

KEYS TO

PROFITABLE PRODUCTION

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KEYS TO PROFITABLE SWEET CORN PRODUCTION IN TEXAS

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Sweet corn is grown predominantly as a fresh market crop in Texas in the spring and summer. Total acreage has declined in recent years because of the difficulty in controlling earworms and the rising cost of hand harvesting. Production of sweet corn for roadside and local farmers markets, however, has been steadily increasing in all areas of the state.

Production Areas and Seasonal Movement

Sweet corn is grown statewide, but most commercial production is located in three major areas: the Rio Grande Valley, the Winter Garden-San Antonio-Coastal Bend region and the Upper Coast-Central Texas regions.

The Rio Grande Valley acreage is planted from early January through March and harvest begins in mid-April. Seeding begins in the Winter Garden in late February or early March and continues into April in San Antonio and the Coastal Bend with harvest beginning the last of May. Growers on the Upper Coast and in Central Texas and East Texas plant in March and April and begin shipping in early June. Heaviest shipments occur in May and June. A small acreage is produced for local sale in the Rolling Plains and High Plains region.

Climate Requirements

Sweet corn is a warm season crop intolerant of frost. The rate of growth and maturity is fastest with high day and night temperatures. Highest yields result from an average monthly temperature of 68° to 72°F. Few varieties make significant growth below 50°F. The optimum soil temperature range for germination is 75° to 95°F. Few seeds will germinate when the soil temperature is lower than 50°F. Sweet corn growth is directly dependent on the time of exposure to air temperatures above 50°F, and the accumulated degree-hours system is used to schedule

plantings. The time required to mature sweet corn from seed varies from about 65 to 90 days depending on the variety and temperature conditions.

Sweet corn is a short-day plant and tassel development of most varieties is hastened by day lengths of less than 12 to 14 hours. Cool weather during harvest retards conversion of kernel sugar to starch; thereby, favoring retention of high ear quality and a prolonged harvest period.

Soils

A deep sandy loam topsoil well supplied with organic matter favors rapid growth and development and maximum yield of early varieties. Loams and clay loams are ideal for later varieties which remove more water and fertilizer from the soil. Sweet corn grows well in soils with pH levels ranging from 5.5 to 7.8, but a pH of 6.0 to 6.5 is ideal. A coarsely disked seedbed is preferred.

Varieties

Large-scale plantings should be restricted to varieties with proven adaptability in a given area. New varieties are best confined to trial plantings of an acre or less in size. Successful varieties for Texas include:

Yellow Kernel

Bonanza
Calumet
Capitan
Goldenrod

Merit
Sweet Tennessee
Valley Market
Style Pak

White Kernel

Silver Queen
Comet

Fertilization

The amount of fertilizer applied prior to planting sweet corn depends on the levels of essential elements already present as indicated by a soil test. The soil type, previous cropping history, number of plants per acre, method of fertilizer application, rainfall and variety should be considered too. Nitrogen may leach from sandy soils during heavy rainfall and later varieties require more nitrogen to fill out the kernels on the large ears.

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Early varieties may require a nitrogen sidedressing if the soil remains cool for a prolonged period.

Generally an acre of sweet corn will remove 50 to 60 pounds of nitrogen, 15 to 25 pounds of P_2O_5 and 18 to 25 pounds of K_2O . Banding 80 to 120 pounds of nitrogen plus 50 to 60 pounds of P_2O_5 two to three inches to one side and one to two inches below the seed at planting time is sufficient under most conditions. Weather conditions and appearance of the foliage prior to tasseling, combined with a quick test of the nitrate level in stalk, will indicate to the grower whether a sidedressing of nitrogen is required. A sidedressing of 25 to 30 pounds of actual nitrogen per acre prior to tassel elongation will assure an adequate supply if a need for additional nitrogen arises.

Planting

Sweet corn is usually seeded one row per bed on 40-inch centers. Eight to fifteen pounds of seed per acre are required depending on plant spacing and seed size. A plant spacing of 6 to 9 inches in the row generally results in the highest yield of large ears for early varieties. Some later varieties bear two ears per stalk and require wider spacing for maximum ear size. Large seed produces more vigorous plants, earlier maturity and greater yield. Seed should be planted no deeper than 1½ to 2 inches. Seed should be treated to resist damage from seed corn maggot and soil fungi.

Irrigation

Early sweet corn varieties require 12 to 16 inches of water per acre while late varieties may use 18 to 20 inches. Careful attention to maintaining soil moisture near optimum is required for highest yield and quality. There are three periods during the growth of sweet corn when low soil moisture will be disastrous: at germination, at tassel elongation and during ear enlargement. The water-absorbing roots are shallow — seldom deeper than 12 to 18 inches. Late varieties root deeper and require more water to develop the larger plant and ears.

Weed Control

The rapid growth rate of sweet corn accompanied by one or two timely cultivations may provide adequate control of weeds. When chemical control is deemed necessary, Sutan⁺ or Sutan⁺ tank mix with Atrazine may be used as a preplant application incorporated into the soil. Chemical sprays applied to the soil surface must be mixed with the soil, using power-driven cultivation equipment set to cut to a depth of 2 to 3 inches or tandem discs set to cut to a depth of 4 to 6 inches. Dry soils and tractor speeds of 4 to 6 miles per hour are conditions providing for best mixing. Sutan⁺ alone controls only annual grasses from seed and freshly sprouting nutgrass.

Sutan⁺ with Atrazine mix provides additional control of certain broadleaf weeds. Read and follow label instructions for specific weeds and grasses controlled. Apply 3¾ to 4¾ pints of Sutan⁺ 6.7E per acre. When using Sutan⁺ with Atrazine add 1¼ to 2 pounds of Atrazine 80W or 1 to 1½ quarts of Atrazine 4L per acre to the Sutan⁺ in 10 to 50 gallons of water. Follow mixing instructions on label to prevent settling out of herbicide.

Cultivation

If crusting or surface cracking occurs or weeds appear, cultivation with sweeps or Lilliston rolling cultivator no deeper than one or two inches will destroy weed seedlings and restore permeability to the surface soil. Cultivation at any other time will not increase yield and may prune roots near the surface.

Diseases

There are several diseases of sweet corn that limit production. Maize Dwarf Mosaic Virus (MDMV) is a virus disease that causes mottling of leaves and stunting of affected plants. Severely infected plants fail to form marketable ears. Under cool weather conditions, diseased plants may turn red. The virus is transmitted by aphids from Johnsongrass to sweet corn. Downy mildew is a fungus disease that overwinters in the soil and attacks plants at the seedling stage or later during the growing season. Affected seedlings will have a condition known as crazy top. Older affected plants are stunted; the leaves show cream-colored stripes. Severely affected plants will not form marketable ears. A white, downy-like growth can sometimes be seen on the underside of the leaves. Other diseases are bacterial wilt, which can be transmitted by insects, corn smut, stalk and root rot, seedling damping-off, ear rots, rust and numerous leaf spots. These diseases are controlled by using a combination of practices. Adapted varieties resistant to MDMV, Downy Mildew and Bacterial Wilt should be used. Crop rotation can reduce losses due to downy mildew, stalk rot and other soil-borne diseases. Southern Corn Leaf Blight, if common in the area, can be reduced by periodic application of foliar fungicides. Rusts, although present in most sweet corn plantings, seldom do measurable economic damage. Some varieties have resistance to this disease and should be used where rusts are a major problem.

Insects

Wireworm, southern corn root worm, seed-corn maggot, corn aphid, fall armyworm, corn earworm, budworm, and southern corn borer sometimes damage sweet corn. Use seed treated with an insecticide and fungicide. Where wireworm or seed-corn maggot are known to be present in damaging numbers, granular diazinon may be applied broadcast and disked into the soil before planting. Aphids seldom reach

populations that reduce yield but malathion at 0.93 pounds per acre will effectively reduce large populations. Fall armyworm and corn earworm can be controlled with carbaryl (Sevin) at 1 to 2 pounds active chemical per acre. Lannate or methyl parathion may also be used at labelled rates for certain worm pests. Growers should watch for activity of these insects from the time the plants are knee high. Chemicals and rates mentioned are EPA approved at the time of this printing; however, they are subject to change, so growers should read and follow carefully pesticide labels.

Harvesting and Packing

Sweet corn can be picked with mechanical harvesters or by hand when the kernels reach the early milk stage, but while the kernel pericarp is very tender and sugar content at its maximum level. The harvested ears are transported in bulk trucks or pallets to

a hydrocooler where they are passed through 40°F water to reduce conversion of sugars to starch.

The cooled product is then packed in waxed cartons, wooden crates or mesh bags, 60 ears per container, top iced and either stored at 32°F and 90 percent relative humidity or shipped immediately in refrigerated trucks to distant markets.

Sweet corn stored at 32°F for 24 hours loses 8 percent of its sugar, while corn stored at 86°F for the same length of time loses 50 percent of its sugar.

Marketing

Texas-grown sweet corn is sold on the open market at prevailing prices. Movement by truck to northern and eastern markets is the usual route. Roadside stands or local farmers markets are becoming more popular for merchandizing produce from small acreages.

Other publications that may be helpful are available from your local county extension agent.

MP-675 - *Texas Guide for Controlling Insects on Commercial Vegetable Crops*

MP-1244 - *Budgets for Major Rio Grande Valley Vegetables*

MP-902 - *Texas Guide for Reducing Vegetable Disease Losses*

MP-1061 - *Part III — Suggestions for Weed Control With Chemicals in Horticultural Crops*

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