



This is a section from the

2019

Mid-Atlantic

Commercial Vegetable

Production Recommendations

The manual, which is published annually, is **NOT** for home gardener use.

The **full manual**, containing recommendations specific to New Jersey, can be found on the Rutgers NJAES website in the Publications section:

<http://njaes.rutgers.edu/pubs/publication.asp?pid=E001>.

The **label** is a legally-binding contract between the user and the manufacturer. The user must follow all rates and restrictions as per label directions. The use of any pesticide inconsistent with the label directions is a violation of Federal law.

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

F. Commodity Recommendations

Pesticide Use Disclaimer

THE LABEL IS THE LAW

Before using a pesticide, check the label for up to date rates and restrictions.

Labels can be downloaded from: <http://www.cdms.net/>, <https://www.greenbook.net/> or <http://www.agrian.com/labelcenter/results.cfm>

Guide to the Recommended Pesticide Tables in the Following Crop Chapters:

1. Pesticides are listed by **group or code number based on chemical structure and mode of action**, as classified by the Weed Science Society of America (WSSA) for herbicides, the Insecticide Resistance Action Committee (IRAC) for insecticides, and the Fungicide Resistance Action Committee (FRAC) for fungicides.
If the number is in bold font, the product may have resistance concerns.
2. For **restricted use pesticides**, the restricted active ingredients are labeled with a *. See the Pesticide Safety chapter for more information.
3. **In addition to the pesticides listed below, other formulations or brands with the same active ingredient(s) may be available. ALWAYS CHECK THE LABEL:**
 - a) to ensure a pesticide is labeled for the same use,
 - b) to ensure the pesticide is labeled for the desired crop, and
 - c) for additional restrictions.
4. All pesticide recommendations are made for spraying a **broadcast area of 1 acre** (43,560 square feet). **Adjust the rate for banded applications** (for more information, see the Pest Management chapter, Calibrating Granular Applicators section).
5. Check the label for the maximum amount of pesticide per application and the maximum number of applications per year.
6. **Bee Toxicity Rating (Bee TR):** N=nontoxic; L=minimum impact on bees; M=moderately toxic, can be used if dosage, timing and method of application are correct, but should NOT be applied directly to crop if bees are present; H=highly toxic, severe losses expected, -- = data not available.

Sweet Corn

Recommended Varieties

Type	Variety	Relative Maturity	Kernel Type ¹	Disease Resistance ²					Bt Insect Resistance ³
				Et	Pst	Ps	MDMV	Bm	
Fresh Market Bicolor Varieties	Temptation	72	Sugary Enhanced						
	Temptation II (GMO)	72	Sugary Enhanced						Performance
	Sweet Rhythm	73	Synergistic	I	I				
	Awesome	74	Synergistic		I				
	BSS0977(GMO)	78	Supersweet	I	I	R			Attribute
	Xtra-Tender 278A	78	Augmented Shrunken	I	I			I	
	Montauk	79	Synergistic	I	I				
	Obsession	79	Augmented Shruken	I	I	R			
	Obsession II (GMO)	79	Augmented Shruken	I	I	R			Performance
	Summer Sweet 7902R	79	Supersweet	R	I	R		I	
	BC0805 (GMO)	82	Synergistic			I		I	Attribute
	Providence	82	Synergistic			R		I	
	Serendipity	82	Synergistic					I	
Delectable	84	Sugary Enhanced	I	I	R	R			
Fresh Market White Varieties	Mirai 421W	71	Mirai	I	I	I			
	Xtra-Tender 372	72	Augmented Shruken		I			I	
	Piscataway	72	Supersweet						
	Sweet Ice	74	Synergistic		I				
	Whiteout	74	Sugary Enhanced	I	I				
	Eden	76	Augmented Shruken						
	Xtra-Tender 378A	78	Augmented Shruken		I			I	
	Munition	78	Supersweet	I	I	R	I		
	Summer Sweet 8909MRW	79	Supersweet	I		R		I	
	SV1580SC	80	Supersweet	I		R			
	Mattapoisett	80	Synergistic	I	I	I			
	WSS0987 (GMO)	81	Supersweet	I		R			Attribute
	Devotion	82	Augmented Shruken		I				
	Silver King	82	Sugary Enhanced	I	I	I		I	
Argent	83	Sugary Enhanced	I	R	I				
Fresh Market Yellow Varieties	Vision	73	Augmented Shruken		I			I	
	GSS0966 (GMO)	78	Supersweet	I	I	R			Attribute
	Summer Sweet 7210R	78	Supersweet	R	R	R		R	
	Incredible	82	Sugary Enhanced		I	R	R		
Processing Yellow Varieties ⁴	Protégé	77	Supersweet	R	I	R		R	
	GH 6462	83	Sugary Normal	I	I	R	I	I	
	GH 9597	83	Sugary Normal	I	R	R	R		
	SS Jubilee Plus	83	Supersweet			R		I	
	GSS 1453	84	Supersweet	R		R			
	GSS 2259P	84	Supersweet	I	I	R	R		
	Overland	84	Supersweet	R	R	R		I	

¹See also: "Sweet Corn Genetics and Isolation Requirements" below.

²R=resistance; I=intermediate/partial resistance.

Et=Northern corn leaf blight caused by *Exserohilum turcicum*,

Pst=Stewart's wilt caused by *Pantoea stewartii*,

Ps=Common rust caused by *Puccinia sorghi*,

MDMV=Maize dwarf mosaic virus,

Bm=Southern corn leaf blight caused by *Bipolaris maydis*.

³Insect resistance from *Bacillus thuringiensis* transgenes is available in some varieties. Attribute varieties have the Cry1Ab gene for corn earworm and European corn borer resistance. Performance Series varieties have the Cry1A.105 and Cry2AB genes for corn earworm, European corn borer and fall armyworm resistance, as well as the transgenes conferring glyphosate resistance.

⁴Processors requirements must be considered. Consult the DE Extension Vegetable and Small Fruits Program for variety trial results at: <http://extension.udel.edu/ag/vegetable-fruit-resources/vegetable-small-fruits-program/variety-trial-results/>.

Recommended Nutrients Based on Soil Tests

In addition to using the table below, check the suggestions on rate, timing, and placement of nutrients in your soil test report and the Soil and Nutrient Management chapter. Your state’s soil test report recommendations and/or your farm’s nutrient management plan supersede recommendations found below.

Sweet Corn	N (lb/A)	Soil Phosphorus Level				Soil Potassium Level				Nutrient Timing and Method
		Low	Med	High (Opt)	Very High	Low	Med	High (Opt)	Very High	
		P ₂ O ₅ (lb/A)				K ₂ O (lb/A)				
Fresh Market	125-175	160	120	80	0 ^{1,2}	160	120	80	0 ^{1,2}	Total nutrient recommended
	40-60 ³	120	100	60	0 ¹	120	100	60	0 ¹	Broadcast and disk-in
	20	40	20	20	0 ^{1,2}	40	20	20	0 ^{1,2}	Band-place with planter
	50-100 ³	0	0	0	0	0	0	0	0	Sidedress when corn is 12 inches tall
Processing	150-200	160	120	80	0 ^{1,2}	160	120	80	0 ^{1,2}	Total nutrient recommended
	55-80	120	100	60	0 ¹	120	100	60	0 ¹	Broadcast and disk-in
	20	40	20	20	0 ^{1,2}	40	20	20	0 ^{1,2}	Band-place with planter
	50-100	0	0	0	0	0	0	0	0	Sidedress 2 weeks after emergence

Apply 1 to 2 lb/A of boron (B) with broadcast fertilizer; see also Table B-7 in the Soil and Nutrient Management chapter. ¹In VA, crop replacement values of 40 lb/A of P₂O₅ and 40 lb/A of K₂O are recommended on soils testing Very High. ²For early planting when soil temperatures are low, band 20 lb/A P₂O₅ and 20 lb/A K₂O when soil tests are Very High to facilitate early growth. ³On very sandy soils, reduce the amount of N applied via broadcast application and disked-in. Instead, split N applications to include an additional split when corn is 6 in. tall of 40 lb/A of N. So, N is applied with the broadcast fertilizer, at-planting in a band, when corn is 6 in. tall, and again when corn is 12 in. tall. In NJ, consult your Extension Agent for information on the approved pre-sidedress nitrate test.

Plant Tissue Testing

Plant tissue testing can be a valuable tool to assess crop nutrient status during the growing season to aid with in-season fertility programs or to evaluate potential deficiencies or toxicities. Critical sweet corn tissue test values for most recently matured leaves at the 30-inch growth stage are: N 2.5-4 %, P 0.2-0.4 %, K 2.5-4 %, 0.5-0.8 %, Mg 0.2-0.4 % and S 0.2-0.4 %. For additional nutrients and other growth stages consult with a tissue testing laboratory or this web link at the University of Florida: <http://edis.ifas.ufl.edu/ep081>.

Pre-sidedress Soil Nitrogen Test (PSNT)

The PSNT was developed to determine the need for sidedress nitrogen (N) on corn. The PSNT is effective for soils with loamy-texture and high organic matter or where manure has been applied. Sandy soils with low organic matter are already known to have low N availability. Contact your county Extension Agent/Educator for information on sampling and using the PSNT (NJ and PA only).

Sweet Corn Genetics and Isolation Requirements

Tenderness of corn kernels is determined by the silk parent. However, kernel sweetness is determined by both tassel and silk parents. Therefore, pollen from varieties and types other than the one planted in the field may interfere with sweetness, and isolation through distance or different silking dates may be necessary. For example, all sweet corn must be isolated from field and popcorn varieties by at least 500 ft. Certain sweet corn varieties must be isolated from each other by at least 500 ft or a difference in silking date of at least 12 days. The table below may be used to determine which varieties must be isolated from each other during pollination.

Variety Class	Genes Present	Variety Examples	Kernel Properties	Grow Apart from Class(es) ¹
Normal	<i>su</i>	Silver Queen, Stowells Evergreen	100% normal	Supersweet Augmented Shrunken
Sugary Enhanced (heterozygous)	<i>su, se (1 copy)</i>	Silverado, Argent	75% normal 25% sugary enhanced	Supersweet Augmented Shrunken
Sugary Enhanced (homozygous)	<i>su, se (2 copies)</i>	Table Sweet™ varieties, Silver King, Sugar Snow II, Imaculata, Brilliance	100% sugary enhanced	Supersweet Augmented Shrunken
Supersweet	<i>sh₂</i>	Snow White, Boreal, Millenium	100% supersweet	Normal Sugary Enhanced (all) Synergistic (all)
Synergistic (Heterozygous <i>se</i> with <i>sh₂</i>)	<i>su, se (1 copy)</i> <i>sh₂ (1 copy)</i>	Sweet Breed™ varieties	56% normal 19% sugary enhanced 25% supersweet	Supersweet Augmented Shrunken

Sweet Corn Genetics and Isolation Requirements - continued on next page

Sweet Corn Genetics and Isolation Requirements - continued

Variety Class	Genes Present	Variety Examples	Kernel Properties	Grow Apart from Class(es) ¹
Synergistic (Homozygous <i>se</i> with <i>sh</i> ₂)	<i>su</i> , <i>se</i> (2 copies) <i>sh</i> ₂ (1 copy)	TripleSweet™ varieties, Cinderella	75% sugary enhanced 25% tender supersweet	Supersweet Augmented Shrunken
Synergistic (Homozygous <i>se</i> with <i>bt</i> ₂)	<i>su</i> , <i>se</i> (2 copies) <i>bt</i> ₂ (1 copy)	Misquamicut, Avalon	75% sugary enhanced 25% tender supersweet	Supersweet Augmented Shrunken
Augmented Shrunken	<i>se</i> (2 copies) <i>sh</i> ₂ (2 copies)	Gourmet Sweet™ varieties, Multisweet™ varieties, Xtra-Tender™ varieties	100% tender supersweet	Normal Sugary Enhanced (all) Synergistic (all)
Mirai™	<i>su</i> , <i>se</i> (2 copies) <i>sh</i> ₂ (2 copies)	Mirai 002	100% tender supersweet	None necessary

¹To avoid starchy kernels, isolate by ≥ 500 ft or ≥ 12 days in silking.

Seed Treatment

Request that seed be treated with fungicides, see Disease Control below. For seed corn maggot and wireworm control, see Insect Control below. Super sweet (*sh*₂) varieties are more difficult to establish than other types. Handle seed gently and use plateless planters to prevent seed damage. Soil temperature and soil moisture should be optimal to reduce seed decay and obtain good stands.

Seeding and Spacing

Sow in rows 30-36 inches apart and at a depth of 1-1.5 inches. First sowing is as early as late March for warmer regions of the mid-Atlantic, and on sandy soils, and as late as early May in cooler regions. Fresh market growers often plant successively through July to ensure continuity of supply. Use varieties that are resistant to frost and chilling injury for early plantings.

Fresh Market: Small-eared early varieties are sown at an in-row spacing of 8-10 inches. Larger-eared mid- and late-season varieties are planted at an in-row spacing of 10-12 inches. This equates to planting densities ranging from 14,500-22,000/A.

Processing: The recommended planting density is usually 22,000-24,000/A, though some varieties may be planted at densities of up to 30,000/A. Consult the seed company for the target density that best maximizes crop yield and quality.

Mulching

Using clear plastic mulch as a row cover can improve stands, conserve moisture, and result in earlier maturity. Corn is seeded in the usual manner except 10-20 days earlier in double rows 14 inches apart and on 5-6 ft centers. Apply herbicide and then cover with clear plastic. Using ridges between double rows or wire hoops to allow space for corn seedlings to grow vertically. Allow plastic to remain over plants for 30 days after emergence, then cut and remove plastic from the field. Plants can then be grown out in the usual manner. Before using this system, it is recommended that the soil is tested for nematodes. If present, control measures are necessary before the above procedure can be used. Clear plastic will allow weeds to germinate and grow quickly, and premergence herbicides should be used under the plastic. Otherwise weeds become too large to be effectively controlled with herbicides after the plastic is removed. Use a cold-tolerant variety to avoid uneven stand and uneven vigor. Sweet corn can also be grown by planting as seed or transplants through black plastic or IRT mulch in early plantings using plastic mulch planters.

Harvest and Handling

Fresh Market: Harvesting sweet corn at the proper stage is critical for its sweetness and tenderness. In the field, sweet corn stays in prime condition for only 1-2 days. As the ear reaches prime condition the silks begin to dry down, the husk fills out with plump kernels, and the kernels exude a milky liquid when punctured with the thumbnail. Ear tips should be filled. Sweet corn approaches maturity 18-22 days after silking and should be picked daily, preferably early in the morning at low field heat. After prime harvest time, sugars in the kernel convert to starch and the hull becomes tough. Supersweet varieties maintain sweetness longer than other varieties and extra tender varieties maintain eating quality for a longer period.

Sweet corn may be harvested by hand or mechanically. Handpicking is done by grasping the ear near the base and sharply twisting it downward. Mechanical harvesters are more efficient; however, the entire crop is picked when primary ears are ready, and any secondary ears will not be marketable.

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Corn is normally piled on a wagon in the field or is put in baskets or bins and then graded/packed at a nearby packing area. Sweet corn should be trimmed uniformly to eliminate flag leaves and long shanks. If left on the ear, they will cause packaging problems and induce further moisture loss. Objectionable kernel denting may occur from a moisture loss of 2% or less. Only first-quality sweet corn devoid of defects and of uniform maturity, color, shape, and size should be selected and packed. Any ears exhibiting signs of disease or mechanical or insect damage should be discarded along with any ears that lack adequate shuck coverage.

For optimum sweetness and tenderness, sweet corn should be cooled immediately after harvest and kept near 32°F (0°C). Hydrocooling is the most efficient and effective cooling method. Corn is immersed in ice cold water, which quickly removes all field heat. Hydrocooling is recommended for sweet corn that is shipped long distance. For smaller growers and short distance shippers, ice can be added to the crate (or burlap bags) during packing; 1 lb ice/5 lb corn is usually sufficient. Ice can also be blown on top of the crates when placed in a cooler or refrigerated truck. Sweet corn placed in cold storage before being pre-cooled will not retain freshness for nearly as long as hydrocooled or iced sweet corn.

Sweet corn for shipping is most commonly packaged in wire bound crates or perforated wax boxes. Pallet or bin boxes are sometimes used, however, corn packed in this manner will be hard to cool completely and ears will heat up in the center of the bin from respiration. Burlap bags may be used for local shipments.

Processing Sweet Corn: Harvest of standard sugary (su) and sugary-extender (se) varieties begins when kernels reach 70-75% moisture. Supersweet (sh₂) varieties have a much higher sugar content than su or se varieties and maintain their sugar content longer after harvest. They are usually harvested at 77-78% moisture. Harvest timing will be determined by the processing companies.

Weed Control

THE LABEL IS THE LAW - See the Pesticide Use Disclaimer on the first page of section F. Recommended Herbicides

1. Identify the weeds in each field and select recommended herbicides. More information is available in the "Herbicide Effectiveness on Common Weeds in Vegetables" (Table E-2) in the Pest Management chapter.
2. Minimize herbicide resistance development. Identify the herbicide site of action group number and follow recommended good management practices; **bolded group numbers in tables below are herbicides at higher risk for selecting resistant weed populations.** Include non-chemical weed control whenever possible.

1. Non-Selective or Burndown						
Group	Product Name	Product Rate	Active Ingredient (*=Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
9	Roundup PowerMax 4.5L "Generic" glyphosate 3L	16 to 32 fl oz/A 24 to 48 fl oz/A	glyphosate	0.75 to 1.13 lb acid equivalent/A	--	4
-Apply before or after seeding but before crop emergence. (Ensure planter slits are fully closed if applying after planting.) -Tank-mix with other herbicides (see table below) for enhanced burndown and/or residual weed control. -Glyphosate controls many perennial weeds as well as annuals if applied when the weed is actively growing and has reached the stage of growth listed on the label. -Glyphosate may be applied in clear liquid nitrogen fertilizers and clear liquid complete-analysis fertilizers, but it may be less effective on certain annual grasses and perennials. Do not use glyphosate with suspension-type liquid fertilizers. -Repeat applications are allowed, with maximum application of 5.3 qt/A per year.						
22	Gramoxone SL 2.0	2.4 to 4.0 pt/A	paraquat*	0.6 to 1.0 lb/A	--	24
-Apply before or after seeding but before crop emergence. (Ensure planter slits are fully closed if applying after planting.) Tank-mix with other herbicides (see table below) for enhanced burndown and/or residual weed control. Paraquat may not control established grasses. -Apply in 20 to 60 gal/A for control of emerged annual weeds. Spray coverage is essential for optimum control. -Add 16 to 32 oz non-ionic surfactant/100 gal of spray. -Phosphate-containing liquid fertilizer solutions diminish paraquat activity if used as a carrier. -Use appropriate precautions when handling paraquat to minimize exposure to the herbicide. Do not use flood jet tips larger than size 20 or spacing greater than 40 inches. -Rainfastness 30 minutes. -A maximum of 3 applications per year are allowed.						

2. Soil-Applied (Preplant Incorporated or Preemergence)						
Group	Product Name	Product Rate	Active Ingredient (*=Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
3	Prowl 3.3E Prowl H2O 3.8CS	1.8 to 4 pt/A 2 to 4 pt/A	pendimethalin	0.75 to 1.65 lb/A 0.95 to 1.9 lb/A	--	24
<p>-Control several common annual grasses and broadleaves but does not control yellow nutsedge and ragweed. -Plant corn at least 1.5 inches deep to avoid Prowl injury; however most sweet corn seeds need to be seeded less than 1 inch for optimum emergence. -Do not incorporate. Must be applied after planting up until corn reaches 30 inches tall. -Preemergence applications can injure corn. Delaying application until spike stage helps maximize crop safety. -Prowl H2O and Satellite HydroCap are water-based capsule suspension formulation that provides similar weed control as the older 3.3E product but causes less staining and odor. Other generic pendimethalin products are available.</p>						
5	Atrazine 4FL	1.0 to 1.5 qt/A	atrazine*	1.0 to 1.5 lb/A	--	12
<p>-Primarily controls broadleaf weeds and provides some suppression of annual grasses. Mostly used in combination with other herbicides especially acetamides. Some prepackaged mixture examples include Bicep II Magnum, Harness Xtra, Keystone NXT, and Guardsman Max. On highly erodible ground with less than 30% surface residue, no more than 1.6 qt may be applied prior to crop emergence. Atrazine Use Restrictions -Preplant or Preemergence: On highly erodible soils (as defined by the U.S. Natural Resources Conservation Service): -Fields where more than 30% of the soil surface is covered with plant residue at planting, apply a maximum of 2 lb/A of active ingredient as a broadcast spray. Fields where less than 30% of the soil surface is covered with plant residue at planting, apply a maximum of 1.6 lb/A of active ingredient as a broadcast spray. -Apply a maximum of 2 lb/A of active ingredient as a broadcast spray. -Postemergence: If no atrazine was applied prior to crop emergence, use a maximum rate of 2 lb/A of active ingredient. If a soil-applied application was made in the same calendar year, the combined preplant or preemergence and postemergence applications may not exceed 2.5 lb/A of active ingredient. Safety Precautions for Using Atrazine -Do not mix, load, or apply within 50 ft of drinking water wells, livestock wells, agricultural drainage wells, irrigation wells, abandoned wells, or sinkholes. Do not mix or load within 50 ft of intermittent streams, perennial streams, rivers, lakes, or reservoirs. -Do not apply within 200 ft of lakes or reservoirs. Do not apply within 66 ft of the points where surface water runoff enters intermittent streams, perennial streams, or rivers. The 66-ft buffers should be planted to a crop or seeded with grass on highly erodible land.</p>						
15	Dual II Magnum 7.64E Cinch 7.64E	1.0 to 2.0 pt/A	s-metolachlor	0.96 to 1.91 lb/A	30	24
<p>-Dual II Magnum/Cinch are similar in activity to Harness, Outlook, and Surpass NXT. Dual II Magnum/Cinch contains a crop-safening agent. Primarily controls annual grasses, controls or suppresses yellow nutsedge, and suppresses certain broadleaf weeds. -Use preplant incorporated to improve yellow nutsedge control. Combine with atrazine to improve control of most broadleaf weeds. -Also commonly sold as prepackaged mixture e with atrazine: o Bicep II Magnum 5.5L at 2.1 qt/A = 1.3 pt Dual II Magnum 7.64E + 1.6 qt atrazine 4L o Bicep Lite II Magnum 6L at 1.3 qt/A = 1.13 pt Dual II Magnum 7.64E + 0.9 qt atrazine 4L o Cinch ATZ 5.5L at 2.1 qt/A = 1.3 pt Dual II Magnum 7.64E + 1.6 qt atrazine 4L -Other generic versions of metolachlor and s-metolachlor may be available, and may or may not be labeled for use in the crop and may or may not include the safener for corn</p>						
15	Harness 7E Surpass NXT 7E Breakfree NXT 7E	1.25 to 2.75 pt/A 1.5 to 3 pt/A 1.5 to 3 pt/A	acetochlor	1 to 2.4 lb/A 1.09 to 2.6 lb/A 1.09 to 2.6 lb/A	--	12
<p>-Acetochlor products can be applied preplant incorporated or preemergence but prior to weed emergence, and before corn height exceeds 11 inches. Control many annual grasses and yellow nutsedge as well as certain small seeded broadleaves. -Check label for specific rate depending on soil type and organic matter. Also commonly sold as prepackaged mixture with atrazine: o Harness Xtra 5.6L at 2.5 qt/A = 2.2 pt Harness 7E + 1.6 qt atrazine 4L o Degree Xtra 4.04ME at 3 qt/A = 4.3 pt Degree 3.8ME + 1 qt atrazine 4L o Keystone NXT 5.6SE at 2.5 qt/A = 2.2 pt Surpass NXT 7E + 3 pt atrazine 4L o Breakfree NXT 5.6SE at 2.5 qt/A = 2.2 pt Surpass NXT 7E + 3 pt atrazine 4L -Other products and formulations may be available.</p>						
15	Outlook 6E	10 to 21 fl oz/A	dimethenamid	0.47 to 0.98 lb/A	50	12
<p>-Outlook is similar in activity to Dual, and Harness. -Primarily controls annual grasses, controls or suppresses yellow nutsedge, and suppresses certain broadleaf weeds. Local data has shown sweet corn injury with Outlook applied preemergence on coarse-textured soils. Outlook may be applied preemergence on up to 12-inch-tall corn prior to weed emergence. -Incorporation improves control of yellow nutsedge. -Prepackaged mixture with atrazine: Guardsman Max 5L at 3.5 pt/A = 16 fl oz Outlook 6E + 1.4 qt atrazine 4L -Prepackaged mixture with saflufenacil (Sharpen): Verdict 5.57EC at 10 fl oz = 8.5 fl oz Outlook 6E + 2 fl oz Sharpen 2.85L</p>						

2. Soil-Applied (Preplant Incorporated or Preemergence) - continued on next page

F Sweet Corn

2. Soil-Applied (Preplant Incorporated or Preemergence). - continued

15	Zidua 85WG Zidua SC 4.17L Anthem Flex Anthem Maxx 4.3SE	1.5 to 4oz/A 1.75 to 6.5 fl oz/A 3.5 to 6 fl oz/A 3 to 6 fl z/A	pyroxasulfone carfentrazone fluthiacet	(± or	0.06 to 0.21 lb/A 0.06 to 0.21 lb/A 0.1 to 0.17 0.1 to 0.2 lb/A	37	12
<p>-Zidua contains the single active ingredient pyroxasulfone. Anthem Flex contains carfentrazone (Aim) and Anthem Maxx contains fluthiacet (Cadet). However, carfentrazone or fluthiacet do not provide any residual weed control. Pyroxasulfone has annual grass activity similar to Dual, Harness, Outlook, Surpass, etc., but also provides good control of several annual broadleaves. These herbicides can be applied preplant (surface or incorporated) up to 45 d before planting or preemergence. Rates can be adjusted for soil type or 2-pass application programs. Corn must be planted at least 1 inch deep.</p> <p>-These herbicides can be tank-mixed with atrazine or other corn herbicides to broaden weed control spectrum.</p> <p>-Do not apply Anthem Flex or Anthem Maxx on coarse-textured soils, or medium-textured soils with less than 2% organic matter. Stunting has been observed with pyroxasulfone on coarse-textured soils.</p>							
27	Callisto 4SC	5.3 to 7.7 fl oz/A	mesotrione		0.166 to 0.24 lb/A	45	12
<p>-Primarily controls common lambsquarters and many other annual broadleaf weeds, including triazine resistant biotypes, but Callisto is weak on ragweed and morninglory species. Typically combined with other herbicides to improve control of grasses and broaden broadleaf spectrum. (See comments under Lumax, Lexar, Zemax, and Acuron for more details about these prepackaged mixtures.)</p> <p>-Cold weather that slows corn growth will also retard recovery from injury following preemergence treatments.</p> <p>-Sweet corn varieties differ in sensitivity to mesotrione.</p> <p>-Severe crop injury may occur if an organophosphate or carbamate insecticide is applied within 7 days of Callisto.</p> <p>-See the sweet corn section of the Callisto label for additional use precautions.</p>							
27, 15, 5	Lexar EZ 3.7SC Lumax EZ 3.67SC Acuron 3.44SC Acuron Flexi 3.26SC Zemax 3.67SC	3 to 3.5 qt/A 2.7 to 3.25 qt/A 2.5 to 3 qt/A 2 to 2.25 qt/A 2 to 2.4 qt/A	mesotrione + s-metolachlor + atrazine (± bicyclopyrone)		2.78 to 3.24 lb/A 2.48 to 2.98 lb/A 2.15 to 2.58 lb/A 1.63 to 1.83 lb/A 1.8 to 2.2 lb/A	45	24
<p>-Lexar EZ and Lumax EZ are mixtures of s-metolachlor (Dual II Magnum), mesotrione (Callisto), and atrazine.</p> <p>-Acuron contains the same active ingredients as Lumax/Lexar with the addition of another Group 27 herbicide, bicyclopyrone. In general, it controls a broader weed spectrum and is better on ragweed, cocklebur, and annual morninglory, and effective on many annual broadleaves and some grasses compared to Lumax/Lexar.</p> <p>-The typical use rates in all tillage systems are 3 qt/A Lexar EZ, 2.7 qt/A Lumax EZ, and 2.5 qt/A Acuron. These products may be applied broadcast on up to 12-inch-tall corn, but prior to annual grass emergence.</p> <p>-Do not apply more than 3.5 qt/A Lexar EZ, 3.25 qt/A Lumax EZ, or 3 qt/A Acuron per growing season.</p> <p>-Sweet corn varieties differ in sensitivity to mesotrione.</p> <p>-Do not apply Lexar, Lumax, or Acuron early POST if the corn was treated with Counter insecticide.</p> <p>-Do not tank-mix Lexar, Lumax, or Acuron with organophosphate (OP) or carbamate insecticides and apply as a foliar POST application.</p> <p>Do not make a foliar POST application of any OP or carbamate insecticide within 7 days before or 7 days after a Lexar EZ, Lumax EZ, or Acuron application, or severe corn injury may occur. Corn, soybeans, small grains, and sorghum may be planted the spring following Lexar EZ, Lumax EZ, or Acuron application. Zemax is similar to Lumax EZ but contains no atrazine. The typical use rate is 2 qt/A.</p> <p>-Do not apply any of these herbicides postemergence in sweet corn.</p>							

3a. Postemergence

Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
2	Accent Q 54.5WG	0.9 oz/A	nicosulfuron	0.031 lb/A	--	4
<p>-Apply as a broadcast or with drop nozzles as a directed spray as an early postemergence rescue treatment to control emerged annual grasses. Treat sweet corn with a broadcast spray or with drop nozzles as a directed spray up to 18 inches tall or up to and including 6 leaf collars (V6).</p> <p>-Do not treat sweet corn more than 18 inches tall to control many annual grasses and certain annual broadleaf weeds.</p> <p>-Tank-mix with atrazine to increase the spectrum of weeds controlled.</p> <p>-Add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal of spray solution).</p> <p>-Accent Q is safe to apply to certain varieties, but injures or kills others. Contact your DuPont Crop Protection Sales Representative for information on local sweet corn varieties that have been evaluated for tolerance to Accent Q.</p> <p>-Do not use if organophosphate (OP) insecticides have been applied to the crop or tank-mix with bentazon (Basagran) or the risk of crop injury may increase.</p> <p>-Do not tank-mix with 2,4-D otherwise grass control will be reduced.</p> <p>-Accent Q is an ALS inhibitor, Group 2 herbicide, and there is widespread resistance in the region to this family of herbicides.</p> <p>-Do not make more than one application of Accent Q per year. The following prepackaged mixture also contains nicosulfuron: o Revulin Q 51.2WG at 4 oz/A = 1.1 oz Accent Q 54.5WG + 3 fl oz Callisto 4SC</p> <p>-Rainfastness is 4 hrs.</p>						

3a. Postemergence - continued on next page

3a. Postemergence - continued

2	Sandea 75DF Permit 75DF	0.5 to 0.66 oz/A	halosulfuron	0.023 to 0.031 lb/A	30	12
<p>-Apply to control yellow nutsedge and broadleaf weeds, including common cocklebur, redroot pigweed, smooth pigweed, ragweed species, and velvetleaf. Sandea/Permit applied postemergence will not control common lambsquarters or eastern black nightshade, and will only suppress morningglory species.</p> <p>-Spray before corn reaches 8" in height, or use drop nozzles when corn is over 8" tall to avoid spraying the foliage and into the whorl.</p> <p>-Always add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal).</p> <p>-Corn varieties may vary in sensitivity to Sandea. Use caution when treating new varieties. Do not apply to "Jubilee".</p> <p>-Do not use if organophosphate (OP) insecticides have been applied to the crop, or the risk of crop injury may increase.</p> <p>-Sandea is an ALS inhibitor, Group 2 herbicide, and there is widespread resistance in the region to this family of herbicides.</p> <p>-Rainfastness is 4 hrs.</p>						
4	2,4-D amine 4L	0.5 to 1.0 pt/A	2,4-D amine	0.25 to 0.5 lb/A	45	48
<p>-Apply after corn and weeds emerge. Use drop nozzles when corn is over 8" tall to avoid spraying the foliage or into the whorl.</p> <p>-Warm, wet weather at application may increase the possibility of crop injury. Use the lower recommended rate under these conditions.</p> <p>-Delay cultivation for 8-10 days after treatment to avoid damaging corn due to temporary brittleness sometimes caused by 2,4-D.</p> <p>-Sweet corn varieties differ in 2,4-D tolerance. Super sweet varieties may be more sensitive than other varieties. Injury will be less when the minimum recommended rate is used. Use with caution on new varieties. At high rates, 2,4-D may cause temporary injury to corn.</p> <p>-Do not apply from tasseling to dough stage. Ester formulations, although labeled, are more subject to volatilization and movement to sensitive crops and are not recommended. Rainfastness is 6 to 8 hrs.</p>						
4	Starane Ultra 2.8L	0.4 pt/A	fluroxypyr	0.14 lb/A	31	12
<p>-Apply in 1 or 2 applications to control certain annual and perennial broadleaf weeds when sweet corn is less than V5 growth stage.</p> <p>-Starane Ultra has a limited control spectrum but the label lists weeds such as chickweed, cocklebur, ragweed, purslane, bindweed, dogbane, morningglory, and velvetleaf. Starane can cause poor development of brace roots. Rainfastness is 1 hr.</p> <p>-Maximum Starane Ultra application per year: 0.7 pt/A and no more than 2 applications per crop season.</p>						
4	Stinger 3A	2.0 to 10.5 fl oz/A	clopyralid	0.047 to 0.25 lb/A	30	12
<p>-Apply in 1 or 2 applications to control certain annual and perennial broadleaf weeds when sweet corn is less than 18 inches tall.</p> <p>-Stinger controls weeds in the Composite and Legume plant families. Common annuals controlled include galinsoga, ragweed species, common cocklebur, groundsel, pineappleweed, clover, and vetch. Perennials controlled include Canada thistle, goldenrod species, aster species, and mugwort (wild chrysanthemum). Stinger is very effective on small seedling annual and emerging perennial weeds less than 2-4 inches tall, but is less effective and takes longer to work when weeds are larger.</p> <p>-Use 2.0 to 4.0 fl oz/A to control annual weeds less than 2 inches tall. Increase the rate to 4.0 to 8.0 fl oz/A to control larger annual weeds. Apply the maximum rate of 10.5 fl oz/A, in 1 or split into 2 applications to suppress or control perennial weeds.</p> <p>-Spray additives are not needed or required by the label, and are not recommended. Observe follow-crop restrictions, or injury may occur from herbicide carryover. Rainfastness is 6 hrs. Maximum Stinger application per year: 10.5 fl oz/A.</p>						
5	Atrazine 4L	1.0 to 2.0 qt/A	atrazine*	1.0 to 2.0 lb/A	--	12
<p>-Primarily controls broadleaf weeds. Apply postemergence when weeds are less than 2 inches tall. Add oil concentrate to be 1% of the spray solution. Do not apply if corn is greater than 12" tall</p> <p>-Do not exceed the maximum rate per acre per year listed on the label for your soil's erodibility class.</p> <p>-ATRAZINE RESTRICTIONS: Refer to "Atrazine Use Restrictions" in the Soil-applied section above.</p> <p>-When this and other atrazine treatments are used, do not double-crop during this season. Cover crops after corn are satisfactory providing the recommended rate of atrazine is not exceeded. Mold-board plowing before planting grain or vegetables the following spring will minimize the risk of atrazine residue injury. See label for specific crop rotation restrictions. Rainfastness is 1 to 2 hrs.</p>						
6	Basagran 4L	1.5 to 2.0 pt/A	bentazon	0.75 to 1.0 lb/A	--	48
<p>-See label for susceptible broadleaf weeds; results are better when weeds are young. Basagran will provide partial control of yellow nutsedge. Basagran will not control grasses or pigweeds. Cultivation within 10-14 days will increase control. Rainfastness is 8 hrs.</p>						
14	Aim 2EC	0.5 fl oz/A	carfentrazone	0.008 lb/A	--	12
<p>-Apply before corn reaches 8 inches in height to control seedling broadleaf weeds including pigweed species, common lambsquarters, morningglory species, eastern black nightshade, and velvetleaf. Aim will not control ragweed species.</p> <p>-Tank-mix with atrazine at reduced rates or another broadleaf weed herbicide to increase the spectrum of weeds controlled. Do not tankmix with Basagran due to concerns for crop safety. Always add nonionic surfactant to be 0.25% of the spray solution (1.0 qt/100 gal of spray solution). Expect to see speckling on the crop foliage after application. Initially the injury may appear to be substantial, but it is not systemic and corn outgrows the injury rapidly.</p> <p>-Variety sensitivity to Aim may vary. Use caution when treating new varieties. Weather conditions may affect the degree of injury observed. Injury may be more severe during periods of warm, cloudy weather with high humidity and plentiful soil moisture when corn growth is rapid and "soft." To reduce the risk of crop injury, use drop nozzles when corn is over 8 inches tall to avoid spraying the foliage and into the whorl. Rainfastness is 1 hr.</p>						
14	Cadet 0.91EC	0.6 to 0.9 fl oz/A	fluthiacet	0.004 to 0.006 lb/A	40	12
<p>-Apply before corn is 48 inches tall or prior to tasseling. While Cadet has a wide application window, it will only control weeds less than 2 inches tall, except velvetleaf which is very sensitive to Cadet. Cadet should not be tankmixed with Basagran due to concerns of crop safety. See comments for carfentrazone above. Rainfastness is 1 hr.</p> <p>-Also available as a prepackaged mixture with mesotrione:</p> <p>o 3 fl oz Solstice 4SC = 0.7 fl oz Cadet 0.91E + 2.85 fl oz Callisto 4SC</p>						

3a. Postemergence - continued on next page

F Sweet Corn

3a. Postemergence - continued

27	Callisto 4SC	3.0 fl oz/A	mesotrione	0.094	45	12
<p>-Primarily controls common lambsquarters and many other annual broadleaf weeds, including triazine resistant biotypes, but Callisto is weak on ragweed and morningglory species.</p> <p>-Always add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal of spray solution), but do not add oil concentrate, liquid fertilizer, or AMS, or tank-mix Callisto and bentazon (Basagran), or severe crop injury may be observed. Temporary minor injury, appearing as whitening of the new foliage, may occur. The crop will quickly outgrow minor injury with no effect on yield or earliness.</p> <p>-Tank-mix with 0.25 to 1.0 lb ai/A of atrazine for improved control and to broaden the spectrum of weed control. Research results support the use of at least 0.5 lb ai/A of atrazine. Do not apply tank-mixes of Callisto and atrazine to corn greater than 12 inches tall.</p> <p>-Sweet corn varieties differ in sensitivity to mesotrione. The majority of varieties may exhibit slight injury symptoms. Certain varieties are tolerant while others exhibit more noticeable injury. No variety was severely injured by the recommended rates applied with nonionic surfactant.</p> <p>-Do not tank-mix Callisto with organophosphate or carbamate insecticides, or apply if the crop was treated with Counter or Lorsban, or severe crop injury may occur. See the sweet corn section of the Callisto label for additional use precautions.</p> <p>-Prepackaged mixture that also contain mesotrione for postemergence use:</p> <ul style="list-style-type: none"> o Revulin Q 51.2WG at 4 oz/A = 1.1 oz Accent Q 54.5WG + 3 fl oz Callisto 4SC o Solstice 4SC at 3 fl oz/A = 0.7 fl oz Cadet 0.91E + 2.85 fl oz Callisto 4SC <p>-Rainfastness is 1 hr.</p>						
27	Impact/Armezon 2.8SC	0.75 to 1.0 fl oz/A	topramezone	0.016 to 0.022 lb/A	45	12
<p>-Apply postemergence to control many annual broadleaf weeds, including common lambsquarters and triazine-resistant broadleaf weed biotypes, and annual grasses. Impact/Armezon will control/suppress crabgrass and most other annual grass species, but may not control certain grass species or grasses larger than the maximum recommended size when treated. Most broadleaf weeds should be treated before they are 6 inches tall and grass weeds should be treated before 2 inches in height. Use the higher recommended rate to suppress or control panicum species or in rescue applications where the target weeds have grown beyond the size indicated on the label.</p> <p>-Add oil concentrate (COC) to be 1% of the spray solution (1 gal/100 gal of spray solution). In addition, the label requires N fertilizer (liquid or AMS).</p> <p>-Tank-mix with 0.25 to 1.0 lb ai/A of atrazine for improved control and to broaden the spectrum of weed control. Research results support the use of at least 0.5 lb ai/A of atrazine. Do not apply tank-mixes of Impact/Armezon and atrazine to corn greater than 12 inches tall.</p> <p>-Do not use postemergence if mesotrione (e.g., Callisto, Lumax, Lexar, Acuron) was used preemergence. Do not tank-mix with Callisto.</p> <p>-Impact/Armezon has an 18 month replant restriction for most vegetables.</p> <p>-Do not apply more than 1 fl oz/A during the growing season. Rainfastness is 1 hr.</p> <p>-Prepackaged mixture that also contains topramezone:</p> <ul style="list-style-type: none"> o Armezon PRO 5.35EC at 24 fl oz/A = 0.76 fl oz Armezon 2.85SC (or Impact) + 18 fl oz Outlook 6E 						
27	Laudis	3.0 fl oz/A	tembotrione	0.082 lb/A	--	12
<p>-Apply postemergence to control many annual broadleaf weeds, including common lambsquarters and triazine-resistant broadleaf weed biotypes, and many annual grasses. Laudis will control/suppress most annual grass species, but may not control certain grass species or grasses larger than the maximum recommended size when treated. Fall panicum is not controlled. Most broadleaf weeds should be treated before they are 6 inches tall and grass weeds should be treated before 2 inches in height and before V7 sweet corn growth stage.</p> <p>-Add methylated seed oil (MSO) or concentrate (COC) to be 1% of the spray solution (1.0 gal/100 gal of spray solution). In addition, the label requires the addition of N liquid fertilizer (1.5 qt/A) or AMS (1.5 lb/A).</p> <p>-Tank mix with 0.25 to 1.0 lb ai/A of atrazine for improved control and to broaden the spectrum of weed control. Research supports the use of at least 0.5 lb ai/A of atrazine. Do not apply tank-mixes of Laudis and atrazine to corn greater than 12 inches tall.</p> <p>-Do not use postemergence if mesotrione (e.g., Callisto, Lumax, Lexar, Acuron) was used preemergence. Do not tank-mix with Callisto.</p> <p>-Laudis has up to an 18 month replant restriction for many vegetables.</p> <p>-Rainfastness is 1 hr. Do not apply more than 1 application per growing season</p>						

3.b. Postemergence for Herbicide Resistant Sweet Corn Varieties ONLY!

Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Poast 1.5EC	0.75 to 1.5 pt/A	sethoxydim	0.15 to 0.3 lb/A	30	12
<p>-USE ONLY ON "POAST PROTECTED" SWEET CORN! Other sweet corn varieties will be severely injured or killed.</p> <p>-Use 1% crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution).</p> <p>-The use of COC may increase the risk of crop injury when hot or humid conditions prevail. To reduce the risk of crop injury, omit additives or switch to nonionic surfactant (NIS) when grasses are small and soil moisture is adequate.</p> <p>-Use lower labeled rates for annual grass control and higher labeled rates for perennial grass control.</p> <p>-Yellow nutsedge, wild onion, wild garlic, and broadleaf weeds will not be controlled.</p> <p>-Controls many annual and certain perennial grasses. For best results, treat annual grasses when they are actively growing at before tillers are present. Control may be reduced if grasses are large or under hot dry weather conditions.</p> <p>-Repeated applications may be necessary to control certain perennial grasses. If repeat applications are necessary, allow 14 days between applications.</p> <p>-Do not tank-mix with or apply within 2 to 3 days of any other pesticide, unless labeled, as this may increase the risk of crop injury or reduce the control of grasses. Rainfastness is 1 hr.</p> <p>-Do not exceed more than 3pt/A Poast per season. -Refer to Poast label for additional application guidelines.</p>						

3.b. Postemergence for Herbicide Resistant Sweet Corn Varieties ONLY! - continued on next page

3.b. Postemergence for Herbicide Resistant Sweet Corn Varieties ONLY! - continued

9	Roundup PowerMax 4.5L (or other labeled generic formulation)	16 to 44 fl oz/A	glyphosate	0.75 to 1.5 lb acid equivalent/A	30	4
<p>-USE ONLY ON "ROUNDUP READY" SWEET CORN! Other sweet corn varieties will be severely injured or killed.</p> <p>-Apply before weeds exceed 2 inches in height or have 4 true leaves. Larger weeds can be killed but yield may be reduced before the weeds are killed. Treat 3-4 weeks after planting when growing conditions are favorable. Perennial weeds must be treated at the proper growth stage to obtain effective control (see label for application time and rate).</p> <p>-Tank-mix glyphosate with Dual II Magnum for residual annual grass control and atrazine for residual annual broadleaf control.</p> <p>-Rainfastness is 6 hrs. Observe all rate restrictions and Preharvest Intervals for all products. Do not apply more than 44 fl oz/A in a single application and before 48" tall corn and more than 4.1 qt/A total of all in-crop applications.</p>						
10	Liberty 280 2.34L	22 fl oz/A	glufosinate	0.4 lb/A	50	4
<p>-USE ONLY ON "LIBERTY LINK" (ATTRIBUTE OR ATTRIBUTE II) SWEET CORN! Other sweet corn varieties will be severely injured or killed. Control many annual broadleaves and grasses. Apply before weeds exceed 3 inches tall and corn reaches V6 growth stage. Include AMS (ammonium sulfate) at 1.5-3 lb/A in the spray mixture.</p> <p>-Use at least 15 gal/A spray volume and medium to coarse spray nozzles.</p> <p>-Tank-mix with other labeled sweet corn herbicides to broaden control spectrum and for residual control.</p> <p>-Rainfastness is 4 hrs. Do not apply more than 22 fl oz/A in a single application and 44 fl oz/A per year.</p>						

4. Other Labeled Herbicides These products are labeled but limited local data are available; and/or are labeled but not recommended in our region due to potential crop injury concerns.

Group	Product Name	Active Ingredient (*=Restricted Use)
14	Sharpen	saflufenacil
14,15	Verdict	saflufenacil + dimethenamid
27	Shieldex	tolpyralate

Insect Control

THE LABEL IS THE LAW - See the Pesticide Use Disclaimer on the first page of section F.

Insect pest management in sweet corn typically occurs in four separate phases:

1) preventive measures at the time of seed purchase such as selecting a transgenic *Bt* hybrid and/or pretreated a commercially-applied insecticide seed treatment; 2) at-planting insecticide applications for soil pests; 3) managing whorl stage corn for lepidopteran pests; and 4) ear protection.

1) Preventive Control

Bt Transgenic Sweet Corn

Bacillus thuringiensis (*Bt*) sweet corn hybrids are available that express single or pyramided insecticidal proteins for protection against lepidopteran "worm" pests. Attribute® hybrids (Syngenta Seeds) expressing the cry1Ab protein (YieldGard trait) have been available since 1998, and growers can purchase 80K or 25K seed units of white, yellow and bicolor SE and Sh2 hybrids for local, shipping, and processing markets. These hybrids now express the Liberty Link herbicide tolerance trait. Performance Series™ hybrids (Seminis Seeds) expressing two *Bt* proteins (cry1A.105 and cy2Ab2) are also available in 80K or 25k seed units. These pyramided traits provide additional protection, particularly for corn earworm and fall armyworm, and also are Roundup Ready. In addition, Attribute® II hybrids (Syngenta Seeds) with pyramided genes expressing YieldGard and Viptera traits (Vip3A protein) and stacked with the Liberty Link trait are now available. This *Bt* pyramided gene technology currently provides nearly 100% control of all lepidopteran pests of sweet corn.

All *Bt* sweet corn hybrids, regardless of whether single or pyramided traits, provide 100% protection against European corn borers, thus no insecticides are needed during the whorl or tasseling stages, or even during silking if this pest is the only concern. However, corn earworm and fall armyworm are more tolerant to the cry proteins, and sweet corn is also exposed to sap beetles, stink bugs, and silk feeding by corn rootworm adults which can reduce pollination. Because of this pest complex, insecticide sprays may be needed to ensure fresh market quality of *Bt* hybrids. Furthermore, control efficacy of the YieldGard trait against corn earworm has significantly declined in the Attribute hybrids, and there is recent evidence that the Performance Series hybrids are also showing reduced efficacy due to corn earworm resistance development to the cry proteins. Thus, fields planted in these *Bt* hybrids will need insecticide applications, depending on the insect pressure and level of resistance in the population. In addition, under moderate to high moth activity (early August-early September), many eggs are laid later in ear development after the expressed *Bt* protein has degraded in dead silk tissue. This loss of protein activity also is

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accelerated by hot, dry conditions, which cause rapid desiccation of the silk tissue. As a result, earworms and fall armyworms have a greater chance of surviving and invading the ear. Under high moth activity, up to 50% or more of the Attribute ears can become infested with larvae. In this situation, spray schedules of 3 or 4 applications starting 3-4 days after the first onset of silking and repeated 3-4 days apart may be required. The pyramided Bt hybrids (Performance Series™, Attribute® II) are more effective than the single protein Attribute hybrids and should require much fewer applications, depending on the ear quality requirements. For these hybrids under high corn earworm pressure, a single application of insecticide applied when 100% of the ears have silked (about 5-6 days after the first onset of silking) has been sufficient to ensure fresh market quality. This timing compared to an earlier silk application conserves beneficial insects that provide an important ecological service by feeding on eggs and small larvae during the fresh silking period.

Insecticidal Seed Treatments

Commercially-Applied Seed Treatments Only		
Group	Product Name	Active Ingredient(s)
1B	Lorsban 50W	chlorpyrifos* - SCM only
4A	Cruiser 5FS	thiamethoxam
4A	Gaucha 600	imidacloprid
4A	Poncho 600	clothianidin
4A + 6	Avicta Complete Corn	abamectin* + thiamethoxam
4A + 11B	Poncho/Votivo	clothianidin + <i>Bacillus firmus</i>
4A + 28	Lumivia	thiamethoxam + chlorantraniliprole

2) At-Planting Insecticide Applications for Soil Pests

Seedcorn Maggots (SCM), Wireworms (WW), and White Grubs (WG)

These insects can attack germinating corn seeds and the early developing roots. Early season control can be achieved with either commercially-treated seed, or in-furrow insecticide treatments. Larger white grubs may not be completely controlled with most seed treatments. Rescue treatments applied post-planting are not effective.

At planting soil-applied treatment. Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Counter 20G–SmartBox® system	4.5 to 6.0 oz/1000 row ft	terbufos*	see label	see label	H
1B	Lorsban 15G, Lorsban 15G SmartBox® system	8 oz/1000 row ft	chlorpyrifos*	21	24	H
3A	Force 3G, Force 3G SmartBox® system	4.0 to 5.0 oz/1000 row ft	tefluthrin*	see label	see label	H

Corn Flea Beetles

Corn flea beetles transmit bacterial wilt disease (also known as Stewart's wilt) and are numerous after mild winters. If possible, use varieties resistant to bacterial wilt disease. Plants are most vulnerable to the disease in the seedling stage. Treat susceptible varieties at spike stage when > 5% of the plants are infested with beetles.

Note: Commercially-applied neonicotinoid seed treatments (Cruiser, Gaucha, or Poncho) provide early-season protection from corn flea beetle injury.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Sevin XLR Plus ¹	1.0 to 2.0 qt/A ¹	carbaryl ¹	see label	see label	H
1B	Lorsban Advanced	1.0 to 2.0 pt/A	chlorpyrifos*	21	24	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
4A	Assail 30SG	4.0 to 5.3 oz/A	acetamiprid	see label	12	M

¹Use of carbaryl prohibited on hand harvested corn.

Corn Rootworm Larvae

Western corn rootworm can be a serious pest of corn planted continuously year after year in the same field. Eggs are laid in cornfields the previous summer and hatch the following spring. Rootworm larvae can only survive on corn. Larvae prune back and tunnel into roots. Crop rotation is the most effective control for corn rootworm. Avoid planting corn after corn, cucumbers, pumpkins, or squash; rotation distance of even 3 ft is effective. Soil insecticides applied at planting aim to protect the root zone for about 6-8 weeks after application. When allowed on the label, T-band tends to be more effective than in-furrow application.

Cutworms - See also the Pest Management chapter, Insect Management section.

Black cutworm is a sporadic pest that can be particularly problematic in no-till situations. Cutworms can clip corn seedlings killing entire plants as they crawl down a row. Use of a soil-applied insecticide for other pests such as white grubs and rootworms will provide some control of cutworms.

For rescue treatment, apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Lorsban Advanced	1.0 to 2.0 pt/A	chlorpyrifos*	21	24	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					

True Armyworms Armyworms are a sporadic pest that chew jagged holes in the edges of leaves. They are primarily a concern of seedling to early-whorl stage corn. They are active at night.

For rescue treatment, apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV ¹	0.75 to 1.5 pt/A ¹	methomyl* ¹	see label	48	H
1B	Lorsban Advanced	1.0 to 2.0 pt/A	chlorpyrifos*	21	24	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
5	Blackhawk 36WG	1.67 to 3.3 oz/A	spinosad	1	4	M
5	Radiant SC	3.0 to 6.0 fl oz/A	spinetoram	1	4	H
18	Intrepid 2F	4.0 to 16.0 fl oz/A	methoxyfenozide	3	4	L
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole	1	4	L

¹Read new methomyl* label restrictions regarding use on seedling stage corn and before tassel push!

3) Managing Whorl Stage Corn for Lepidopteran Pests

Whorl/Tassel Infestation by European Corn Borer (ECB) and Fall Armyworm (FAW)

In general, insect larval feeding (ECB and FAW) during the whorl stage of development has a greater impact on early planted, short-season varieties. For ECB on early plantings, apply first spray when 15% of the plants show fresh feeding signs. Additional applications may be necessary if infestation remains above 15%. An early tassel treatment is usually more effective than a whorl treatment because larvae are more exposed to the chemicals.

For mid- and late-season plantings, the impact of infestation depends on the growth stage of the plants. Treat for FAW during the early whorl stage when more than 15% of the plants are infested. During mid- to late-whorl stages, treatment for both FAW and ECB may be necessary if more than 30% of the plants are infested. Treat fields in early tassel stage if more than 15% of the emerging tassels are infested with ECB, FAW, or young CEW larvae. Thorough spray coverage in whorls and on plants is essential; direct spray over the plants so that it penetrates leaf whorls. For foliar spray applications, 50-75 gal/A is necessary for effective control. Group 3A pyrethroids may not provide complete control of FAW.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV ¹	0.75 to 1.5 pt/A ¹	methomyl* ¹	see label	48	H
1B	Lorsban Advanced	1.5 to 2.0 pt/A	chlorpyrifos*	21	24	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
5	Blackhawk 36WG	1.67 to 3.3 oz/A	spinosad	1	4	M
5	Radiant SC	3.0 to 6.0 fl oz/A	spinetoram	1	4	H
18	Intrepid 2F	4.0 to 16.0 fl oz/A	methoxyfenozide	3	4	L
22	Avaunt 30WDG, Avaunt eVo	2.5 to 3.5 oz/A	indoxacarb - through tassel push only	3	see label	H
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole	1	4	L

¹Read new methomyl* label restrictions regarding use on seedling stage corn and before tassel push!

4) Ear Protection

Corn Earworms (CEW) and Other "Worm" Pests Including European Corn Borers (ECB), Fall Armyworms (FAW), and Western Bean Cutworms (WBC)

CEW is the major pest attacking corn ears in the mid-Atlantic U.S. Moth activity increases after mid-July and continues into September. One female can deposit an egg on hundreds of ears. Direct sampling for CEW, FAW,

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and ECB during silking is not practical. Begin treatment when the ear shanks emerge or the very first silks appear. Silk sprays should continue on a schedule based on area blacklight or pheromone trap counts, geographical location, and time of year. Before mid-July, silk sprays may be required on a 3-6-d schedule. When CEW populations are heavy (> 10 moths per night), and/or later in the summer, it may be necessary to treat on a 2-3 day schedule.

Please note that some localized CEW populations have developed resistance to pyrethroids (Group 3A), and that these insecticides should be used with caution and rotated to other insecticide classes within a season.

Applications during the low populations can be terminated up to 5 d before last harvest. During heavy populations and high temperatures, treatments will need to be made according to the legal "days to harvest" of the chemical. For best control during heavy infestations, maximize the gallonage of water per acre, use a wetting agent, and make applications during the early morning if possible. If irrigation or rains wash off the spray within 24 hrs after an application, repeat treatment as soon as the foliage dries. For more precise timing of silk sprays, use blacklight and pheromone traps to determine the actual moth activity on your farm. Contact your county Extension agent or consult your state pest management newsletter for more information on these techniques.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV	1.0 to 1.5 pt/A	methomyl*	see label	48	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
5	Blackhawk 36WG	2.2 to 3.3 oz/A	spinosad	1	4	M
5	Radiant SC	3.0 to 6.0 fl oz/A	spinetoram	1	4	H
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole	1	4	L

Corn Leaf Aphids

Corn leaf aphids are contamination concerns for sweet corn as their densities can reach extremely high numbers on corn husks leading to sticky honey dew build up and concomitant sooty mold growth on the husks. This hurts the marketability. Aphid outbreaks are typically caused by frequent applications of pyrethroid insecticides, which **do not** control the aphids, but rather eliminate natural enemies that consume the aphids under normal conditions.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV	0.75 to 1.5 pt/A	methomyl*	see label	48	H
1B	Lorsban Advanced	1.0 to 2.0 pt/A	chlorpyrifos*	21	24	H
4A	Neonicotinoids registered for us on Peas: see table at the end of Insect Control.					
4D	Sivanto Prime	7.0 to 14.0 fl oz/A	flupyradifurone	7	4	M
4D	Sivanto 200SL	7.0 to 10.5 fl oz/A	flupyradifurone	7	4	M

Corn Rootworm Adults and Japanese Beetles - Silk clipping Beetles

High rates of silk feeding by corn rootworm beetles, Japanese beetles, and other silk-feeders can affect pollination and cause ear quality problems. **Note: Sweet corn varieties with the *Bacillus thuringiensis* genes will NOT control any of these insects.** For silk feeding insects, when more than 50% of ears have fresh silks cut back and the plants are still pollinating, an insecticide spray also is recommended.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV	0.75 to 1.5 pt/A	methomyl*	see label	48	H
1B	Lorsban Advanced	1.0 to 2.0 pt/A	chlorpyrifos*	21	24	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
4A	Assail 30SG	4.0 to 5.3 oz/A	acetamiprid	see label	12	M

Grasshoppers

Grasshoppers may be quite conspicuous on corn feeding on leaves, but they are seldom of economic concern because they often move into corn later in the season after other grasses and plants have dried down or been harvested. Unless they are seedlings, corn plants typically can tolerate their feeding injury. Grasshoppers also are more abundant on field edges giving the impression that their pest densities are higher than they actually are across the field. Most insecticides (Group 1A, 1B, 3, or 4A) applied for other insects will also control grasshoppers.

Mites

Mites feed by removing fluids from plant tissue leading to lighter colored or white areas described as stippling. Extensive feeding may lead to reduced photosynthesis and reduced vigor plants.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
23	Oberon 2SC	5.7 to 16.0 fl.oz/A	spiromesifen	5	12	M

Sap Beetles

Most sap beetle infestations follow behind "worm" infestations, which create entry holes for the beetles to reach kernels to deposit their eggs. Nevertheless, on farms with a known history of sap beetle problems, an insecticide application 5-6 days after the first onset of silking is the best timing for maximum protection against these pests, which are attracted to the ear zone to lay eggs as silk tissue degrades. Varieties with long, tight silk tubes can reduce sap beetle damage. Begin sampling at pollen shed and treat when 5% of the ears have adults and/or eggs. Most insecticides used for "worm" control at silking will control these beetles. **Note: Sweet corn varieties with the *Bacillus thuringiensis* genes will NOT control sap beetles.**

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV	0.75 to 1.5 pt/A	methomyl*	see label	48	H
1A	Sevin XLR Plus	1.0 to 2.0 qt/A	carbaryl*	see label	see label	H
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					
4A	Neonicotinoids registered for us on Peas: see table at the end of Insect Control.					

Stink Bugs

Stink bugs including the invasive brown marmorated stink bug can feed on developing ears resulting in misshapen ears, unfilled kernels, collapsed kernels, and kernels that turn dark after corn is cooked. **Note: Sweet corn varieties with the *Bacillus thuringiensis* genes will NOT control any of these insects.**

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
3A	Pyrethroid insecticides registered for use on Sweet Corn: see table at the end of Insect Control.					

Group 3A Pyrethroid Insecticides Registered for Use on Sweet Corn

Apply one of the following formulations (please check if the product label lists the insect you intend to spray; the label is the law):						
Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR	
Asana XL	5.8 to 9.6 fl oz/A	esfenvalerate*	3	12	H	
Baythroid XL	0.8 to 2.8 fl oz/A	beta-cyfluthrin*	0	12	H	
Bifenthrin 2EC, others	2.1 to 6.4 fl oz/A	bifenthrin*	3	12	H	
Hero EC	4.0 to 10.3 fl oz/A	zeta-cypermethrin* + bifenthrin*	3	12	H	
Lambda-Cy IEC, others	1.92 to 3.84 fl oz/A	lambda-cyhalothrin*	7	12	H	
Mustang Maxx	2.24 to 4.0 fl oz/A	zeta-cypermethrin*	1	12	H	
Permethrin 3.2EC, others	4.0 to 8.0 fl oz/A	permethrin*	1	12	H	
Tombstone, others	0.8 to 2.8 fl oz/A	cyfluthrin*	0	12	H	
Warrior II	1.28 to 1.92 fl oz/A	lambda-cyhalothrin*	7	12	H	
Combo products containing a pyrethroid						
Cobalt Advanced	11.0 to 42.0 fl oz/A	lambda-cyhalothrin* + chlorpyrifos* (Group 1B)	21	24	H	
Besiege	6.0 to 10.0 fl oz/A	lambda-cyhalothrin*+chlorantraniliprole (Group 28)	7	12	H	

Group 4A Neonicotinoid Insecticides Registered for Use on Sweet Corn

Apply one of the following formulations (please check if the product label lists the insect you intend to spray; the label is the law):						
Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR	
Assail 30SG	2.1 to 5.3 oz/A	acetamiprid	7	12	M	

Disease Control

THE LABEL IS THE LAW - See the Pesticide Use Disclaimer on the first page of section F. Recommended Fungicides

Nematodes

Control is very important to the production of sweet corn. See also the Nematodes and Soil Fumigation sections in the Pest Management chapter. Use fumigants listed in the Pest Management chapter, or one of the following:

Code	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Counter 15G	see label for use directions (not for use in WV)	terbufos*	AP	48	H
1B	Mocap 15G	see label for use directions	ethoprop*	AP	48	H

Seed Treatment

Request that seed be treated with one or more of the following fungicides for seedling diseases and damping-off: Allegiance, Apron XL LS, Dynasty, Captan, Thiram, Vitavex or Maxim XL,. Seed treatment with these fungicides is especially important for early seedings of Super Sweet (sh) varieties.

Bacterial and Fungal Diseases

Leaf Blights (Northern, Southern, and Anthracnose Leaf Blights), and Leaf Spots (Gray Leaf Spot, Northern Corn Leaf Spot)

These diseases originate in corn residue and progress up the plant with persistent rain or overhead irrigation. Avoid planting continuous corn and bury residue with tillage. For optimal control, begin sprays before symptoms appear. Regular scouting and protectant fungicides late in the season may be necessary.

Code	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
Apply one of the following protectant fungicides:						
M3	mancozeb 75DF	1.5 lb/A	mancozeb	7	24	N
M5	chlorothalonil 6F (7-day schedule, do not apply to corn to be processed)	0.75 to 2.0 pt/A	chlorothalonil	12	12	N
AND rotate on a 7-14 day schedule with one of the following (do not apply the same fungicide more than twice in a row; switch to fungicides with different FRAC codes):						
3	propiconazole 3.6EC	2.0 to 4.0 fl oz/A	propiconazole	12	12	N
3 + 3	Prosaro 421SC	6.5 fl. oz/A (5-14 day schedule)	tebuconazole + prothioconazole	7	12	N
3+7+11	Trivapro	14.5 fl oz/A (10.5 fl oz/A Trivapro A and 4 fl oz/A Trivapro B)	propiconazole + soletanol + azoxystrobin	7	12	N
3 + 11	Headline AMP 1.68SC	10.0 to 14.4 fl oz/A	pyraclostrobin + metaconazole	20	12	N
3 + 11	Quilt Xcel 2.2SC	10.5 to 14 fl oz/A	propiconazole + azoxystrobin	14	12	N
3 + 11	Stratego 2.08EC	10.0 fl oz /A	propiconazole + trifloxystrobin	14	12	N
3 + 11	Stratego YLD 4.18EC	4.0 to 5.0 fl oz/A (5-14 d. schedule)	prothioconazole + trifloxystrobin	0	12	N
7 + 11	Priaxor 4.17SC	4.0 to 8.0 fl oz/A	fluxapyroxad + pyraclostrobin	7	12	N
11	Approach 2.08 SC	6.0 to 12.0 fl oz/A	picoxystrobin	7	12	N
11	azoxystrobin 2.08F	9.2 to 15.5 fl oz/A	azoxystrobin	7	4	N
11	Headline 2.1EC	9.0 to 12.0 fl oz/A	pyraclostrobin	7	12	N

Root and Stalk Rots

Root and stalk rots are caused by several species of fungi, including *Fusarium*, *Diplodia*, *Pythium* and *Macrophomina*. Some of these fungi enter through the roots and move up into the stalk, while others enter the stalk directly at the nodes. Insects can increase infection by enabling fungi to enter the plant in damaged areas. Use fungicide-treated seed and plant in well-drained areas. Do not exceed recommended plant densities. Keep soil fertility balanced based on soil tests. Manage insects throughout the growing season.

Rust (Common and Southern)

Rust is caused by a pathogen that blows into our region from Southern areas. In most years chemical control measures are not necessary, but rust occasionally becomes troublesome on susceptible hybrids planted later in the growing season. Corn warrants spraying if infection occurs prior to the whorl stage, particularly if Southern rust is detected. Observe fields on a regular basis.

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
If pustules are observed prior to the whorl stage, apply one of the following on a 7-14 day schedule (do not apply the same fungicide more than twice in a row; switch to fungicides with different FRAC codes):						
3 + 3	Prosaro 421SC	6.5 fl. oz/A (5-14 day schedule)	tebuconazole + prothioconazole	7	12	N
3+7 +11	Trivapro	14.5 fl oz/A (10.5 fl oz/A Trivapro A and 4 fl oz/A Trivapro B)	propiconazole + soletanol + azoxystrobin	7	12	N
3 + 11	Headline AMP 1.68SC	10.0 to 14.4 fl oz/A	pyraclostrobin + metaconazole	20	12	N
3 + 11	Quilt Xcel 2.2SE	10.5 to 14 fl oz/A	propiconazole + azoxystrobin	14	12	N
3 + 11	Stratego 2.08EC	10.0 fl oz /A	propiconazole + trifloxystrobin			N
3 + 11	Stratego YLD 4.18EC	4.0 to 5.0 fl oz/A (5-14 day schedule)	prothioconazole + trifloxystrobin	0	12	N
7 + 11	Priaxor 4.17SC	4.0 to 8.0 fl oz/A	fluxapyroxad + pyraclostrobin	7	12	N

Smut

There is no true genetic resistance to smut in sweet corn. Later maturing, larger varieties tend to be more tolerant to smut than early, smaller varieties. Since damaged tissue is more prone to infection, control corn borers, stink bugs, and other problematic insect pests as the first tassel appears.

Stewart's Bacterial Wilt

Use varieties resistant to Stewart's wilt listed in the sweet corn varieties table at the front of this section in areas with a history of bacterial wilt. More variety information relative to Stewart's Bacterial Wilt is available at: <http://sweetcorn.illinois.edu/index.html>. Control of flea beetles is essential for effective disease management. Flea beetles transmit Stewart's wilt and are prevalent after mild winters. Use insecticide-treated seed or a recommended insecticide at seedling emergence. Treat susceptible varieties at spike stage when 5% of the plants are infested. See Insect Control Section for flea beetle control recommendations.

Viruses

Maize Dwarf Mosaic Virus (MDMV)

MDMV is most likely to occur on corn planted after July 1. The virus is transmitted by aphids to sweet corn from infected weeds, especially Johnsongrass. Less frequently, the disease may be transmitted in/on seed. For control, manage weeds and aphids and plant healthy (disease free) seeds of resistant varieties for fall harvest.

**For Immediate Medical Attention
Call 911**

**For a Pesticide Exposure Poisoning Emergency
Call**



For All States

This number will automatically connect you to the poison center nearest you.

Anyone with a poisoning emergency can call the toll-free telephone number for help. Personnel at the Center will give you first-aid information and direct you to local treatment centers if necessary.

For Pesticide Spills

Small Spills: See the product label for cleanup advice.

Large spills: Call the National Response Center at 1-800-424-8802 or CHEMTREC at 800-424-9300 (24 hours) - Industry assistance with emergency response cleanup procedures for large, dangerous spills.

Be aware of your responsibility to report spills to the proper state agency.