

AGRICULTURAL GUIDE

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Corn

Fresh market sweet corn

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Fresh, high quality sweet corn is widely popular among consumers. There is much undeveloped potential for small scale production of sweet corn in Missouri. The greatest opportunity for profitable production is where the critical resources are all present:

- good productive land,
- water in quantity for irrigation,
- basic farm implements,
- positive methods of pest control,
- proper management practices,
- family labor for harvesting, and
- a marketing strategy matching the scale of production.

High quality sweet corn can be readily sold on farms, at roadside stands, city fruit and vegetable stands or farmer's markets. Local advertising can bring quantity orders from considerable distances. Growers within driving range of larger towns or cities may find a ready market at independent grocers or the larger supermarket chains if volume is sufficient.

Large acreages, which justify mechanical harvesting, hydrocooling and truckload shipments to terminal markets or supermarket distribution centers, require the best possible land and considerable capital resources to set such an operation into motion.

Farm families looking at sweet corn as a way of generating more income should study the realities of their situation. There are more farmers who have failed with sweet corn than there are those who have continued to grow it.

Expected yields. A yield of 1,000 dozen ears of sweet corn per acre is considered good. Type of growing season, soil depth and fertility, fertilizer usage, variety, and plant stand are among the factors influencing actual yields.

Price. Prices vary considerably from year to year and within a given season. Local sales vary with quantity and quality of corn available. For the past few years, prices have usually averaged around 10¢ per ear for top quality corn. With commercially shipped sweet corn prices vary with season and national crop but usually will bring \$3.50 to \$4.50 per crate of five dozen ears.



Uniform stands of sweet corn produce maximum yields.

Labor requirement. A family can usually handle all the labor, including harvesting, for one or two acres of sweet corn. Larger acreages require more sophisticated equipment and additional labor.

Production costs. Production costs per acre vary widely:

1. *Acreage to be planted* determines type and cost of equipment needed to accomplish a given management level.
2. *Management level* determines effective application of production units such as seed, fertilizer, pesticides and irrigation.
3. *Labor requirement* determines whether you use family or hired labor.
4. *Fixed costs* include rent, taxes and depreciation on equipment and buildings.

Based upon the level of these production costs, you might spend from \$500 to \$750 per acre. (Note: as costs increase, it is usually assumed that yields per acre and quality of product will also increase, thereby increasing gross returns per acre.)



Sweet corn with good husk cover.



Sweet corn with good kernel development.

Planting

Dates. Plant one to two weeks before the frost free date for your area. Sweet corn can be planted in successive plantings for six to eight weeks.

Planting rates. Suggested planting rates are 12 to 15 pounds of sweet corn seed per acre. Sized seed permits more specific and precise planting.

Planting distances. Sweet corn rows are usually spaced 36 to 38 inches apart. Spacing within the row should be 8 to 12 inches, depending upon vigor and size of variety. Plant early and short varieties about 8 inches apart, and tall and late maturing varieties up to 12 inches apart.

Planting depth. Plant about 1 inch deep on loam soils, $\frac{3}{4}$ inch on clay soils and $1\frac{1}{4}$ inches on sandy soils. Poor stands are often the result of planting too deeply.

Soil and Fertilizer

Soil types. Medium-textured soil of good depth and drainage is best for sweet corn. River bottoms most often provide these kinds of soils. Avoid shallow, ridge top soils, sandy soils and heavy clay or gumbo soils.

Fertilization. A soil analysis is essential for determining fertilizer needs. For information on sampling techniques and procedures, contact your county extension center.

The soil analysis can determine levels of lime, phosphate, potash and magnesium. It also helps identify major nutrient shortages, so you won't apply too much fertilizer.

If a previous soil analysis or crop experience indicate good soil fertility, it may only be necessary to provide for the current season's fertilizer needs. In that case, apply 30 pounds of nitrogen, 60 pounds of P_2O_5 , and 60 pounds of K_2O (30-60-60) in a split application. Broadcast half the fertilizer, and work it into the soil 4 inches deep at final seedbed preparation. Apply the remaining half as a band 2 inches to the side and 2 inches below the seed at time of seeding.

Sidedress with 80 pounds of nitrogen when the plants are about 18 inches tall. On shallow soil types, sidedress with 40 pounds of nitrogen when plants are 12 inches tall and with another 40 pounds when plants are 24 inches tall.

Irrigation

Good yields of high quality corn are rarely attained without irrigation. However, sweet corn production on a small scale cannot justify large expenditures for developing water resources.

Corn requires about $1\frac{1}{2}$ inches of water per week during June and 2 to $2\frac{1}{2}$ inches of water per week during July and into early August. Irrigate to make up the amount not supplied by rainfall. The most critical period is from silking to harvest.

Weeds and Cultivation

There are a variety of available herbicide treatments for controlling annual and perennial weeds in sweet corn. Most herbicides specifically state the time and method of application, weeds controlled, rates of application and crops that may follow in rotation. Effective weed control is possible only when selecting the treatment most suitable to the weeds likely to be present and the cropping system used.

But even the best herbicide treatment may not provide full season weed control. Sometimes rainfall is inadequate to activate a pre-emergence herbicide. In these situations, a $\frac{1}{2}$ inch of irrigation water, light harrowing or rotary hoeing incorporates the herbicide into the soil and improves results.

Occasionally, tolerant weed species escape the herbicide treatment. Row cultivation can help eliminate this problem. Cultivate while both weeds and sweet corn are small. Cultivation will not adequately control tall weeds and may cause considerable root pruning if the sweet corn is more than 18 inches tall.

Insects

Flea beetles are small, black, jumping insects which eat small holes in the leaves of young plants. They may carry and transmit the bacterial disease, Stewart's wilt.

Corn borers are white worms with dark heads. First generation borers feed on whorl leaves during early summer, and later generations invade stalks, ears, and ear shanks.



This grower is pulling ears ready for harvest.



Loading the wagon is another step during harvest.

Corn earworms are variably colored worms which feed mostly on ear tips. Protect ears with an insecticide from early silking to harvest.

Soil insects include wireworms, white grubs, cutworms and seed corn maggots. They are especially troublesome on grassland to be planted to sweet corn.

Diseases

Stewart's wilt is caused by a bacterium, carried and transmitted by the corn flea beetle. Prevalence varies from year to year, depending upon the number of beetles surviving the winter. Plants may wilt, leaves may have long, pale green to yellow or brown irregular streaks, and plants are often stunted. Stewart's wilt is usually more severe on smaller, early maturing varieties. For these varieties, flea beetle control is very important.

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. There appears to be some varietal resistance to this disease. The varieties recommended in this guide provide a good measure of resistance to common smut.

Maize Dwarf Mosaic (M) and Wheat Streak Mosaic (WSM) are two viral diseases, which have recently damaged sweet corn in Missouri and states to the east. The viruses are transmitted by insects (mostly by aphids) and vary in severity from year to year. Johnson grass, sudan grass and sorghums are carriers of MDM, while wheat carries WSM. There appears to be some degree of tolerance of these viruses among sweet corn varieties. Control Johnson grass and volunteer wheat to help prevent the spread of MDM and WSM.

Animal Problems

Small plantings of sweet corn grown on land surrounded by wooded areas can be damaged by various animals. Deer, racoons, woodchucks (groundhog), squirrels and birds are



This load of sweet corn is ready for packing.

the most damaging. Prevent animal damage by not planting in risky areas. Contact your local conservation agent for suggestions when animal control is desired.

Harvesting and Handling

Harvest sweet corn when the ears reach full size for the variety, husks are tight (full at the tip), and silks are dried. Kernels should be fully developed and show a milky liquid when punctured. As the field matures, a few ears should be examined daily to determine the proper time for picking. Second or third pickings may be necessary, depending upon variety. Check ears daily for proper maturity.

Traditional types of sweet corn (standard su genes) rapidly lose sweetness and freshness after being harvested. At 86 degrees F, half the sugar is lost within 24 hours. If the harvested corn is left in large piles or tightly packed without adequate cooling, it can heat up and spoil within a few hours. For the best quality, harvest early in the morning while the corn is cool.

Super or ultra sweet corn varieties retain sweetness much longer.

Recommended Sweet Corn Varieties*

Standards (su genes)	Traditional sweet corn flavor and texture. Requires careful harvest and handling procedures to preserve sweetness and quality.		
<u>Yellow</u>	<u>White</u>	<u>BiColor</u>	
Sundance (69) Gold Cup (80)	Silver Queen (92)	Sweet Sue (88)	
Super Sweets (se genes)	Feature high sugar, creamy texture, natural corn flavor and thin pericarp (easy to chew). Sweetness persists. Good germination and vigor. Best for local markets.		
<u>Yellow</u>	<u>White</u>	<u>BiColor</u>	
Miracle (82) Kandy Korn (89)	Platinum Lady (78) White Lightning (90)	Double Delight (87)	
Ultra Sweets (sh₂ genes)	Feature very high sugar. Kernels crisp or crunchy. Good for shipping. Sweetness persists. Requires isolation from other gene types. Germination poor in cold soils. Seed density much less than other types.		
<u>Yellow</u>	<u>White</u>	<u>BiColor</u>	
Early Xtra Sweet (72) Summer Sweet 7600 (82) Florida Staysweet (85)	Summer Sweet 8601 (86) How Sweet It Is (88)	Summer Sweet 8502 (85)	
<p>*The varieties listed are considered the "best" of each category—kernel color and corn type. There are many other varieties available from the seed trade. To find the best varieties for you, make small trial plantings of new varieties that seem to offer some production or market advantage over presently grown varieties.</p> <p>Note: Sweet corn pollen source can have an immediate effect on the quality of the ear that is eaten. Field corn pollen will make sweet corn starchy. Pollen from some high-sugar sweet corns will make sweet corn starchy. Pollen from yellow or bicolor corn will produce yellow kernels on normally white ears. Non-compatible sweet corns must be separated in time (of pollen shed) or distance to prevent any possible adverse effects of cross pollination. Distances of 250 feet or separation of plantings by 14 days will virtually eliminate all cross pollination.</p>			

Tips for Growing Sweet Corn

✓ A sprayer suited for applying pesticides to sweet corn is a must for growing quality corn.

✓ Access lanes left at intervals of 8 to 12 rows make spraying, harvesting and irrigation easier.

✓ Many varieties of sweet corn produce vigorous tillers (suckers) from the base of the plant. Removal of these suckers has been shown to be unnecessary and impractical.

✓ Make reasonable efforts to get good stands. Good seedbed preparation, a properly working planter and careful planting are essential for uniform stands of sweet corn. Trying to correct a poor stand is usually unsuccessful. It is better to replant entirely.

✓ Use only fresh seed. Planting old seed is likely to result in poor plant stands.