UF UNIVERSITY of FLORIDA
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Chapter 39.
Sweet Corn Production in Florida

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BOTANY

Nomenclature

Family - Poaceae (Gramineae)
Sweet corn - *Zea mays var. rugosa*

Origin

Like bean, potato, tomato, pepper, and pumpkin, sweet corn is of New World origin (Fig. 39-1). However, wild corns have not been found. It is believed that corn which evolved from ancestral types in South America was later domesticated in Central America.

Related Species

Sweet and popcorn are the only members of the Poaceae family which are classed as vegetables. Nonetheless, this family is one of the most important in providing human sustenance, either directly or as feed for domestic animals, with grains such as wheat, rice, oats, rye, and corn or indirectly as hay and forage grasses for domestic animals. Sugar cane is also an important member of this family.

VARIETIES

A description of major sweet corn types currently available is given in Table 1. Supersweet (shrunken-2) sweet corn varieties that are in commercial use in Florida are given in Table 2.

Pollination

Sweet corn is wind pollinated, i.e. wind is the agent responsible for transfer of pollen from the tassel to the silk to effect the pollination process. Isolation of genetic types, just as isolation of yellow and white corns of a single genetic type, must occur for them to produce their desired characteristics. Isolation strategies include:

Distance - about 300 feet should be sufficient isolation to avoid cross pollination.

Time - Maturity differences of at least 14 days which can be accomplished by variety selection or successive plantings should be sufficient to avoid cross pollination of genetic types.

SEEDING AND PLANTING

Planting dates and seeding information are given in Table 3.

Table 1. Description of major sweet corn types currently available.

Type	Genes controlling sweetness	Storage life[1] (days)	Relative sugar content
Sugary	Full complement of sugary	1 to 3	Normal
Sugary Enhanced, also "Modified" and "EH"	Full complement of sugary (su) and half or full complement of sugary enhancer (se)	3 to 5	Slight to moderate or even high levels
Supersweet, also "Ultra," "Extra" sweet	No sugary (su); full complement of shrunken-2 (sh_2)	5 to 10	High
Synergistic, also "Sweet-Gene Hybrid"	Full complement of sugary (su); and half complement of shrunken-2 (sh_2)	3 to 5	Moderate
Improved Supersweet	Half complement of sugary (su); and full complement of shrunken-2 (sh_2)	5 to 10	Very high
ADX	No sugary (su) or shrunken-2 (sh_2) genes; full complement of ae, du, and wx genes.	5 to 10	Moderate to high

[1] These values are approximations provided for comparison among types. Actual storage time will depend on variety, cultural practices, and postharvest handling methods.

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FERTILIZER AND LIME

For mineral soils with subsurface or sprinkler irrigation, band all P_2O_5 and micronutrients with 20 to 25% of N and K_2O at planting. Sidedress band remaining N and K_2O in one or two applications during the early part of growth cycle. After midseason, N and K_2O can be applied through center-pivot irrigation system at rates of 10 to 20 lbs/A of N and K_2O in several applications.

For mulched crops with subsurface irrigation, broadcast all P_2O_5, micronutrients and 20 to 25% N and K_2O in bed prior to mulching. For subsurface irrigated crops, band remaining N and K_2O in groove 2 to 3 inches deep in bed center. For sprinkler irrigation, broadcast all fertilizer in bed.

For organic soils, band all P_2O_5 and micronutrients at planting. Broadcast all K_2O. Supplemental N at rate of 40 lbs/A might be needed in cool winter weather or after leaching rain.

Soil test and fertilizer recommendations for mineral soils are given in Table 4. Soil test and fertilizer recommendations for Histosols are given in Table 5.

PLANT TISSUE ANALYSIS

Plant tissue analysis information for sweet corn is given in Table 6. The analysis was done when the plants were 30 inches tall, using the most recently matured leaf.

IRRIGATION

Water requirements of sweet corn (see Chapter 8, *Principles and Practices for Irrigation Management of Vegetables*, Table 4 to 6) increase rapidly from about 40% of ETo during early growth to 110% of ETo at peak growth (see Chapter 8, *Principles and Practices for Irrigation Management of Vegetables*, Table 3). Proper water management is essential during the silking and tasseling and the ear development periods. Water requirements may decrease to 100% of ETo during the final week or two of growth.

WEED MANAGEMENT

Herbicides labeled for weed control in sweet corn are listed in Table 4.

DISEASE MANAGEMENT

Chemicals approved for disease management in sweet corn are listed in Table 8.

INSECT MANAGEMENT

Table 9 outlines the insecticides approved for use on insects attacking sweet corn.

PRODUCTION COSTS

Average breakeven production costs for sweet corn vary among Florida's production areas. The costs for a given year, 1998 - 99, are outlined for Dade County in Table 10 and Palm Beach County in Table 11.

Table 3. Seeding and planting information for sweet corn.

Planting dates	
North Florida	Feb - Apr
Central Florida	Jan - Apr
South Florida	Oct - Mar
Seeding information	
Distance between rows (in)	28 - 32
Distance between plants (in)	6 - 8[1]
Seeding depth (in)	1.0 - 1.5
Seed per acre (lb)	6 - 15
Days to maturity from seed	64 - 90
Plant population (acre)	24,000 - 32,000

[1] Wider rows and between plant spacings will yield larger ears.

Table 2. Some supersweet (shrunken-2) sweet corn varieties that are grown in Florida arranged by kernel color.

Yellow	White	Bicolor
Beyond Multisweet	Boreal	Big Time
Prime Time	Summer Sweet 6801	Beyond BC
Prime Plus	Summer Sweet 7111	Obsesssion
Summer Sweet 6800R	Summer Sweet 7311	Summer Sweet 6802
Summer Sweet 7100R	Vail	Summer Sweet 7102
Summer Sweet 7650R		Summer Sweet 8102R
Summer Sweet 8100R		Tethys
Winstar		

Table 4. Soil test and fertilizer recommendations for mineral soils for sweet corn.[1]

Target pH	N lb/A[2]	VL	L	M	H	VH	VL	L	M	H	VH
		P_2O_5[2]					K_2O				
		(lb/A/crop season)									
6.5	200	150	120	100	0	0	150	120	100	0	0

[1] See Chapter 2 section on supplemental fertilizer application and best management practices, pg 11.

[2] Seeds and transplants may benefit from applications of a starter solution at a rate no greater than 10 to 15 lbs/acre for N and P_2O_5, and applied through the plant hole or near the seeds.

Table 5. Soil test and fertilizer recommendations for Histosol soils for sweet corn, with target pH = 6.5 and N rate 0 lb/A.

	P and K index and fertilizer rate[1]					
P index	3	6	9	12	15	18
P_2O_5 (lb/A)	160	120	80	40	0	0
K index	50	80	110	140		
K_2O (lb/A)	120	60	0	0		

[1] Seeds and transplants may benefit from applications of a starter solution at a rate no greater than 10 to 15 lbs/acre for N and P_2O_5, and applied through the plant hole or near the seeds.

Table 6. Plant tissue analysis for sweet corn plants 30 inches tall. Dry wt. basis.

Status	N	P	K	Ca	Mg	S	Fe	Mn	Zn	B	Cu	Mo
	Percent						Parts per million					
Deficient	<2.5	0.2	2.5	0.5	0.2	0.2	40	40	25	10	4	0.1
Adequate range	2.5-4.0	0.2-0.4	2.5-4.0	0.5-0.8	0.2-0.4	0.2-0.4	40-100	40-100	25-40	10-30	4-10	0.1-0.2
High	>4.0	0.4	4.0	0.8	0.4	0.4	100	100	40	30	10	0.2
Toxic (>)									100			

Table 7. Chemical weed controls: sweet corn.

Herbicide	Labeled crops	Time of application to crop	Rate (lbs. AI./Acre) Mineral	Muck
Atrazine (AAtrex 4L) (AAtrex Nine-0)	Sweet corn	Preemergence	1.0 - 2.0	2.0 - 3.0
Remarks: Controls germinating annuals. Apply to moist soil. Note label precautions of planting non-registered or sensitive crops for at least one growing season.				
Atrazine (AAtrex 4L) (AAtrex Nine-0)	Sweet corn	Postemergence	1.0 - 2.8	1.0 - 2.8
Remarks: Controls emerged weeds. Apply in a minimum of 10 gals. of water before weeds are 1.5 inches tall. Use lower rates when weeds are small. Note replanting precautions listed above.				
Atrazine + Oil	Sweet corn	Postemergence	1.0 - 2.0 + oil	1.0 - 2.0 + oil
Remarks: Controls emerged weeds. Apply to small test plots to evaluate tolerance of new hybrid corn varieties. Following mixing instructions listed on the label and rates of emulsifiable oil or oil concentrate depending on ground or aerial application methods. Apply before annual grasses are 1.5O and broadleaf weeds are 4O. Note replanting precautions. Do not apply to breeding stock or inbred lines of sweet corn.				
Bentazon (Basagran)	Corn (all types)	Postemergence	0.75 - 1.0	0.75 - 1.0
Remarks: Controls actively growing young broadleaf weeds. Recommended for burn down of annual morning glory and yellow nutsedge in corn. Consult label for weeds controlled/weed size table. Corn is tolerant at all stages of growth. Do not apply over 2 lbs ai (4 pts.)/acre per season. Add a crop oil concentrate (coc) at 2 pts/acre maximum.				

Table 7. Continued.

Herbicide	Labeled crops	Time of application to crop	Rate (lbs. AI./Acre) Mineral	Muck
Carfentrazone (Aim)	Corn (all)	Preplant, Preemergence, Postemergence	0.008-0.016	0.008-0.016
Remarks: Controls young actively growing broadleaf weeds. May be applied 30 days before planting until corn reaches the 8 leaf collar growth stage. Rate is 0.5 fl oz product per acre. Use a nonionic surfactant in the spray mix. Leaf burn or speckling has been seen on older plants when applied over the top. Directed sprays are much safer. No yield reduction was seen in trials when leaf damage occurred. FMC states that the use is the responsibility of grower due to not being tested on all sweet corn varieties.				
EPTC (Eptam 7E) (Eptam 10G)	Potato	Postemergence or early layby Preplant, Dragoff, Layby	3.0 3.0	— —
Remarks: Granular formulation may be applied Preplant incorporated, at Dragoff and incorporated or at Layby and incorporated into clean cultivated soil. Emulsifiable formulation should not be applied on winter and early spring potatoes. Apply only after potatoes have emerged and true leaves have formed or at layby. There is a 45-day preharvest interval for application.				
Glyphosate (Roundup, Durango Touchdown, Glyphomax)	Sweet Corn	Chemical fallow Preplant, pre emergence, Pre transplant	0.3 - 1.0	
Remarks: Roundup, Glyphomax and Touchdown have several formulations. Check the label of each for specific labeling directions.				
Halosulfuron (Sempra) (Sandea)	Sweet Corn	Postemergence	0.032	0.032
Remarks: Sempra may be applied over-the-top or with drop nozzles from the spike to the layby stage of corn. Applications of ⅔ oz by weight (.032 lb ai) per acre broadcast may be made with a sequential treatment of ⅔ oz by wt directed or semi-directed to avoid application into the whorl may be made. Avoid cultivation for 7 days after application. Excellent control of nutsedges and active on cocklebur, pigweeds, ragweed and smartweed. Will not control emerged grasses. Consult label for plantback restrictions.				
Mesotrione (Callisto)	Sweet Corn	Pre emergence Postemergence	0.188-0.24 0.094	-
Remarks: Apply Callisto preemergence at 6.0 to 7.7 fl oz/ A. May be tank mixed with a grass herbicide for grass control. Apply at 3 fl oz/A postemergence. It may be tank mixed with herbicides such as atrazine, metolachlor, bentazone, etc. Check the label. Do not apply wiht a crop oil concentrate (coc), UAN, or AMS postemergence. Corn may be treated up to 30 inches tall. Do not harvest within 45 days after applicatioon. In some cultivars, transitory bleaching may occur. Intrials, yield has not been affected.				
S-Metolachlor (Dual Magnum) (Dual II Magnum)	Sweet Corn	Pre emergence	1.0-1.5	
Remarks: Provides good control of annual grasses and certain broadleaf weeds. Use the lower rate on light sandy soils. Use higher rate on soils with organic matter 3% and greater. May be used as preemergence up to 4 pints (lbs/ai) on soils with 6 to 20% organic matter. May be used as directed spray to the base of corn plants 5 inches tall until corn plants reach 40 inches in height. See Special Local Needs (24c) label for muck soils.				
Paraquat (Gramoxone Inteon) (Firestorm)	Sweet Corn	Pre emergence	0.56 - 0.94	0.56 - 0.94
Remarks: Controls emerged weeds. Apply prior, during, or after planting, but before corn emerges. Use a spreader.				
Paraquat (Gramoxone Inteon)	Sweet Corn	Directed spray	0.25	0.25
Remarks: Apply when corn is at least 10" tall. Arrange nozzles to spray no higher than the lower 3 inches of the corn plant. Corn plants shorter than 10" may be injured and not recover. (Corn height measured from soil surface to top of whorl.)				
Pendimethalin (Prowl) + Atrazine (Several)	Sweet Corn	Early Postemergence	0.75 - 1.0 1.0 - 1.5	1.0 - 2.0 1.0 - 2.0
Remarks: In Alabama, Florida and Georgia, Prowl 3.3 EC can be applied with atrazine early postemergence. Apply from spike through 4 leaf stage but before weeds exceed 1 inch in height, except for Texas panicum which must be no larger than the 2 leaf stage. Prowl alone will not control emerged weeds. Wait at least 7-10 days befoe cultivation early postemergence treatments.				
Topramezone (Impact)	Sweet Corn	Postemergence	0.016	0.016
Remarks: Apply to emerged actively growing weeds. Impact is a systemic postemergence herbicide. The addition of 0.25 to 1.0 lb ai of atrazine will enhance control. Not all sweet corn hybrids have been tested. Test each new hybrid before applying to the whole fields.				

Table 8. Disease management for sweet corn.

Chemical (a.i.)	FRAC Group[1]	Maximum Rate/Acre/ Application	Season	Min. Days to Harvest	Pertinent Diseases	Select Remarks[2]
Amistar 80DF (Azoxystrobin)	11	5 oz	2.5 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not exceed 1 sequential and 6 total applications of Amistar or other QoI fungicides.
Apron XL LS (Mefenoxam)	4	0.64 fl. oz./ 100 lb seed or 2.2 fl oz/ 100 lb seed			Pythium seedling blight Downy mildew	Seed treatment only. Use the higher rate if treating seed for prevention of systemic downy mildew.
Bravo Ultrex 82.5 WDG (Chlorothalonil)	M5	1.8 lb	10.9 lb	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Bravo Weather Stik 6F (Chlorothalonil)	M5	2 pt	12 pt	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Bumper 41.8EC (Propiconazole)	3	4 fl oz	16 fl oz	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not exceed 4 total applications.
Contans WG (Coniothyrium minitans)		6 lbs			Sclerotinia diseases	Apply to soil surface and incorporate prior to, at planting.
Copper-Count-N (Copper ammonium complex)	M1	2qt			Bacterial rot, bacterial wilt, Bacterial stripe, Leaf blights, Stalk rot	
Dithane-DF-Rainshield (Mancozeb)	M3	1.5 lb	22.5 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Dithane-F45-Rainshield (Mancozeb)	M3	1.2 qt	18 qt	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Dithane-M45 (Mancozeb)	M3	1.5 lb	22.5 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Echo 720 (Chlorothalonil)	M5	2 pt	12 pt	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Echo 90 DF (Chlorothalonil)	M5	1.6 lb	10 lb	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Equus 720 SST (Chlorothalonil)	M5	2 pt	12 pt	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Equus-DF (Chlorothalonil)	M5	1.6 lb	10 lb	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Fosphite (Potassium phosphite)	33	3 qt	18 qt		Pythium, Rhizoctonia, Fusarium, Downy mildew	Do not exceed 6 applications per crop. Caution should be used when applying in a management program including copper fungicides. See label for foliar, and irrigation application details.
Headline EC (Pyraclostrobin)	11	12 fl oz	72 fl oz	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not exceed 2 sequential and 6 total applications of Headline or other QoI fungicides.

Table 8. Continued.

Chemical (a.i.)	FRAC Group[1]	Maximum Rate/Acre/ Application	Season	Min. Days to Harvest	Pertinent Diseases	Select Remarks[2]
Kocide-2000 (Coppery hydroxide)	M1	3 lb			Bacterial blight	
Kumulus DF (Sulfur)	M2	15 lb				
Maneb 75DF (Maneb)	M3	1.5 lb	24 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Maneb 80WP (Maneb)	M3	1.5 lb	24 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Manex (Maneb)	M3	1.2 qt	18 qt	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Manzate 75DF (Maneb)	M3	1.5 lb	24 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Manzate 80WP (Mancozeb)	M3	1.5 lb	24 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Manzate Flowable (Mancozeb)	M3	1.2 qt	18 qt	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Maxim 4FS (Mancozeb)	12	0.16 fl oz/ 100 lbs of seed			Various seedling diseases	Seed treatment only.
Miconized Gold (Sulfur)	M2	20 lb			Powdery mildew Rust	Greenhouse use only
Penncozeb 75DF (Mancozeb)	M3	1.5 lb	24 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Penncozeb 80WP (Mancozeb)	M3	1.5 lb	22.5 lb	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not use crop for livestock feed.
Propimax EC (Propiconazole)	3	4 fl oz	16 fl oz	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not apply more than 4 applications per season.
Quadris (Azoxystrobin)	11	15.4 fl oz	3.75 qt	7	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not exceed 2 sequential and 6 total applications of Quadris or other QoI fungicides.
Quilt (Azoxystrobin; Propiconazole)	11, 3	14 fl oz	56 fl oz	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Alternate with a non QoI fungicide
Serenade Max (Bacillus subtilis)		3 lb		0		
Sonata (Bacillus pumilus)		4 qt		0	Common and southern rust Northern corn leaf blight Southern corn leaf blight	
Sporan EC (Clove, rosemary, and thyme oil)		2 pt		0		

Table 8. Continued.

Chemical (a.i.)	FRAC Group[1]	Maximum Rate/Acre/ Application	Maximum Rate/Acre/ Season	Min. Days to Harvest	Pertinent Diseases	Select Remarks[2]
Telone EC (1,3 dichlopropene)		18 gal			Nematode and soil-borne diseases	Apply as a soil fumigant. Restricted use pesticide. See label regarding specific application instructions.
Tilt 3.6E (Propiconazole)	3	4 fl oz	16 fl oz	14	Common and southern rust Northern corn leaf blight Southern corn leaf blight	Do not apply more than 4 applications per season.
Topaz (Potassium phosphate)	33	3 qt	18 qt	0	Pythium, Fusarium, Rhizoctonia	
Trilogy (Neem oil)		2 gal				Apply at a rate of 0.5% - 1.0% in 25 to 100 gallons of water per acre or at 2 pt in a minimum of 5 GPA for low volume applications.

[1] Fungicide group (FRAC Code): Numbers (1-37) and letters (M, U, P) are used to distinguish the fungicide mode of action groups. All fungicides within the same group (with same number or letter) indicate same active ingredient or similar mode of action. This information must be considered for the fungicide resistance management decisions. M = Multi site inhibitors, fungicide resistance risk is low; U = Recent molecules with unknown mode of action; P = host plant defense inducers. Source: http://www.frac.info/ (FRAC = Fungicide Resistance Action Committee). Be sure to read a current product label before applying any chemicals,

[2] Information provided in this table applies only to Florida. Be sure to read a current product label before applying any chemical. The use of brand names and any mention or listing of commercial products or services in the publication does not imply endorsement by the University of Florida Cooperative Extension Service nor discrimination against similar products or services not mentioned.

Table 9. Selected insecticides approved for use on insects attacking sweet corn.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
Agree WG (Bacillus thuringiensis subspecies aizawai)	1.0-2.0 lb	4	0	lepidopteran larvae (caterpillar pests)	11B1	Apply when larvae are small for best control. OMRI-listed[2].
***Ambush 25W** (permethrin)	6.4-16 oz	12	1	aster leafhopper, corn earworm, corn rootworm (adults), cutworms, fall armyworm	3	Do not apply more than 2.0 ai/ acre per season. (128 oz)
***Asana XL (0.66EC)** (esfenvalerate)	5.8-9.6 fl oz	12	1	aphids, armyworms, banded cucumber beetle, beet armyworm (aids in control), chinch bugs, corn borer, corn earworm, corn rootworm, corn silk fly, cutworms, flea beetles, grasshoppers, sap beetle (adults), stalkborers, tarnished plant bug	3	Do not apply more than 0.5 lb ai/ acre per season (10 applications at highest rate).
Avaunt (indoxacarb)	2.5-3.5 oz	12, (14 days for hand harvesting)	3, (35 for fodder & stover)	fall armyworm	22	Whorl application (before silking) only. No more than 4 applications per season.
Aza-Direct (azadirachtin)	1-2 pts, up to 3.5 pts, if needed	4	0	aphids, beetles, caterpillars, leafhoppers, leafminers, mites, stink bugs, thrips, weevils, whiteflies	26	Antifeedant, repellant, insect growth regulator. OMRI-listed[2].
Azatin XL (azadirachtin)	5-21 fl oz	4	0	aphids, beetles, caterpillars, leafhoppers, leafminers, thrips, weevils, whiteflies	26	Antifeedant, repellant, insect growth regulator.
***Baythroid 2** (cyfluthrin)	0.8-2.8 fl oz	12	0	chinch bugs, common stalk borers, corn earworm, corn rootworm adult, corn silk fly, cutworms, fall armyworm (1st and 2nd instars only), grasshoppers, true armyworm	3	Maximum number of applications: 10.
Biobit HP (Bacillus thuringiensis subspecies kurstaki)	0.5-2.0 lb	4	0	caterpillars (will not control large armyworms)	11B2	Treat when larvae are young. Good coverage is essential. Can be used in the greenhouse. OMRI-listed[2].
BotaniGard 22 WP, ES (Beauveria bassiana)	**WP:** 0.5-2 lb/100 gal **ES:** 0.5-2 qts/100 gal	4	0	aphids, thrips, whiteflies	--	May be used in greenhouses. Contact dealer for recommendations if an adjuvant must be used. Not compatible in tank mix with fungicides.

Table 9. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
***Counter 15G Lock 'n Load** (terbufos)	6.0-8.0 oz per 1000 ft of row, banded or in furrow post emergence incorporated, 8 oz per 1000 ft of row at cultivation, 8 oz per 1000 ft of row at cultivation, 8 oz per 1000 ft of row	48	60	billbugs, chinch bugs(1), corn rootworm, cutworms (suppression), flea beetles, lesser corn stalk borer (suppression), maize billbug, seedcorn beetle, seedcorn maggot, symphylans, thrips, white grubs, wireworms	1B	(1)Early season control of light to moderate infestations. Only one application (at-planting, post-emergence incorporated, or cultivation time treatment per season. Do not exceed 8.7 lb/acre.
Crymax WDG (Bacillus thuringiensis subspecies kurstaki)	0.5-2.0 lb	4	0	caterpillars	11B2	Use high rate for armyworms. Treat when larvae are young.
Deliver (Bacillus thuringiensis subspecies kurstaki)	0.25-1.5 lb	4	0	caterpillars	11B2	Use higher rates for armyworms. OMRI-listed[2].
***Diazinon 4EC, *50W** (diazinon)	**foliar - AG500, 4EC:** 0.5-2.5 pts **50W:** 1-2.5 lb **preplant - AG500, 4EC:** 2-4 qts **50W:** 4-8 lb	24	7 or preplant	corn earworm, corn leaf aphid, corn rootworm adult, cutworms, flea beetles, grasshoppers, sap beetles, seed corn maggot, spider mites, wireworms	1B	Apply just before planting for seed corn maggot, cutworms, and wireworms. Do not make more than 5 applications per season (4E).
DiPel DF (Bacillus thuringiensis subspecies kurstaki)	0.5-2.0 lb	4	0	caterpillars	11B2	Treat when larvae are young. Good coverage is essential. OMRI-listed[2].
Endosulfan 3EC (endosulfan)	1.33-2 qt	24	1	aphids, corn earworm, whiteflies	2	Do not apply to sweet corn to be processed or used to feed livestock.
Entrust (spinosad)	0.5-2 oz	4	1 day - ears 7 day - forage	armyworms, corn earworm	5	Do not apply more than 9 oz per acre per year. OMRI-listed[2].
Extinguish ((S)-methoprene)	1-1.5 lb	4	0	fire ants	7A	Slow-acting IGR (insect growth regulator). Best applied early spring and fall where crop will be grown. Colonies will be reduced after three weeks and eliminated after 8 to 10 weeks. May be applied by ground equipment or aerially.
***Force 3G** (tefluthrin)	depends on row spacing	0	at planting or cultivation within 30 days of seeding emergence	billbugs(1), chinch bugs(1), corn rootworm, cutworms, lesser cornstalk borer, red imported fire ant(2), seedcorn beetle, seedcorn maggot, white grubs, wireworms	3	Only one application per crop. Granules must be incorporated. (1) suppression only (2) suppression for 28 days

Table 9. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
***Furadan 4F** (carbofuran)	2.5 oz/1000 ft	48	at planting	corn rootworms, flea beetles, seedcorn maggot, wireworms	1A	See restrictions for very sandy soil.
Javelin WG (Bacillus thuringiensis subspecies kurstaki)	0.12-1.50 lb	4	0	most caterpillars, but not Spodoptera species (armyworms)	11B2	Treat when larvae are young. Thorough coverage is essential. OMRI-listed[2].
***Lannate LV, *SP** (methomyl)	**LV:** 0.75-1.5 pts **SP:** 0.25-0.50 lb	48	0 - ears 3 - forage 21 - stover	aphids, armyworms, beet armyworm, corn earworm, corn rootworm, cutworms, fall armyworm, flea beetles, picnic beetles	1A	Certain hybrid varieties are susceptible to methomyl injury. Treat a small area to determine safety first.
***Larvin 3.2** (thiodicarb)	20-30 fl oz	48	0	beet armyworm, cutworms, corn earworm, fall armyworm, southern armyworm	1A	Do not allow livestock to graze treated field. Do not feed treated corn silage or fodder to livestock. See label for special instructions for cutworms.
Lepinox WDG (Bacillus thuringiensis subspecies kurstaki)	1.0-2.0 lb	12	0	for most caterpillars, including beet armyworm (see label)	11B2	Treat when larvae are small. Thorough coverage is essential.
***Lorsban 75WG** (chlorpyrifos)	0.33-1.33 lb	24	35	aphids, beet armyworm, chinch bugs, corn earworm, corn rootworm adult, cutworms, fall armyworm, grasshoppers	1B	Do not feed treated corn silage, forage, or fodder, or allow livestock to graze.
15G, 75 WG	See label for rates.	24	at planting	billbugs, corn rootworm larvae, cutworms, lesser corn stalk borer, seed corn maggot, symphylans, wireworms	1B	See label.
***MSR Spray Concentrate** (oxydemeton-methyl)	1.5-2 pt	48	7 - 1 appl 21 - 2 or 3 applications	aphids, corn rootworms, leafhoppers, mites, thrips	1B	Do not apply more than 3 times per season.
***Mocap 15G, *EC** (ethoprop)	See label.	48	at planting	corn rootworms, cutworms, symphylans, wireworms, (suppression of white grubs)	1B	
M-Pede 49% EC Soap, Insecticidal	1-2% V/V	12	0	aphids, armyworms, leafhoppers, mites, thrips	--	OMRI-listed[2].
***Mustang Max** (zeta-cypermethrin)	2.24-4.0 oz	12	3	armyworms, chinch bug, corn borers, corn earworm, corn silkfly, cutworms, flea beetles, grasshoppers, leafhoppers, sap beetle adults	3	Maximum of 0.15 lb ai/acre per season.
Neemix 4.5 (azadirachtin)	4-16 fl oz	12	0	aphids, armyworms, corn earworm, thrips	26	OMRI-listed[2].
Oil, insecticidal	1-2 gal/100 gal, depending on brand	4	0	aphids, armyworms, corn earworms, corn rootworms, mites, thrips	--	

Table 9. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
***Penncap-M 2EC** (methyl parathion)	1-3 pt	4 days - See label	4	aphids, armyworms, corn earworm, corn rootworm adult, cutworms, flea beetles, grasshoppers, sap beetles, silk fly	1B	See restrictions on label.
***Pounce 1.5 G** (permethrin)	8 oz/1000 ft	12	at planting	armyworms, cutworms	3	
	6.7-13.3 lb		pre-emergence	armyworms, cutworms, stalk borers	3	
	6.7-13.3 lb		foliar - 1	armyworms, corn borers, cutworms, stalk borers	3	
Pyrellin EC (pyrethrin + rotenone)	1-2 pt	12	12 hours	aphids, flea beetles, leafhoppers, loopers, mites, thrips	3, 21	
Sevin 80S; 4F; XLR (carbaryl)	**80S:** 1.25-2.5 lb **4F; XLR:** 1-2 qt	12	2 - Ears 14 - Forage 48 - Fodder	armyworms, chinchbugs, corn earworms, corn rootworm adult, cutworms, fall armyworm, flea beetles, leafhoppers, sap beetles	1A	Highly toxic to bees.
SpinTor 2 SC (spinosad)	1.5-6 fl oz	4	1	armyworms, corn earworm	5	Do not apply more than 29 fl oz per acre per year.
***Telone C-35** (dichloropropene + chloropicrin)	See label.	5 days - See label	preplant	symphylans, wireworms	--	See supplemental label for use restrictions in south and central Florida.
***Telone II** (dichloropropene)						
***Thimet 20-G** (phorate)	See label. No more than 6.5 lb	48	at planting, see label	corn rootworms, flea beetles, mites, seedcorn beetle, seed corn maggot, white grubs, wireworms	1B	One application per season.
Trilogy (extract of neem oil)	0.5-2.0% V/V	4	0	aphids, mites, suppression of thrips and whiteflies	26	Apply morning or evening to reduce potential for leaf burn. Toxic to bees exposed to direct treatment. OMRI-listed[2].
***Warrior** (lambda-cyhalothrin)	2.56-3.84 fl oz	24	1 21 for feeding livestock	aphids, aster leafhopper, beet armyworm, chinch bugs, corn earworm, corn rootworm, cutworms, fall armyworm, flea beetles, grasshoppers, mites (see label for more details), red imported fire ant(1), southern armyworm, tarnished plant bug, wireworm(1)	3	(1) suppression only.

Table 9. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
Xentari DF (Bacillus thuringiensis subspecies aizawai)	0.5-2.0 lb	4	0	caterpillars	11B1	Treat when larvae are young. Thorough coverage is essential. May be used in the greenhouse. Can be used in organic production.

The pesticide information presented in this table was current with federal and state regulations at the time of revision. The user is responsible for determining the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label instructions.

[1] Mode of Action codes for vegetable pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v.3.3 October 2003. 1A. Acetylcholine esterase inhibitors, Carbamates 1B. Acetylcholine esterase inhibitors, Organophosphates

2A. GABA-gated chloride channel antagonists
3. Sodium channel modulators
4A. Nicotinic Acetylcholine receptor agonists/antagonists, Neonicotinoids
5. Nicotinic Acetylcholine receptor agonists (not group 4)
6. Chloride channel activators
7A. Juvenile hormone mimics, Juvenile hormone analogues
7D. Juvenile hormone mimics, Pyriproxifen
9A. Compounds of unknown or non-specific mode of action (selective feeding blockers), Cryolite
9B. Compounds of unknown or non-specific mode of action (selective feeding blockers), Pymetrozine
11B1. Microbial disruptors of insect midgut membranes, B.t. var aizawai
11B2. Microbial disruptors of insect midgut membranes, B.t. var kurstaki
12B. Inhibitors of oxidative phosphorylation, disruptors of ATP formation, Organotin miticide
15. Inhibitors of chitin biosynthesis, type 0, Lepidopteran
16. Inhibitors of chitin biosynthesis, type 1, Homopteran
17. Inhibitors of chitin biosynthesis, type 2, Dipteran
18. Ecdysone agonist/disruptor
20. Site II electron transport inhibitors
21. Site I electron transport inhibitors
22. Voltage-dependent sodium channel blocker
23. Inhibitors of lipid biosynthesis
25. Neuroactive (unknown mode of action)
26. Unknown mode of action, Azadirachtin

2 OMRI listed: Listed by the Organic Materials Review Institute for use in organic production.

* Restricted Use Only.

Table 10. Breakeven production costs for sweet corn at various yield levels in the Miami-Dade County area, 2004-05.

		Yield (crates/acre)				
	Cost per acre	**250**	**275**	**300**	**325**	**350**
Variable costs	$1,857.05	$7.43	$6.75	$6.19	$5.71	$5.31
Fixed costs	$1,514.75	$6.06	$5.51	$5.05	$4.66	$4.33
Harvest cost/unit		$2.98	$2.98	$2.98	$2.98	$2.98
Total cost/unit		$16.47	$15.24	$14.22	$13.35	$12.61

Table 11. Breakeven production costs for sweet corn at various yield levels in the Palm Beach County area, 2004-05.

		Yield (crates/acre)				
	Cost per acre	**200**	**225**	**250**	**275**	**300**
Variable costs	$1,638.22	$8.19	$7.28	$6.55	$5.96	$5.46
Fixed costs	$1,455.04	$7.28	$6.47	$5.82	$5.29	$4.85
Harvest cost/unit		$3.28	$3.28	$3.28	$3.28	$3.28
Total cost/unit		$18.75	$17.03	$15.65	$14.53	$13.59