure promptly to discourage egg-laying. Reduce losses to seedcorn maggots and wireworms by pro-

moting rapid germination (avoid planting unnecessarily deep and into cold soils.) Wireworms are most likely to be a problem for the first two years following sod.

Cutworms

Cutworms are an occasional, early-season pest of sweet corn. Chemical controls are most effective if applied to moist soils in the late afternoon or early evening.

European Corn Borer

This insect is a major pest of sweet corn in Manitoba. Sweet corn is susceptible to corn borer from the late-whorl stage (12 to 14 leaves) until the silks dry. During these stages, fields should be inspected weekly for egg masses on the underside of the leaves and/or pinhole feeding in the foliage.

When pinhole feeding is observed on at least 5% of the plants, apply one of the registered insecticides. If the tassel has not yet completely emerged, direct sprays down into the whorl. After that time, direct the spray toward the ear zone.

Applications at five-to-seven-day intervals usually give satisfactory control. This interval may vary with temperature and material used (consult manufacturer's label directions). Pyrethroid insecticides break down rapidly when temperatures exceed 26°C.

To reduce the threat of major corn borer infestations, rotate your sweet corn planting with non-host root and bulb crops and keep grassy weeds bordering fields and in ditch banks under control.

There are now transgenic varieties of sweet corn with the Bt gene, which gives them complete resis-

tance to corn borers and partial resistance to earworms and fall armyworms, reducing the need for insecticides. Some insecticides may be needed for other pests if pressure is high. Check with your seed company representative for availability and planting restrictions.

Corn Earworm and Fall Armyworm

These two late-season pests do not overwinter in Manitoba. They are carried in by south winds from the United States. Adult moths usually appear in late July to early August. The larvae of both species attack the ear, causing economic injury to late-planted sweet corn fields.

Both pests can be monitored with pheromone traps. Pheromone monitoring is particularly effective for the corn earworm; field scouting is almost impossible. Insecticide applications are based on the number of moths caught per week and the average temperatures.

Sweet corn is only susceptible to corn earworm damage while the silks are green. Refer to the Insecticide tables for chemical control recommendations.

Aphids

Repeated use of pyrethroid insecticides may increase the population of aphids by killing the beneficial insects that normally feed on them. To minimize aphid problems, only use pyrethroid insecticides when corn earworms or fall armyworms are present, or if the crop is within one week of harvest. If monitoring indicates a need, refer to the Insecticide tables in the *Guide to Vegetable Crop Protection 2003* for chemical control recommendations.

Corn Earworm Spray Intervals (Based on trap counts)		
Moths / trap / week	Daily Maximum Temperature	
	Less than 27°C	More than 27°C
1 – 6	5 – 7 days	5 – 7 days
7 – 90	5 days	4 days
More than 90	4 days	3 days

(Source – *Vegetable Production Recommendations 2002-2003* – Ontario Ministry of Agriculture and Food)

Weeds

Competition from weeds can reduce yield and also make harvesting more difficult. For recommended herbicides refer to the *Guide to Vegetable Crop Protection 2003*.

Harvest and Storage

Sweet corn is harvested when the kernel is fully formed but still tender. Most varieties reach this stage about the time the silk turns brown or approximately three weeks after the silks first appear. Until familiar with outward signs, test for readiness by pressing the tip kernels with your

finger nail. The milky contents of the kernel should spurt out when pressure is applied.

Harvested corn must be cooled rapidly; ideally by hydro-cooling.

To maintain quality, sweet corn should be marketed quickly with temperatures of 0°C and relative humidity of 90-100% maintained throughout distribution.

It must be held at below 0°C, and at high humidity, (95 -100%) or it will lose quality very quickly. After harvest, sweet corn should be marketed in the shortest possible time.

Cucumber

Cultivars

Contact Manitoba Agriculture and Food's Vegetable Specialist for variety information.

Climate and Soil Requirements

Cucumbers are frost tender, thriving only if weather is warm. Delay seeding and transplanting until late May and early June when soil temperatures are 16°C or higher.

Cucumbers produce well on a wide range of well drained soil types. Yields are typically higher and fruit bearing is longer on heavier soils such as loams or clay loams

Seed Treatments

Treat seed with a fungicide prior to seeding to control damping off and seed decay. Cucumbers may be raised either from transplants, for early crops, or from direct seeding in the field. About 2.0 lb/ac of seed is required to produce enough transplants for 2.5 acres.

Seeding and Spacing

Total cucurbit yields tend to increase with plant density. In other vine crops, high plant populations may result in harvest problems due to excessive vine growth. An overly dense canopy is also be more conducive to disease pressure.

Quick, uniform emergence is essential to avoid uneven stands weakened by insects and disease. Cucurbit seeds will not germinate at a soil temperature below 10°C. They germinate fastest at 25°C to 30°C soil temperatures. Delay planting until the soil temperature is 15°C or higher.

For transplants, direct seed into trays (128 cell) three to four weeks prior to field transplanting. Do not damage the root mass when pulling plants from trays.

For direct seeding of cucumbers, 4 to 5 lb/acre are required.

Sow cucumbers at a depth of 1/2 to 1 inch (1.3 to 2.5 cm).

Suggested spacing requirements: rows 4 to 6 ft (1.2 to 1.8 m), plants 12 to 15 inches (30 to 38 cm) apart.

Fertility

Refer to Tables 1 through 9 for this crop. For general recommendations in the absence of a soil test, refer to Table 10 in the fertility section.

When using transplants, the application of a starter fertilizer such as 10-52-17 or 10-40-10 is recommended.

As a general recommendation broadcast and incorporate 18 to 54 lb/acre of nitrogen, and 107 to 143 lb/acre phosphorus (P₂O₅). Sands and sandy loam