

# Chapter 13. Pepper Production<sup>1</sup>

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## Botany and Planting

**Bell pepper**—*Capsicum annuum*, Solanaceae

**Habanero and Bird's-eye pepper**—*Capsicum chinense*

## Cultivars

### Sweet Bell

**Antebellum.** Green, sweet pepper with earlier setting patterns and more concentrated fruit set, deep-green color, and blocky shape. R to Xcv 1–10, TMV: 0; IR TSWV.

**Aristotle.** Green-to-red blocky bell with great yield potential. Extra large, thick walled. Very vigorous plant that produces dark-green, anthocyaninless fruit. R to Xcv 1–3, PVY, Tobamo Po (R).

**Autry.** Uniformly blocky fruit that ripen red. Fruit set is concentrated, with high first-pick yields. R to Xcv 1–10, TMO and IR to TSWV.

**Blitz.** Early-maturing, extra-large, blocky, green-to-red bell with great yield potential at first harvest. Fruit are high quality with thick walls and a uniformly blocky shape. HR: TMV: 0 / Xcv: 0–5, 7–9 and IR: TEV.

**Boca.** Fruit is very dark green with thick firm walls. TSWV in addition to bacterial leaf spot resistance. R to Xcv 1–10.

**Green Machine.** Main-season hybrid bell pepper for the spring and fall season with robust plant that produces dark green, deep blocky, anthocyaninless fruits turning red at maturity. HR to TMV race 0 and IR to Xcv 1–10 and TSWV.

**Nitro S10®.** A mid-maturing hybrid suited for place pack. It is adapted to fall and spring in the Southeast. Fruit have good size uniformity, are smooth, firm, and glossy dark green, and mature to red color. R to TMV 0 and IR to Pc, TSWV, and Xcv 0–10.

**Placepack.** Main-season, high-quality, dark-green pepper with high percentage of 4-lobes. Plants provide good cover. R to Xcv 1–10, PVY 0–1, Tm 0 and IR to TEV.

**Provider.** Dark-green fruit with plant structure and fruit set making it ideal for extended harvest. R to Xcv 1–10, PVY 0–1, Tm 0 and IR to TEV.

**PS 09979325.** Main-season hybrid that develops a mid-sized plant that produces green, maturing-to-red fruit

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targeted to the southeastern United States. The plants produce a high, concentrated set of firm, dark-green, smooth, blocky fruit 74 days after transplant. The hybrid is resistant to Tobamo Po and bacterial leaf spot races 0 to 10 (X10R).

**PS 9928302.** High resistance to bacterial spot races 1–5 (X5R) and combines a large, robust plant with large, dark-green to firm-red fruits. In trials, 8302 has been very adaptable with good size, shape, uniformity, and color. It is anthocyaninless. Xcv 1–5, Tm Po (HR).

**Regulator.** Widely adapted. Strong plant with good cover. Produces a high percentage of uniform, four-lobed fruit. R to Xcv 1–10, Tm 0 and IR to TSWV 0.

**Seedway 48.** Medium plant size with large to jumbo, uniform, and dark-green fruit. R to Xcv 1–10.

**Shogun S10®.** Extra-large, dark-green fruit with high yield potential. Adapted to late fall, winter, and spring in the Southeast. R to TMV 0 and IR to TSWV, Xcv 1–10.

**SV3255PB.** Main season variety with blocky green-to-red fruit. IR: Xcv 0–10.

**Standout.** Uniformly shaped, extra-large to jumbo-sized dark, glossy fruit.

**Vanguard.** Medium plant with good foliage. Fruit are dark green, blocky, 4-lobed, and extra large with thick firm walls. Early maturity with concentrated harvest. R to Xcv 1–5, PepMo and ToM.

## Sweet Peppers

**Boris.** Sweet banana type with light-yellow to red fruit. R to TSWV.

**Lemon Delite, Orange Delite, Ruby Delite.** Series is a large-fruited snack pepper variety with very early maturity and hot set potential. R to TMV 0 and Xcv 0–3, 7,8.

**Natasha.** Sweet banana with a vigorous plant. Light-yellow to red fruit. R to Xcv 1–3.

**Sopron.** Sweet banana type with light-yellow to red fruit. R to Xcv 1–3.

## Cubanelle

**Aruba.** Early-maturing, erect plant, 3–4 lobed, elongated fruit, matures from a pale lime green to a bright red.

**Bimini.** Thick-walled, heavy fruit with good setting ability and excellent flavor. Performs well in both fall and spring seasons. T to Xcv 1–10.

**Granada.** Good canopy provides protection against sun scald, well-adapted to the Southeast. Heavy yields of sweet, thick-walled Cubanelle peppers. Peppers turn from light green to red at maturity. R to Xcv 0–3, 7, 8.

**Key West.** Long, lime-green fruit that matures to red. R to Xcv 1–3.

## Hot Ancho Poblano

**Hitman.** Dark green and glossy open-field fruit with high percentage of two-lobed fruit. Medium-early maturity. R to Tm 0.

**Massivo.** Mostly two-lobed dark-green fruit. R to TMV.

## Hot Cayenne

**Arapaho.** Cayenne type with early maturity on a medium-sized plant. Produces long (8–9 inch), medium-high pungent fruit with great flavor and aroma.

**Iberia.** Long hot type similar to Mesilla but longer and slightly hotter. R to TMV.

**Mesilla.** Long hot type produces very long (9–11 by 1.5 inches) fruit that can be used green or red. Pods grow pendant from a large plant, maturing at mid-season. R to Tobamo Po and PVY, and IR to TEV.

## Hot Jalapeño

**Baluarte.** Large, thick-walled fruit, with low cracking. R to Xcv 1–3.

**Compadre.** Medium-to-late fruiting. Vigorous plant with good tolerance to extreme temperatures. Continuous picking. Uniform, smooth, large fruit. No purpling. R to PVY, TM and Xcv 2, 5.

**Everman.** Shiny and uniform fruit with excellent weight and shelf life and no cracking. Open plant with good regrowth and continuous set during the cycle. R to Xcv 1–3.

**Jedi (Jaguar).** Vigorous plant with jumbo fruit. R to Xcv 1–3.

**Lexus.** Concentrated early-season fruit set. Glossy dark-green fruit. HR to Xcv 1–3.

**Mixteco.** Early-maturing, heavy and thick-walled fruit with deep-green color. Strong plant with good regrowth that brings high yield potential. R to Tm 0 and IR to Xcv 1–3.

**Orizaba.** Large, strong fruit with excellent leaf cover. Spicy with little cracking. R to Xcv 1–3.

**PS 11435807.** Vigorous medium plant with concentrated fruit set. Smooth dark-green fruit. R to PVY, TE. Intermediate resistance to root-knot nematode.

**PS 11435810.** Vigorous tall plant with pungent, dark-green, smooth fruit. R to root-knot nematode, *Phytophthora capsici*, PVY, TE.

## Other Hot Peppers

**Altiplano.** Vigorous serrano pepper with uniform and glossy green fruit.

**Balada.** Finger hot Asian-type pepper, fruit maturing from green to red, fruit slightly curved, tapers to point, highly pungent.

**Camino Real.** Serrano type, medium maturity, large green-fruit size. R to PVY and IR to TEV.

**Canario Real.** A main-season, hot banana pepper with large, heavy fruit and vigorous plant habit.

**Charger.** Anaheim type with smooth, flat, thick-walled fruit that is mildly hot. IR to TSWV.

**Devil Serrano.** Early, large, dark-green glossy fruit. Semi-indeterminate bush. HR to TMV, PVY. IR to TEV.

**Don Picoso.** Dark-green serrano type with thick wall fruit.

**Flaming Flare.** Widely adapted Fresno pepper with 4-inch-long, thin-walled fruit with a sweet and mildly hot flavor. R to TMV.

**Fresno 3429.** Vigorous medium-to-tall plant. 75 days to maturity. Thick, firm wall, good shipper. Deep red at maturity.

**Habanero.** Habanero type, ready for harvest 90–100 days from transplant, extremely pungent, both fresh and processing markets. The wrinkled fruit taper to a point and measure approximately 2 by 1 inches. The thin flesh is light-green to orange-pink at full maturity.

**Inferno.** This Hungarian hot wax hybrid produces high yields of uniform fruit. The thick-walled pods mature from yellow to red and are pendant, large, smooth, tapered, and well-suited for fresh market and pickling.

**Lone Ranger.** Serrano pepper variety with excellent plant cover, good heat setting, large size that averages between 4 and 4.5 inches, and thick walls for great shelf life. R to Xcv 0-3, 7, 8.

**Megalodon.** Large, habanero-type pepper with compact growth habit. Fruit green to orange to red.

**Pathfinder.** Serrano pepper with excellent plant and foliar cover, with an average fruit length of 4.5 to 5 inches. Dark-green fruit with thick walls are suitable for the export market. R to Xcv 0-3, 7, 8.

**Rio de Oro.** Very large Santa Fe type with wide shoulders. Matures from golden yellow to red.

**Rio Tesoro.** Hybrid yellow Caribe pepper. 3.5"×2" fruit.

**Super Habanero.** Bright-red fruit with good shelf life. Medium-to-high plant vigor with good canopy coverage.

## Bird's-Eye Pepper—Strain 3

Table 13.1. Planting information for pepper.

<b>Planting Dates</b>	<b>Traditional</b>	<b>Bird's Eye</b>
North Florida	July–Aug; Feb–Mar	Aug; Feb–Mar
Central Florida	Aug–Sept; Jan–Mar	Aug–Sept; Jan–Mar
South Florida	Aug–Feb	Aug–Feb
<b>Planting Information</b>		
Distance between rows (in)	36–48 60–72	36–48
Number of rows/bed	1–2	1
Distance between rows/bed	15–18	10–24
Distance between plants (in)	9–15	0.5–0.75
Seed per acre in transplant (lb)	0.25–0.5	0.25–0.5
Days to maturity from transplant	65–75	
Plant population (acre)	14,520–19,400	17,500

The following tables list registered pesticides that should be integrated with other pest management methods. Additional information on integrated management methods can be requested from UF/IFAS Extension horticulture or agriculture agents. A list of local UF/IFAS Extension county offices is available at <https://sfyl.ifas.ufl.edu/find-your-local-office/>.

Table 13.2. Herbicides approved for managing weeds in peppers. Contact: Nathan S. Boyd, UF/IFAS Gulf Coast Research and Education Center.

Active Ingredient lb a.i./Acre	Trade Name Product/Acre	MOA Code	Weeds Controlled/Remarks
<b>Labels change frequently. Be sure to read a current product label before applying any chemical.</b>			
<b>***PREPLANT/PREEMERGENCE ***</b>			
<b>Bensulide</b> 5.0–6.0	(Prefar) 4 E 5–6 qt	8	Broadleaves and grasses. Incorporate mechanically 1–2 inches deep or with irrigation 2–4 inches deep.
<b>Carfentrazone</b> up to 0.031	(Aim) 2.0 EC up to 2 fl oz	14	Apply as a preplant burndown for emerged broadleaf weeds up to 4 inches tall or rosettes less than 3 inches across. Good coverage is essential. A nonionic surfactant, methylated seed oil, or crop oil concentrate is recommended. No pretransplant interval.
<b>Clomazone</b> 0.25–1	(Command) 3ME 0.67 to 2.67 pt	15	Annual broadleaves and grasses. Do not use on banana peppers. Place the roots of transplanted peppers below the chemical barrier.
<b>Flumioxazin</b> up to 0.128	(Chateau) SW up to 4 oz	14	Annual broadleaves and grasses. Apply to row middles of raised plastic-mulched beds that are at least 4 inches higher than the treated row middles and with a 24-inch bed width. Do not apply after transplant. Label is a Third-Party Registration (TPR, Inc.). Use without a signed authorization and waiver of liability is a misuse of the product. Tank-mix with a burndown herbicide to control emerged weeds. 0-day pretransplant interval.
<b>Fomesafen</b> 0.25–0.38	(Reflex) 2 EC 1.0–1.5 pt	14	Broadleaves and yellow/purple nutsedge. Suppression of some annual and perennial grasses. Label is a 24(C) local indemnified label and a waiver of liability must be signed for use. Transplanted crop only. May be applied to bare-ground production 7 days before transplanting or to a formed bed but prior to laying plastic. Use shields or hooded sprayers if applying to row middles, and prevent contact with plastic mulch. 60-day PHI.
<b>Glyphosate</b>	(various formulations) consult labels	9	Emerged broadleaves, grasses, and nutsedge. Apply as a preplant burndown. Allow 3 days between application and planting. Consult label for individual product directions.
<b>Halosulfuron</b> 0.024–0.05	(Sanda, Profine) 75 DF 0.5–1.0 oz	2	Broadleaves and yellow/purple nutsedge. Apply to row middles only. Do not exceed 2 oz/A per 12-month period. 30-day PHI.
<b>Lactofen</b> 0.25–0.5	(Cobra) 2 EC 16–32 fl oz	14	Broadleaves. Label is a Third-Party Registration (TPR, Inc.). Use without a signed authorization and waiver of liability is a misuse of the product. Apply to the row middles only with a shielded or hooded sprayer. Product must not contact green foliage or fruit to avoid excessive injury. Drift of lactofen-treated soil particles onto plants can cause contact injury. Limit of 1 PRE and 1 POST application per growing season. 30-day PHI.
<b>Napropamide</b> 1.0–2.0	(Devrinol) 2-XT 2–4 quarts (Devrinol DF XT) 50 DF 4–8 lb	15	Annual broadleaves. Apply to bed tops after forming beds but before plastic application. Rainfall or overhead irrigate to 1 inch within 24 hr of application. For row-middle treatments, do not apply between bloom and harvest, and do not exceed 2 lb a.i./A per crop cycle.
<b>Oxyfluorfen</b> 0.25–0.5	(Goal 2 XL) 2 EC 1–2 pt (GoalTender) 4 E 0.5–1.0 pt	14	Broadleaves. Apply as a preemergence broadcast or banded to preformed beds. 30-day pretransplant interval. Mulch may be applied any time during the 30-day interval.
<b>Paraquat</b> 0.5–1.0	(Gramoxone) 2 SL 2.0–4.0 pt (Firestorm) 3 SL 1.3–2.7 pt	22	Emerged broadleaf and grass weeds. Apply as a preplant burndown treatment. Surfactant recommended. <b>Consult label for new restrictions.</b>
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Emerged broadleaves and grasses. Apply as a preplant burndown treatment. Product is a contact, nonselective, foliar-applied herbicide with no residual control. May be tank-mixed with soil residual compounds.
<b>Pendimethalin</b> 0.48–0.72	(Prowl H20) 3.8 1.0–1.5 pt	3	Annual broadleaves and grasses. May be applied to row middles or under the plastic. Do not exceed 3.0 pt/A per year. 70-day PHI.
<b>Pyraflufen</b> 0.001–0.003	(ET Herbicide) 0.208 EC 0.5–2.0 fl oz	14	Emerged broadleaves less than 4 inches tall or rosettes less than 3 inches diameter. Apply as a preplant burndown treatment. Nonionic surfactant or crop oil concentrate recommended.

Active Ingredient lb a.i./Acre	Trade Name Product/Acre	MOA Code	Weeds Controlled/Remarks
<b>S-metolachlor</b> 0.64–0.95	(Dual Magnum) 7.62 EC 0.67–1.0 pt	15	Annual broadleaves, grasses and suppression of yellow/purple nutsedge. Label is a Third-Party Registration (TPR, Inc.). Use without a signed authorization and waiver of liability is a misuse of the product. Apply to the finished bed immediately before laying the plastic. Do not exceed 1.68 pt of Dual Magnum/A per crop cycle. 60-day PHI.
<b>Sulfentrazone</b> 0.09	Willowood Sulfentrazone 3 fl oz	14	Broadleaves, grasses, and nutsedge species. Apply under the plastic mulch or in row middles. Do not use on soils with less than 1% organic matter.
<b>Trifluralin</b> 0.5–0.75	(Treflan, Trifluralin) 4 EC 1.0–1.5 pt (Treflan) 10 G 5.0–7.5 lb	3	Annual broadleaves and grasses. Incorporate 4 inches or less within 8 hr of application. Results in Florida are erratic on sandy soils with low organic matter. Note label precautions against planting noncrops within 5 months. Do not apply after transplanting. 60-day PHI.
<b>***POSTEMERGENCE/POSTTRANSPLANT ***</b>			
<b>Carfentrazone</b> up to 0.031	(Aim) 2.0 EC up to 2 fl oz	14	Emerged broadleaves. Apply as hooded application to row middles only. May be tank-mixed with other herbicides. Do not exceed 6.1 fl oz per cropping season. A nonionic surfactant, methylated seed oil, or crop oil concentrate is recommended. 0-day PHI.
<b>Clethodim</b> 0.09–0.13 0.07–0.13	(Arrow, Select) 2 EC 6–8 fl oz (Select Max) 1 EC 9–16 fl oz	1	Perennial and annual grasses. Use higher rates under heavy grass pressure or larger weeds. Surfactant or crop oil concentrate recommended. Consult label. 20-day PHI.
<b>Diquat</b> 0.5	(Reglone Dessiccant) 1 qt	22	Broadleaves and grasses. Apply to row middles only. Maximum of 2 applications per season. Prevent drift to crop. Nonionic surfactant recommended. 30-day PHI.
<b>Halosulfuron</b> 0.024–0.05	(Sandea, Profine) 75 DF 0.5–1.0 oz	2	Broadleaves and yellow/purple nutsedge. Apply to row middles only. Do not exceed 2 oz/A per 12-month period. Nonionic surfactant recommended. 30-day PHI.
<b>Imazosulfuron</b> 0.19–0.30	(League) 75 DF 4.0–6.4 oz	2	Broadleaves and yellow/purple nutsedge suppression. Pepper must be well established and 10 inches tall. Direct sprays to base of stem, and avoid contact with leaves or fruit. Do not exceed 6.4 oz/A per crop season. Observe crop rotation restrictions. Nonionic surfactant recommended. 21-day PHI.
<b>Paraquat</b> 0.5	(Gramoxone) 2 SL 2 pt (Firestorm) 3 SL 1.3 pt	22	Emerged broadleaves and grasses. Direct spray over emerged weeds 1 to 6 inches tall in-the-row middles between mulched beds. Use low pressure and shields to control drift. Do not apply more than 3 times per season. Nonionic surfactant recommended. <b>Consult label for new restrictions.</b>
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Emerged broadleaves and grasses. Direct spray to row middles. Product is a contact, nonselective, foliar-applied herbicide with no residual control. May be tank-mixed with several soil residual compounds.
<b>Pendimethalin</b> 0.48–0.72	(Prowl H20) 3.8 1.0–1.5 pt	3	Broadleaves and grasses. May be applied posttransplant to row middles if previously untreated. Do not exceed 3.0 pt/A per year. 70-day PHI.
<b>Sethoxydim</b> 0.19–0.28	(Poast) 1.5 EC 1.0–1.5 pt	1	Actively growing grasses. A total of 4.5 pt/A applied in one season. Unsatisfactory results may occur if applied to grasses under stress. Crop oil concentrate recommended. 20-day PHI.
<b>S-metolachlor</b> 0.95	(Dual Magnum) 7.62 EC 1.0 pt	15	Annual broadleaves, grasses, and yellow/purple nutsedge. Label is a Third-Party Registration (TPR, Inc.). Use without a signed authorization and waiver of liability is a misuse of the product. Direct spray solution to row middles only with minimal contact to plants and plastic. Do not exceed 1.68 pt Dual Magnum/A per crop. 60-day PHI.
<b>*** POSTHARVEST ***</b>			
<b>Diquat</b> 0.5	(Reglone Dessiccant) 2.0 pt	22	Minimum of 35 gal/A. Thorough coverage is required. Nonionic surfactant recommended.



Table 13.3. Insecticides labeled for management of arthropod pests of peppers. Contact: Craig Frey, UF/IFAS Extension Hendry County.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
Aphids (including aphid-transmitted viruses, green peach aphid, potato aphid)	1A	*Lannate LV, *SP (methomyl)	LV: 1.5–3.0 pt SP: 0.5–1.0 lb	No more than 12 pt LV or 4 lb SP/acre crop.	48	3	No more than 8 applications per crop.
	1A	*Vydate L (oxamyl)	Foliar: 2–4 pt Drip chemigation & soil injection systems: 2–4 pt/A of plant bed	Do not apply more than 24 pt per acre per season.	48	7	Do not make more than 8 applications per season.
	1B	Acephate 90 WDG (acephate)	0.55–1.11 lb	Do not apply more than 2.22 lb/A per crop cycle.	24	7	
	1B	*Dibrom 8EC (naled)	1 pt	Do not apply more than 5 pints per acre per season.	48	1	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures are over 90°F.
	1B	Dimethoate LV, EC, 2.67 (dimethoate)	LV & EC: 0.5–0.66 pt 2.67: 0.75–1.0 pt	Maximum total rate per year is 1.65 lb a.i./A.	48	0	Highly toxic to bees.
	1B	Malathion 5EC (malathion)	1.5–2.5 pt	No maximum.	12	3	Maximum of 2 applications per year.
	1B	Orthene 97 (acephate)	Bell peppers: 0.5–1.0 lb Non-bell peppers: 0.5 lb	Do not apply more than 2 lb a.i. per acre per crop cycle or 1 lb a.i. per acre per season for non-bell peppers.	24	7	
	3A	*Karate with Zeon (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 23.04 fl oz/A per season.	24	5	Suppression only.
	3A	Pyganic EC 5.0 (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	*Warrior II (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	Suppression only.
	3A + 4A	*Endigo ZC (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	No more than 19.0 fl oz/acre product or 0.36 lb a.i. of lambda-cyhalothrin products or 0.172 lb a.i. of thiamethoxam products per acre per season.	24	5	Toxic to bees.
	3A + 6	*Gladiator (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	3A + 28	*Besiege (lambda-cyhalothrin + chlorantraniliprole)	6.0–9.0 fl oz	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications. Suppression only.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A	<b>Actara</b> (thiamethoxam)	2.0–3.0 oz	Maximum of 11 oz/acre or 0.172 lb a.i./acre of thiamethoxam-containing products per growing season.	12	0	Toxic to bees.
	4A	<b>Admire Pro</b> (imidacloprid)	7–14.0 fl oz	Maximum allowed on pepper is 14.0 fl oz/A (0.5 lb a.i./A).	12	<b>Soil:</b> 21	Most effective if applied to soil at transplanting.
	4A	<b>Admire Pro</b> (imidacloprid)	0.44 fl oz/10,000 plants	0.44 fl oz/10,000 plants	12	<b>Soil:</b> 21	<b>Planthouse:</b> 1 application to transplants. See label.
	4A	<b>Assail 30SG</b> (acetamiprid)	2.0–4.0 oz	Do not exceed 16 oz of Assail 30SG per acre per season, including any acetamiprid pretransplant applications.	12	7	Do not apply more than 4 times per season or more often than every 7 days.
	4A	<b>Assail 70WP</b> (acetamiprid)	0.8–1.7 oz	Do not exceed 6.8 oz Assail 70WP per acre per season, including any acetamiprid pretransplant applications.	12	7	Do not apply more than 4 times per season or more often than every 7 days.
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6–2.1 oz	Do not apply more than 6.4 oz per acre per season.	12	7	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz per acre per season.	12	Apply at planting	Do not release irrigation water from the treated area. See label for instructions.
	4A	<b>Platinum</b> (thiamethoxam)	5–11 fl oz	11 fl oz Platinum/A or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	3.8–6.2 oz maximum per crop per season	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Scorpion 355L</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Suppression only. Use only one application method (soil or foliar). Follow label restrictions to protect pollinators.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1–4 oz <b>Soil:</b> 5–7.5 oz	Maximum 6 oz (foliar) or 12 oz (soil) per acre per season.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Suppression only. Use only one application method (soil or foliar). Max of 3 applications per season.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 fl oz	13.0 fl oz acre/season product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole.	12	30	Make only one soil application per crop season. Several methods of soil application—see label.



Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Not for greenhouses, transplants, or if seed was treated with thiamethoxam or other Group 4A insecticides. Do not use adjuvant on chili pepper or pimento. Highly toxic to bees.
	4C	<b>Transform WG</b> (sulfoxaflor)	0.75–1.0 oz	Do not apply more than 8.5 oz/acre per year.	12	1	Do not apply more than 0.070 lb a.i./acre per season. Do not make more than 2 applications per crop cycle.
	4D	<b>Sivanto Prime</b> (flupyradifurone)	7.0–12.0 fl oz	Do not apply more than 28.0 fl oz/A per year.	4	1	Minimum interval between applications: 7 days.
	9B	<b>Fulfil</b> (pymetrozine)	2.75 oz	Do not apply more than 5.5 oz/acre per crop.	12	0	Do not make more than 2 applications.
	9B	<b>PQZ</b> (pyrifluquinazon)	2.4–3.2 fl oz	4.8 fl oz/A per crop cycle	12	1	Do not make more than 2 applications per crop cycle.
	9D	<b>Sefina</b> (afidopyropen)	3.0 fl oz	Do not apply more than 28 fl oz product per acre per season.	12	0	No more than 2 sequential applications per year before using a different mode of action.
	23	<b>Movento</b> (spirotetramat)	4.0–5.0 fl oz	Maximum of 10 fl oz/acre per season.	24	1	Minimum interval between applications: 7 days
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	<b>Soil at-planting or transplant trays:</b> 6.75–13.5 fl oz <b>Drip chemigation or soil injection:</b> 6.75–10 fl oz	Do not apply more than 0.4 lb a.i./A per calendar year.	4	1	Suppression only.
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.8–4.28 oz	Do not apply more than 8.4 oz/acre per season.	12	0	Begin applications before pests reach damaging levels.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	10–21 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>BotaniGard ES</b> ( <i>Beauveria bassiana</i> strain GH4)	0.25–1.0 qt		4	0	OMRI-listed. Greenhouse approved. May be mixed with some fungicides.

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	-	<b>Molt-X</b> (azadirachtin)	8 fl oz		4	0	OMRI-listed. Antifeedant, repellent, IGR.
	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v		12	0	OMRI-listed.
	-	<b>Mycotrol ESO</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt		4	0	OMRI-listed. Greenhouse approved. May be mixed with some fungicides.
	-	<b>Neemix 4.5</b> (azadirachtin)	5–7 fl oz		4	0	Suppression of nymphs and adult feeding deterrence. IGR and feeding repellent. OMRI-listed.
	-	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2–4 qt		4	0	Begin before pests reach damaging levels.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed. Greenhouse labeled.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Stylet Oil helps manage aphid-borne viruses but does not kill aphids. Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Beetles</b> (including beetle larvae, blister beetle, Colorado potato beetle, cucumber beetle, flea beetle)	1A	<b>Carbaryl 4L</b> (carbaryl)	0.5–2 quarts	Do not apply more than 8 quarts per crop per year.	12	3	<b>Bee Caution:</b> DO NOT apply to weeds or crops in bloom.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 0.5–2.0 qt	Do not apply a total of more than 8 qt per acre per crop.	12	3	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	1B	<b>*Dibrom 8EC</b> (naled)	1 pt	Do not apply more than 5 pints per acre per season.	48	1	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures are over 90°F.
	3A	<b>*Ambush 25W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 1.6 lb a.i./acre per season.	12	3	Bell peppers only.
	3A	<b>*Asana XL</b> (esfenvalerate)	5.8–9.6 fl oz	Do not apply more than 0.35 lb a.i. per acre per season.	12	7	Repeat applications at 7-to-10-day intervals to achieve control.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	No more than 0.2 lb a.i. per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz product or 0.266 lb a.i. per acre per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	No more than 23.04 fl oz or 0.36 lb a.i./A per season.	24	5	

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	3A	<b>*Pounce 25 WP</b> (permethrin)	6.4–12.8 oz	Do not apply more than 0.8 lb a.i. per acre per season.	12	3	Labeled for bell peppers. Do not make applications less than 5 days apart.
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	No more than 19.0 fl oz/A of Endigo ZC or 0.36 lb a.i. of lambda-cyhalothrin products or 0.172 lb a.i. of thiamethoxam products per acre per season.	24	5	Minimum interval between applications is 5 days. Toxic to bees.
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	3A + 28	<b>*Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	6.0–9.0 fl oz	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications.
	4A	<b>Actara</b> (thiamethoxam)	2.0–3.0 oz	Maximum of 11 oz/acre or 0.172 lb a.i./acre of thiamethoxam-containing products per growing season.	12	0	Toxic to bees.
	4A	<b>Admire Pro</b> (imidacloprid)	7–14.0 fl oz	Maximum allowed on pepper is 14.0 fl oz/A (0.5 lb a.i./A).	12	<b>Soil:</b> 21	Most effective if applied to soil at transplanting.
	4A	<b>Assail 70WP</b> (acetamiprid)	0.6–1.1 oz	No more than 6.8 oz Assail 70WP per acre per season, including any pretransplant applications of acetamiprid.	12	7	No more than 4 applications per season or reapplication within 7 days.
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6–2.1 oz	Do not apply more than 6.4 oz per acre per season.	12	7	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz per acre per season.	12	Apply at planting.	Do not release irrigation water from the treated area.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	11 fl oz Platinum/A or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Provado 1.6F</b> (imidacloprid)	3.8–6.2 oz	Maximum per crop per season 19.2 fl oz/A.	12	0	Do not apply to crop treated with imidacloprid or thiamethoxam. Allow 5 days between apps.

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	4A	<b>Scorpion 35SL</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Application restrictions exist because of risk to bees and other insect pollinators. Follow directions for use to protect pollinators. Use only one application method.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1–4 oz <b>Soil:</b> 5–7.5 oz	No more than 6 oz (foliar) or 12 oz (soil)/acre per season.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Use only one application method (soil or foliar). No more than 3 applications per season.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 fl oz	13.0 fl oz per acre/season product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole.	12	30	Make only one soil application per crop season. Several methods of soil application—see label.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Not for greenhouses, transplants, or if seed was treated with thiamethoxam or other Group 4A insecticides. Do not use adjuvant on chili pepper or pimiento. Highly toxic to bees.
	4D	<b>Sivanto 200 SL</b> (flupyradifurone)	10.5–14.0 fl oz	Do not apply more than 28.0 fl oz/A per year.	4	1	Minimum interval between applications: 7 days.
	5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	34 fl oz product or 0.266 lb a.i. per acre per year.	4	1	Allow 4 days between applications. No more than 6 applications per year.
	6	<b>Abba Ultra</b> (abamectin)	4.0–8.0 fl oz	24 fl oz product or 0.056 lb a.i. foliarly applied per year.	12	7	No more than 2 sequential applications of product or same a.i. Wait 7 days before retreatment.
	28	<b>Coragen</b> (chlorantraniliprole)	<b>Foliar:</b> 3.5–7.5 fl oz	No more than 15.4 fl oz or 0.2 lb a.i. per acre per crop.	4	1	Can apply by drip chemigation, at planting to soil and foliar. No more than 4 applications per crop.
	28	<b>Exirel</b> (cyantraniliprole)	7.0–13.5 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	<b>Soil at-planting or transplant trays:</b> 6.75–13.5 fl oz <b>Drip chemigation or soil injection:</b> 6.75–10 fl oz	Do not apply more than 0.4 lb a.i./A per crop.	4	1	
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	

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	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	5–16 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz		4	0	IGR and feeding repellent. OMRI-listed.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
	-	<b>Surround</b> (kaolin)	12.50–50 lb		4	0	12.5 lb/25 gallons preferred up to fruit set. Apply only up to 1/4 of desired fruit size unless washing capabilities are sufficient.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Caterpillars</b> (including cabbage looper, corn earworm, garden webworm loopers, hornworms, salt marsh caterpillars, tobacco budworm, tomato fruitworm, tomato pinworm, beet armyworm, fall armyworm, southern armyworm)	1A	<b>Carbaryl 4L</b> (carbaryl)	1–2 quarts	Do not apply more than 8 quarts per crop per year.	12	3	Do not apply to target crop or weeds in bloom. Up to 7 applications allowed per year.
	1A	<b>*Lannate LV, *SP</b> (methomyl)	<b>LV:</b> 0.75–3.0 pt <b>SP:</b> 0.25–1.0 lb	No more than 12 pt LV or 4 lb SP/acre crop.	48	3	No more than 8 applications per crop.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 1–2 qt	Do not apply a total or more than 8 qt per acre per crop.	12	3	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	1B	<b>Acephate 90 WDG</b> (acephate)	0.55–1.11 lb	Do not apply more than 2.22 lb/A per crop cycle.	24	7	Bell-type peppers only.
	1B	<b>Lorsban 75WG</b> (chlorpyrifos) [24(c) label] SLN FL-040005	1.33 lb	10.64 lb per crop maximum.	24	7	Do not apply within 10 days of transplanting or to plants under severe heat or drought stress. Do not make more than 8 applications.
	1B	<b>Orthene 97</b> (acephate)	Bell peppers: 0.50–1.00 lb	Do not apply more than 2 lb a.i. per acre per season.	24	7	
	3A	<b>*Ambush 25W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 1.6 lb a.i./acre per season.	12	3	Bell peppers only.
	3A	<b>*Asana XL</b> (esfenvalerate)	5.8–9.6 fl oz	Do not apply more than 0.35 lb a.i. per acre per season.	12	7	
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	1.6–2.8 fl oz	16.8 fl oz product or 0.132 lb a.i./A per season maximum.	12	7	Beet armyworm 1st and 2nd instars only. Do not apply more than 2.8 fl oz/A within 7 days.

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	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	No more than 0.2 lb active ingredient per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Danitol 2.4 EC</b> (fenpropathrin)	10.67 fl oz	Maximum of 4 applications (0.8 lb a.i./acre) per season.	24	3	Do not mix with copper.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	0.96–1.92 fl oz	23.04 fl oz product or 0.36 lb a.i./A per season.	24	5	
	3A	<b>*Pounce 25 W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 0.8 lb a.i. per acre per season.	12	3	Labeled for bell peppers. Do not make applications less than 5 days apart.
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	0.96–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	No more than 19.0 fl oz/acre product or 0.36 lb a.i. of lambda-cyhalothrin products or 0.172 lb a.i. of thiamethoxam products per acre per season.	24	5	Toxic to bees.
	3A + 28	<b>*Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	<b>Cabbage looper, cutworms and hornworms: 5.0–8.0 fl oz</b> <b>All others: 6.0–9.0 fl oz</b>	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 fl oz	13.0 fl oz acre/season product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole.	12	30	Make only one soil application per crop season. Several methods of soil application—see label.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Do not use in greenhouses or on transplants. Do not use if seed has been treated with thiamethoxam or if other Group 4A insecticides will be used. Highly toxic to bees.
	5	<b>Entrust SC</b> (spinosad)	1.5–8.0 fl oz	Do not use more than 29 oz or 0.45 lb a.i. per acre per crop.	4	1	Maximum application is 6 per year. Do not apply to seedlings grown for transplant. OMRI-listed.



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	5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	34 fl oz product or 0.266 lb a.i. per acre per year.	4	1	Allow 4 days between applications. No more than 6 applications per year.
	6	<b>Abba Ultra</b> (abamectin)	8.0 fl oz	No more than 24 fl oz product or 0.056 lb a.i. foliarly applied per year.	12	7	Tomato pinworm. No more than 2 sequential applications of product or same a.i. Wait 7 days before retreatment.
	6	<b>*Proclaim</b> (emamectin benzoate)	2.4–4.8 oz	No more than 28.8 oz/acre per season.	12	7	
	11A	<b>Agree WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb		4	0	Apply when larvae are small for best control. Can be used in greenhouse. OMRI-listed. <sup>2</sup>
	11A	<b>Biobit HP</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb		4	0	Treat when larvae are young. Good coverage is essential. Greenhouse approved. OMRI-listed.
	11A	<b>Crymax WDG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb		4	0	Use high rate for armyworms. Treat when larvae are young.
	11A	<b>Deliver</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.25–1.50 lb		4	0	Use higher rates for armyworms. OMRI-listed.
	11A	<b>DiPel DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb		4	0	Treat when larvae are young. Good coverage is essential. OMRI-listed.
	11A	<b>Javelin WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.12–1.50 lb		4	0	Treat when larvae are young. Thorough coverage is essential. OMRI-listed.
	11A	<b>Xentari DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb		4	0	Treat when larvae are young. Thorough coverage is essential. May be used in the greenhouse. Can be used in organic production.
	15	<b>*Dimilin 25W, *2L</b> (diflubenzuron)	4–8 oz	Apply no more than 24 oz per acre per season.	12	7	Up to 5 applications per season. IGR effects not seen for 5–7 days.
	15	<b>Rimon 0.83EC</b> (novaluron)	9–12 fl oz	Do not apply more than 36 fl oz per acre per season.	12	1	Do not use with an adjuvant.
	18	<b>Confirm 2F</b> (tebufenozide)	6–16 fl oz	Do not apply more than 1.0 lb a.i. per acre per season.	4	7	
	18	<b>Intrepid 2F</b> (methoxyfenozide)	4–16 fl oz	Do not apply more than 64 fl oz per acre per season.	4	1	

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	22A	<b>Avaunt eVo</b> (indoxacarb)	2.5–6.0 fl oz	Do not apply more than 24 fl oz per season.	12	3	Do not make more than 4 applications per season.
	28	<b>Coragen</b> (chlorantraniliprole)	3.5–7.5 fl oz	Do not apply more than 15.4 fl oz per acre per crop.	4	1	Can be applied by drip chemigation or as a soil application at planting as well as a foliar spray. See label. For hornworms, can use as little as 2.0 fl oz/acre when applied as a foliar spray. Make no more than 4 applications per crop.
	28	<b>Exirel</b> (cyantraniliprole)	7–17 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	<b>Soil at-planting or transplant tray treatment:</b> 5–13.5 fl oz <b>Drip, soil injection or chemigation:</b> 5–10 fl oz	Do not apply more than 0.4 lb a.i./A per crop.	4	1	
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	<b>Tomato pinworms:</b> 10 fl oz <b>Loopers:</b> 7.5–10 fl oz <b>All others:</b> 5.5–10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	5–21 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	1–3 lb		4	0	Can be used in organic production. OMRI-listed.
	-	<b>MBI-203 EP</b> ( <i>Chromobacterium subsugae</i> )	4.0–8.0 quarts		4	0	OMRI listed. Can be used in the greenhouse.
	-	<b>Molt-X</b> (azadirachtin)	8 fl oz		4	0	OMRI-listed. Antifeedant, repellent, IGR.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–10 fl oz		4	0	IGR and feeding repellent. OMRI-listed.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
<b>Fire ants</b>	7A	<b>Extinguish</b> (S-methoprene)	1.0–1.5 lb		4	0	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.
	7C	<b>Esteem Ant Bait</b> (pyriproxyfen)	1.5–2.0 lb		12	1	Apply when ants are actively foraging.
<b>Grasshoppers</b>	1B	<b>Acephate 90 WDG</b> (acephate)	0.28–1.11 lb	No more than 2.22 lb product or 2.0 lb a.i./A per crop cycle.	24	7	Bell-type peppers only.
	1B	<b>Orthene 97</b> (acephate)	Bell peppers: 0.25–0.5 lb—	Do not apply more than 2 lb a.i. per acre per season.	24	7	Bell-type peppers only.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz of product or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	No more than 23.04 fl oz or 0.36 lb a.i./A per season.	24	5	
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	Do not exceed a total of 19.0 fl oz or 0.36 lb lambda-cyhalothrin or 0.172 lb thiamethoxam/acre per season.	24	5	
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	3A + 28	<b>*Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	6.0–9.0 fl oz	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications.
	4A	<b>Scorpion 355L</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.

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	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1–4 oz <b>Soil:</b> 5.0–7.5 oz	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Use only one application method (soil or foliar). No more than 3 applications per season. Toxic to bees.
	-	<b>Surround</b> (kaolin)	12.50–50 lb		4	0	12.5 lb is the preferred rate up to fruit set.
<b>Lace bugs</b>	1A	<b>Carbaryl 4L</b> (carbaryl)	1–2 quarts	Do not apply more than 8 quarts per crop per year.	12	3	Do not apply to crops in bloom. Up to 7 applications per year.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 1.0–2.0 qt	Do not apply a total of more than 8 qt per acre per crop.	12	3	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
<b>Leafhoppers</b>	1A	<b>Carbaryl 4L</b> (carbaryl)	0.5–1 quart	Do not apply more than 8 quarts per crop per year.	12	3	Do not apply to crops or weeds in bloom. Toxic to bees.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 0.5–1.0 qt	Do not apply a total of more than 8 qt per acre per crop.	12	3	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	1.6–2.8 fl oz	16.8 fl oz product or 0.132 lb a.i./A per season maximum.	12	7	
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz of product or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	No more than 23.04 fl oz of product or 0.36 lb a.i./A per season.	24	5	
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	Do not exceed a total of 19.0 fl oz of product or 0.36 lb lambda-cyhalothrin or 0.172 lb thiamethoxam/acre per season.	24	5	
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	4A	<b>Admire Pro</b> (imidacloprid)	7–14.0 fl oz	Maximum allowed on pepper is 14.0 fl oz/A (0.5 lb a.i./A).	12	<b>Soil:</b> 21	Most effective if applied to soil at transplanting.

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	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz	Do not apply more than 6.4 oz product or 0.2 lb a.i./acre per season.	12	7	Do not use as adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz product or 0.2 lb a.i./acre per season.	12	Apply at planting	Do not release irrigation water from the treated area.
	4A	<b>Platinum</b> (thiamethoxam)	5–11 fl oz	11 fl oz Platinum/Acre or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Provado 1.6F</b> (imidacloprid)	3.8–6.2 oz	Maximum per crop per season 19.2 fl oz/Acre	12	0	Do not apply to crop treated with imidacloprid or thiamethoxam. Allow 5 days between applications.
	4A	<b>Scorpion 355L</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 fl oz	13.0 fl oz acre/season product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole.	12	30	Make only one soil application per crop season. Several methods of soil application—see label.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Do not use in greenhouses or on transplants. Do not use if seed has been treated with thiamethoxam or if other Group 4A insecticides will be used. Highly toxic to bees.
	4D	<b>Sivanto 200 SL</b> (flupyradifurone)	7.0–10.5 fl oz	No more than 28.0 fl oz or 0.365 lb a.i./A per year.	4	1	Minimum interval between applications: 7 days.
	16	<b>Courier SC</b> (buprofezin)	9.0–13.6 fl oz	Do not apply more than 27.2 fl oz/A per crop cycle.	12	1	Slow-acting IGR that will not kill nymphs immediately. 2 applications per season. Allow at least 5 days between applications.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	10–16 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz		4	0	OMRI-listed. Antifeedant, repellent, IGR.

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	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v		12	0	OMRI-listed.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
	-	<b>Surround</b> (kaolin)	12.50–50 lb		4	0	12.5 is the preferred rate up to fruit set.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Liriomyza leafminers</b> (includes leafminer larvae)	1A	<b>*Vydate L</b> (oxamyl)	<b>Foliar:</b> 2–4 pt	Do not apply more than 24 pt per acre per season.	48	7	Suppression only. May also be applied by drip chemigation or soil injection systems. See label for rate.
	1B	<b>*Dibrom 8EC</b> (naled)	1 pt	Do not apply more than 6 pints per acre per season.	48	1	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures are over 90°F.
	1B	<b>Dimethoate LV, EC, 2.67</b> (dimethoate)	<b>LV &amp; EC:</b> 0.5–0.66 pt <b>2.67:</b> 0.75–1.0 pt	Maximum total rate per year is 1.65 lb a.i./A.	48	0	Highly toxic to bees.
	3A	<b>*Ambush 25W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 1.6 lb a.i./acre per season.	12	3	Bell peppers only. Suppression only.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	2.8 fl oz	16.8 fl oz product or 0.132 lb a.i./A per season maximum.	12	7	Suppression only.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	Do not apply more than 0.2 lb a.i. per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz product or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	23.04 fl oz product or 0.36 lb a.i./A per season.	24	5	Suppression only.
	3A	<b>*Pounce 25 W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 0.8 lb a.i. per acre per season.	12	3	Labeled for bell peppers. Do not make applications less than 5 days apart.
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.5 fl oz	Do not exceed a total of 19.0 fl oz per acre per season.	24	5	Suppression only. For control: tank-mix with 2–2.5 oz/A of Actara.



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	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz	Do not apply more than 6.4 oz per acre per season.	12	7	Suppression only. Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz per acre per season.	12	Apply at planting	Suppression only. Do not release irrigation water from the treated area.
	4A	<b>Scorpion 35SL</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Suppression only. Do not use in greenhouses or on transplants. Do not use if seed has been treated with thiamethoxam or if other Group 4A insecticides will be used. Highly toxic to bees.
	5	<b>Entrust SC</b> (spinosad)	6–10 fl oz	Do not use more than 29 fl oz or 0.45 lb a.i./acre per crop.	4	1	No more than 6 applications per year. Do not apply to seedlings grown for transplant. OMRI-listed.
	5	<b>Radiant SC</b> (spinetoram)	6–10 fl oz	34 fl oz product or 0.266 lb a.i. per acre per year.	4	1	Allow 4 days between applications. No more than 6 applications per year.
	6	<b>Abba Ultra</b> (abamectin)	4.0–8.0 fl oz	24 fl oz product or 0.056 lb a.i. foliarly applied per year.	12	7	No more than 2 sequential applications of product or same a.i. Wait 7 days before retreatment.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.7–3.5 fl oz	No more than 10.25 fl oz/A (0.056 lb a.i./A) Agri-Mek SC or any other foliar-applied abamectin-containing product in a growing season.	12	7	No more than 2 sequential applications per year. Must be used with a nonionic activator-type wetting, spreading, or penetrating adjuvant.
	15	<b>Rimon 0.83EC</b> (novaluron)	12 fl oz	Do not apply more than 36 fl oz per acre per season.	12	1	Do not use with an adjuvant.
	17	<b>Trigard</b> (cyromazine)	2.66 oz (one packet)	Do not apply more than 15.96 oz/A per season.	12	0	No more than 6 applications per crop.

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	28	<b>Coragen</b> (chlorantraniliprole)	5.0–7.5 fl oz	Do not apply more than 15.4 fl oz product or 0.2 lb a.i./acre per crop.	4	1	Can be applied by drip chemigation or as a soil application at planting as well as a foliar spray. See label. Make no more than 4 applications per crop.
	28	<b>Exirel</b> (cyantraniliprole)	13–20.5 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	<b>Soil at-planting or transplant tray treatment:</b> 6.75–13.5 fl oz <b>Drip, soil injection or chemigation:</b> 6.75–10 fl oz	Do not apply more than 0.4 lb a.i./A per crop.	4	1	
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	10–16 fl oz		4	0	Antifeedant, repellent, insect growth regulator. Foliar application to larvae. Use with oil.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz		4	0	OMRI-listed. Antifeedant, repellent, IGR.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–7 fl oz		12	0	IGR and feeding repellent. OMRI-listed. For larvae and nymphs.
	-	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	3–4 qt		4	0	Begin before pests reach damaging levels.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Mealybugs</b>	1B	<b>*Dibrom 8EC</b> (naled)	1 pt	Do not apply more than 6 pints per acre per season.	48	1	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures are over 90°F.

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Mites (including broad mites, carmine spider mite, tomato russett mite, two-spotted spider mite)	3A	<b>*Brigade 2EC</b> (bifenthrin)	5.12–6.4 fl oz	Do not apply more than 0.2 lb active ingredient per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Danitol 2.4 EC</b> (fenpropathrin)	10.67 fl oz	Maximum of 4 applications (0.8 lb a.i./acre) per season.	24	3	Do not apply with copper.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	10.3 oz	Do not apply more than 27.39 oz or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	No more than 23.04 fl oz or 0.36 lb a.i./A per season.	24	5	Suppression only (spider mite species).
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	Suppression only (spider mite species).
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.5 fl oz	Do not exceed a total of 19.0 fl oz product or 0.36 lb a.i. lambda-cyhalothrin or 0.172 lb a.i. thiamethoxam/acre per season.	24	5	Suppression only. For control: tank-mix with 2–2.5 oz/A of Actara.
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	6	<b>Abba Ultra</b> (abamectin)	4.0–8.0 fl oz	24 fl oz product or 0.056 lb a.i. foliarly applied per year.	12	7	No more than 2 sequential applications of product or same a.i. Wait 7 days before retreatment.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.7–3.5 fl oz	No more than 10.25 fl oz/A (0.056 lb a.i./A) Agri-Mek SC or any other foliar-applied abamectin-containing product in a growing season.	12	7	No more than 2 sequential applications per year. Must be used with a nonionic activator-type wetting, spreading, or penetrating adjuvant.
	10B	<b>Zeal WDG Miticide</b> (etoxazole)	2.0–3.0 oz	Do not make more than one application per season.	12	7	Do not use with an adjuvant or surfactant.
	20B	<b>Kanemite 15 SC</b> (acequinocyl)	31.0 fl oz	Do not apply more than 62 fl oz/A per season.	12	1	Minimum of 21 days between treatments. Two applications per year. Do not use an adjuvant.
	20D	<b>Acramite-50WS</b> (bifenazate)	0.75–1.0 lb	One application allowed per season.	12	3	

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	21A	<b>Portal</b> (fenpyroximate)	2.0 pt	Do not apply more than 4.0 pints/A per crop cycle.	12	1	Do not make more than two applications per season. Allow 14 days between applications.
	23	<b>Oberon 25C</b> (spiromesifen)	7.0–8.5 fl oz	Maximum amount per crop: 25.5 fl oz/acre.	12	1	No more than 3 applications.
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>METS2 EC</b> ( <i>Metarhizium anisopliae</i> strain F52)	<b>Drench:</b> 40–80 fl oz/100 gal <b>Foliar:</b> 0.5 pt–2 qt/A		4	0	
	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v		4	0	OMRI-listed.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Plant bugs</b> (includes tarnished plant bug)	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 1–2 qt	Do not apply a total or more than 10 lb or 8 qt per acre per crop.	12	3	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	23.04 fl oz product or 0.36 lb a.i./A per season.	24	5	
	3A	<b>Pyganic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	Do not exceed a total of 19.0 fl oz per acre per season.	24	5	
	3A + 28	<b>*Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	6.0–9.0 fl oz	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz	Do not apply more than 6.4 oz per acre per season.	12	7	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz per acre per season.	12	Apply at planting	Do not release irrigation water from the treated area.
	4C	<b>Transform WG</b> (sulfoxaflor)	1.15–2.25 oz	Do not apply more than 8.5 oz/acre per year.	12	1	Do not apply more than 0.070 lb a.i./acre per season. Do not make more than 2 applications per crop cycle.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.0–4.28 oz	Do not apply more than 8.4 oz/acre per season.	12	0	Begin applications before pests reach damaging levels.
	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v		12	0	OMRI-listed.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
<b>Planthoppers</b>	4A	<b>Scorpion 3SSL</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.
	16	<b>Courier SC</b> (buprofezin)	9.0–13.6 fl oz	Do not apply more than 27.2 fl oz/A per crop cycle.	12	1	Product is a slow-acting IGR that will not kill nymphs immediately. No more than 2 applications per season. Allow at least 5 days between applications.
<b>Psyllids</b>	4D	<b>Sivanto 200 SL</b> (flupyradifurone)	10.5–14.0 fl oz	Do not apply more than 28.0 fl oz/A per year.	4	1	Minimum interval between applications: 7 days.
	6	<b>Abba Ultra</b> (abamectin)	4.0–8.0 fl oz	24 fl oz product or 0.056 lb a.i. foliarly applied per year.	12	7	No more than 2 sequential applications of product or same a.i. Wait 7 days before retreatment.
	23	<b>Movement</b> (spirotetramat)	4.0–5.0 fl oz	Maximum of 10 fl oz per acre per season.	24	1	Minimum interval between applications: 7 days
<b>Stinkbugs</b> (including brown stinkbug, green stinkbug, southern green stinkbug)	1A	<b>Carbaryl 4L</b> (carbaryl)	1–2 quarts	Do not apply more than 8 quarts per crop per year.	12	3	Suppression only.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 0.5–2.0 qt	Do not apply a total or more than 10 lb or 8 qt per acre per crop.	12	3	Suppression. Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	1.6–2.8 fl oz	16.8 fl oz product or 0.132 lb a.i./A per season maximum.	12	7	
	3A	<b>*Danitol 2.4 EC</b> (fenprothrin)	10.67 fl oz	Maximum of 4 applications (0.8 lb a.i./acre) per season.	24	3	

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	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	23.04 fl oz of product or 0.36 lb a.i./A per season.	24	5	
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.0–4.5 fl oz	Do not exceed a total of 19.0 fl oz per acre per season.	24	5	
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	4A	<b>Actara</b> (thiamethoxam)	3.0–5.5 oz	Maximum of 11 oz/acre or 0.172 lb a.i./acre of thiamethoxam-containing products per growing season.	12	0	Toxic to bees.
	4A	<b>Scorpion 3SSL</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar (only):</b> 1–4 oz	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Use only one application method (soil or foliar). No more than 3 applications per season.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.4 oz	Do not apply more than 6.4 oz per acre per season.	12	7	Do not use as an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Do not use in greenhouses or on transplants. Do not use if seed has been treated with thiamethoxam or if other Group 4A insecticides will be used. Highly toxic to bees.
	15	<b>Rimon 0.83EC</b> (novaluron)	12 fl oz	Do not apply more than 36 fl oz per acre per season.	12	1	Do not use with an adjuvant.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.



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Thrips: check label for species controlled (includes eastern flower thrips, foliar feeding thrips, chilli thrips, melon thrips, western flower thrips)	1A	<b>Carbaryl 4L</b> (carbaryl)	1–2 quarts	Do not apply more than 8 quarts per crop per year.	12	3	Suppression.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F:</b> 1.0–2.0 qt	Do not apply a total or more than 10 lb or 8 qt per acre per crop.	12	3	Suppression. Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	1A	<b>*Vydate L</b> (oxamyl)	<b>Foliar:</b> 2–4 pt	Do not apply more than 24 pt per acre per season.	48	7	Does not control western flower thrips.
	1B	<b>Lorsban 75WG</b> (chlorpyrifos) [24(c) label] SLN FL-040005	1.33 lb	10.64 lb per crop maximum.	24	7	Do not apply within 10 days of transplanting or to plants under severe heat or drought stress. Do not make more than 8 applications. Application interval is 10 days.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	2.1–2.8 fl oz	16.8 fl oz product or 0.132 lb a.i./A per season maximum.	12	7	Not effective on <i>Thrips palmi</i> .
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	Do not apply more than 0.2 lb active ingredient per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	10.3 oz	Do not apply more than 27.39 oz or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	Will not control Western Flower Thrips.
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.5 fl oz	Do not exceed a total of 19.0 fl oz per acre per season.	24	5	Will not control Western Flower Thrips.
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	4A	<b>Admire Pro</b> (imidacloprid)	7–14.0 fl oz	Maximum allowed on pepper is 14.0 fl oz/A (0.5 lb a.i./A).	12	<b>Soil:</b> 21	Most effective if applied to soil at transplanting.
	4A	<b>Assail 30SG</b> (acetamiprid)	4.0 oz	Do not exceed a total of 16 oz of Assail 30SG per acre per growing season, including any pretransplant applications of acetamiprid.	12	7	Do not apply more than 4 times per season or apply more often than every 7 days.

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	4A	<b>Assail 70WP</b> (acetamiprid)	1.7 oz	Do not exceed a total of 6.8 oz Assail 70WP per acre per growing season, including any pretransplant applications of acetamiprid.	12	7	
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz per acre per season.	12	Apply at planting	Do not release irrigation water from the treated area.
	4A	<b>Platinum</b> (thiamethoxam)	5–11 fl oz	11 fl oz Platinum/A or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	11 fl oz Platinum/A or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Scorpion 355L</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1–4 oz <b>Soil:</b> 5.0–7.5 oz	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Use only one application method (soil or foliar). No more than 3 applications per season.
	4C	<b>Transform WG</b> (sulfoxaflor)	2.75 oz	Do not apply more than 8.5 oz/acre per year.	12	1	Do not apply more than 0.070 lb a.i./acre per season. Do not make more than 2 applications per crop cycle.
	4D	<b>Sivanto Prime</b> (flupyradifurone)	12–14.0 fl oz	Do not apply more than 28.0 fl oz/A per year.	4	1	Suppression—Chilli thrips. Minimum interval between applications: 7 days.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 fl oz	13.0 fl oz acre/season product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole.	12	30	Make only one soil application per crop season. Several methods of soil application—see label.
	5	<b>Entrust SC</b> (spinosad)	4–8 fl oz	Do not use more than 29 fl oz or 0.45 lb a.i./acre per crop.	4	1	Maximum application is 6 per year. Do not apply to seedlings grown for transplant. OMRI-listed.
	5	<b>Radiant SC</b> (spinetoram)	6–10 fl oz	34 fl oz product or 0.266 lb a.i. per acre per year.	4	1	Allow 4 days between applications. No more than 6 applications per year.

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	6	<b>Abba Ultra</b> (abamectin)	4.0–8.0 fl oz	No more than 24 fl oz product or 0.056 lb a.i. foliarly applied per year.	12	7	<i>Thrips palmi</i> . No more than 2 sequential applications of product or same a.i. Wait 7 days before retreatment.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.7–3.5 fl oz	No more than 10.25 fl oz/A (0.056 lb a.i./A) Agri-Mek SC or any other foliar-applied abamectin-containing product in a growing season.	12	7	<i>Thrips palmi</i> . No more than 2 sequential applications per year. Must be used with a nonionic activator-type wetting, spreading, or penetrating adjuvant.
	15	<b>Rimon 0.83EC</b> (novaluron)	12 fl oz	Do not apply more than 36 fl oz per acre per season.	12	1	Do not use with an adjuvant. No more than 2 applications targeting thrips.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	<b>Soil at-planting or transplant tray treatment:</b> 10–13.5 fl oz <b>Drip, soil injection or chemigation:</b> 10 fl oz	Do not apply more than 0.4 lb a.i./A per crop.	4	1	
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10 fl oz <b>Foliage-feeding species:</b> 10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	Suppression: foliage feeders
	29	<b>Beleaf 50 SG</b> (flonicamid)	<b>Greenhouse:</b> 4.2 oz	Do not apply more than 8.4 oz/acre per season. Allowed 2 applications per season.	12	0	Apply before pests reach damaging levels. Rotate MOA after 2 consecutive Beleaf applications. Allow a minimum of 7 days between applications.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt; up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	10–21 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>BotaniGard ES</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt		4	0	OMRI-listed. Greenhouse approved. May be mixed with some fungicides. Contact dealer for recommendations when using an adjuvant.
	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v		12	0	OMRI-listed.
	-	<b>MET52 EC</b> ( <i>Metarhizium anisopliae</i> strain F52)	<b>Drench:</b> 40–80 fl oz/100 gal <b>Foliar:</b> 0.5 pt–2 qt/A		4	0	

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	-	<b>Molt-X</b> (azadirachtin)	8 fl oz		4	0	OMRI-listed. Antifeedant, repellent, IGR.
	-	<b>Mycotrol ESO</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt		4	0	OMRI-listed. Greenhouse approved. May be mixed with some fungicides. Contact dealer for recommendations if adjuvant being used.
	-	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2–4 qt		4	0	Begin before pest reach damaging levels.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
	-	<b>Surround</b> (kaolin)	12.50–50 lb		4	0	12.5 is the preferred rate up to fruit set.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Weevils</b> (including pepper weevil, vegetable weevil)	1A	<b>*Vydate L</b> (oxamyl)	<b>Foliar:</b> 2–4 pt	Do not apply more than 24 pt per acre per season.	48	7	
	1B	<b>Lorsban 75WG</b> (chlorpyrifos) [24(c) label] SLN FL-040005	1.33 lb	10.64 lb per crop maximum.	24	7	Do not apply within 10 days of transplanting or to plants under severe heat or drought stress. Do not make more than 8 applications. Application interval is 10 days.
	3A	<b>*Ambush 25W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 1.6 lb a.i./acre per season.	12	3	Bell peppers only.
	3A	<b>*Asana XL (0.66EC)</b> (esfenvalerate)	5.8–9.6 fl oz	Do not apply more than 0.35 lb a.i. per acre per season or treat more than 7 times at high rate.	12	7	Aids in control.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	2.8 fl oz	16.8 fl oz product or 0.132 lb a.i./A per season maximum.	12	7	Suppression.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	Do not apply more than 0.2 lb active ingredient per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	4.0–10.3 oz	Do not apply more than 27.39 oz or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.

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	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	23.04 fl oz of product or 0.36 lb a.i./A per season.	24	5	Suppression.
	3A	<b>*Mustang</b> (zeta-cypermethrin)	2.4–4.3 fl oz	Apply no more than 245.8 fl oz per acre per season.	12	1	Do not make applications less than 7 days apart.
	3A	<b>*Pounce 25 W</b> (permethrin)	6.4–12.8 oz	Do not apply more than 0.8 lb a.i. per acre per season.	12	3	Labeled for bell peppers. Do not make applications less than 5 days apart.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	Suppression.
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.5 fl oz	Do not exceed a total of 19.0 fl oz per acre per season.	24	5	Suppression only. For control, tank-mix with 2–2.5 oz/A of Actara.
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	3A + 28	<b>*Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	6.0–9.0 fl oz	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications.
	4A	<b>Assail 30SG</b> (acetamiprid)	2.5–4.0 oz	Do not exceed a total of 16 oz of Assail 30SG per acre per growing season, including any pretransplant application of acetamiprid.	12	7	Begin applications for whitefly when first adults are noticed. Do not apply more than 4 times per season or apply more often than every 7 days.
	4A	<b>Assail 70WP</b> (acetamiprid)	1.1–1.7 oz	Do not exceed a total of 6.8 oz Assail 70WP per acre per growing season, including any pretransplant applications of acetamiprid.	12	7	
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz	Do not apply more than 6.4 oz per acre per season.	12	7	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Provado 1.6F</b> (imidacloprid)	6.2 oz	19.2 fl oz/A maximum per crop per season	12	0	Do not apply to crop treated with imidacloprid or thiamethoxam. Allow 5 days between applications.
	4A	<b>Scorpion 35SL</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.

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	15	<b>*Dimilin 25W, *2L</b> (diflubenzuron)	4–8 oz	Apply no more than 24 oz per acre per season.	12	7	Up to 5 applications per season. IGR effects not seen for 5–7 days. Will not control adults; however, eggs laid by adults will exhibit reduced hatching in fruits once adults have consumed or contacted residues on plant tissue.
	15	<b>Rimon 0.83EC</b> (novaluron)	9–12 fl oz	Do not apply more than 36 fl oz per acre per season.	12	1	Do not use with an adjuvant. Apply at initial flowering stage.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Suppression only. Use as part of an effective control program. Rotate in other modes of action. Start applications when populations are low.
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	Suppression
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	10–21 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz		12	0	IGR and feeding repellent. OMRI-listed.
<b>Whiteflies</b> (adults, immatures)	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	Do not apply more than 0.2 lb active ingredient per acre per season.	12	7	Do not make applications less than 7 days apart.
	3A	<b>*Hero</b> (bifenthrin + zeta-cypermethrin)	10.3 oz	Do not apply more than 27.39 oz or 0.266 lb a.i./A per season.	12	7	Refer to label's maximum usage table when applying Hero and another product containing either of the same active ingredients.
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	23.04 fl oz of product or 0.36 lb a.i./A per season.	24	5	Suppression.
	3A	<b>Pyganic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	Do not apply more than 10 times per season.	12	0	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28–1.92 fl oz	Do not apply more than 0.36 lb a.i./acre per season.	24	5	Suppression.
	3A + 4A	<b>*Endigo ZC</b> (lambda-cyhalothrin + thiamethoxam)	4.5 fl oz	Do not exceed a total of 19.0 fl oz per acre per season.	24	5	Suppression only. For control, tank-mix with 2–2.5 oz/A of Actara.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	3A + 6	<b>*Gladiator</b> (zeta-cypermethrin + avermectin B1)	19 fl oz	No more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb z-cypermethrin/A per 12-month cropping year.	12	7	Do not reapply this product or others containing either of the same active ingredients within 7 days.
	3A + 28	<b>*Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	6.0–9.0 fl oz	Do not apply more than 31.0 fl oz per acre per year.	24	5	Allow 5 days between applications. Suppression only.
	4A	<b>Actara</b> (thiamethoxam)	3.0–5.5 oz	Maximum of 11 oz/acre or 0.172 lb a.i./acre of thiamethoxam-containing products per growing season.	12	0	Toxic to bees.
	4A	<b>Admire Pro</b> (imidacloprid)	7–14.0 fl oz	Maximum allowed on pepper is 14.0 fl oz/A (0.5 lb a.i./A).	12	<b>Soil:</b> 21	Most effective if applied to soil at transplanting.
	4A	<b>Admire Pro</b> (imidacloprid)	0.44 fl oz/10,000 plants		12	<b>Soil:</b> 21	<b>Planthouse:</b> 1 application to transplants. See label.
	4A	<b>Assail 30SG</b> (acetamiprid)	2.5–4.0 oz	Do not exceed a total of 16 oz of Assail 30SG per acre per growing season, including any pretransplant applications of acetamiprid.	12	7	Begin applications for whitefly when first adults are noticed. Do not apply more than 4 times per season or apply more often than every 7 days.
	4A	<b>Assail 70WP</b> (acetamiprid)	1.1–1.7 oz	Do not exceed a total of 6.8 oz Assail 70WP per acre per growing season, including any pretransplant applications of acetamiprid.	12	7	
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–3.2	Do not apply more than 6.4 oz per acre per season.	12	7	Suppression. Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Soil:</b> 4.8–6.4 oz	Do not apply more than 6.4 oz per acre per season.	12	Apply at planting	Do not release irrigation water from the treated area.
	4A	<b>Platinum</b> (thiamethoxam)	5–11 fl oz	11 fl oz Platinum/A or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	11 fl oz Platinum/A or 0.172 lb a.i. of thiamethoxam per acre per season.	12	30	Soil application. See label for rotational restrictions.
	4A	<b>Provado 1.6F</b> (imidacloprid)	3.8–6.2 oz	19.2 fl oz/A maximum per crop per season	12	0	Do not apply to crop treated with imidacloprid or thiamethoxam. Allow 5 days between applications.



Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A	<b>Scorpion 355L</b> (dinotefuran)	<b>Foliar:</b> 2–7 fl oz <b>Soil:</b> 9–10.5 fl oz	Do not apply more than 10.5 fl oz per acre per season as foliar sprays or more than 21 fl oz to soil.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1–4 oz <b>Soil:</b> 5.0–7.5 oz	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	12	<b>Foliar:</b> 1 <b>Soil:</b> 21	Use only one application method (soil or foliar). No more than 3 applications per season.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 fl oz	13.0 fl oz acre/season product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole.	12	30	Make only one soil application per crop season. Several methods of soil application—see label.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4–7 oz	14 oz/acre per season (0.172 lb a.i. thiamethoxam) or 0.2 lb a.i. of chlorantraniliprole products per acre per season.	12	1	Do not use in greenhouses or on transplants. Do not use if seed has been treated with thiamethoxam or if other Group 4A insecticides will be used. Highly toxic to bees.
	4C	<b>Transform WG</b> (sulfoxaflor)	2.0–2.25 oz	Do not apply more than 8.5 oz/acre per year.	12	1	Do not apply more than 0.070 lb a.i./acre per season. Do not make more than 2 applications per crop cycle.
	4D	<b>Sivanto Prime</b> (flupyradifurone)	10.5–14.0 fl oz	Do not apply more than 28.0 fl oz/A per year.	4	1	Minimum interval between applications: 7 days.
	7C	<b>Knack IGR</b> Section 2(ee) #59639-95 FL (pyriproxyfen)	5 fl oz	Do not exceed 20 fl oz/A per season.	12	1	Immatures only. Apply when nymphs first appear. Alternate or mix application with a.i. of different mode of action.
	9B	<b>Fulfill</b> (pymetrozine)	2.75 oz	Do not apply more than 5.5 oz/acre per crop.	12	0	Suppression. Do not make more than two applications.
	9D	<b>Sefina</b> (afidopyropen)	14.0 fl oz	Do not apply more than 28 fl oz product per acre per season.	12	0	No more than 2 sequential applications per year before using a different mode of action.
	15	<b>Rimon 0.83EC</b> (novaluron)	12 fl oz	Do not apply more than 36 fl oz per acre per season.	12	1	Do not use with an adjuvant. No more than 2 applications targeting whitefly.
	16	<b>Courier SC</b> (buprofezin)	9.0–13.6 fl oz	Do not apply more than 27.2 fl oz/A per crop cycle.	12	1	Immatures only. Slow-acting IGR that will not kill nymphs immediately. Two applications per season. Allow at least 5 days between applications.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	21A	<b>Portal</b> (fenpyroximate)	2.0 pt	Do not apply more than 4.0 pints/A per crop cycle.	12	1	Suppression. No more than two applications per season. Allow 14 days between applications.
	23	<b>Movento</b> (spirotetramat)	4.0–5.0 fl oz	Maximum of 10 fl oz per acre per season.	24	1	Minimum interval between applications: 7 days.
	23	<b>Oberon 2SC</b> (spiromesifen)	7.0–8.5 fl oz	Maximum amount per crop: 25.5 fl oz/acre.	12	1	No more than 3 applications.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	Do not apply a total of more than 0.4 lb a.i./A per crop.	12	1	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	<b>Soil at-planting or transplant tray treatment:</b> 6.75–13.5 fl oz <b>Drip, soil injection or chemigation:</b> 6.75–10 fl oz	Do not apply more than 0.4 lb a.i./A per crop.	4	1	
	28 + 6	<b>*Minecto Pro</b> (cyantraniliprole + abamectin)	10 fl oz	Do not apply more than 20 fl oz per calendar year.	12	7	
	28 + 16	<b>Vetica</b> (flubendiamide + buprofezin)	12.0–17.0 fl oz	Do not apply more than 38 fl oz/A per season.	12	1	Do not apply more than 3 times per season or apply more than 38 fl oz per acre per season. Use 14 to 17 fl oz per acre to control whiteflies.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.8–4.2 oz	8.4 oz per acre per season. 2 applications per season.	12	0	Apply before pests reach damaging levels. Rotate MOA after 2 consecutive Beleaf applications. Allow a minimum of 7 days between applications.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed		4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	10–21 fl oz		4	0	Antifeedant, repellent, insect growth regulator.
	-	<b>BotaniGard ES</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt		4	0	OMRI-listed. Greenhouse approved. May be mixed with some fungicides. Contact dealers for adjuvant recommendations.
	-	<b>MET52 EC</b> ( <i>Metarhizium anisopliae</i> strain F52)	<b>Drench:</b> 40–80 fl oz/100 gal <b>Foliar:</b> 0.5 pt–2 qt/A		4	0	
	-	<b>Molt-X</b> (azadirachtin)	8 fl oz		4	0	OMRI-listed. Antifeedant, repellent, IGR.
	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v		12	0	OMRI-listed.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Mycotrol ESO</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt		4	0	OMRI-listed. Greenhouse approved. May be mixed with some fungicides. Contact dealers for adjuvant recommendations.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz		4	0	IGR and feeding repellent. OMRI-listed.
	-	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2–3 qt		4	0	Begin before pests reach damaging levels.
	-	<b>Suffoil-X</b> (petroleum oil)	1–2 gal per 100 gal water		4	0	OMRI-listed.
	-	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal		4	0	Organic Stylet-Oil and Saf-T-Side are OMRI-listed.

<sup>1</sup> Mode of Action (MOA) codes for plant pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v. 10.2, March 2022. Number codes (1 through 29) are used to distinguish the main insecticide mode of action groups, with additional letters for certain subgroups within each main group. All insecticides within the same group (with the same number) indicate the same active ingredient or similar mode of action. This information must be considered for the insecticide resistance management decisions. - = unknown, or a mode of action that has not been classified yet.

<sup>2</sup> Information provided in this table applies only to Florida. Be sure to read a current product label before applying any product. The use of brand names and any mention or listing of commercial products or services in the publication does not imply endorsement by UF/IFAS Extension nor discrimination against similar products or services not mentioned. OMRI-listed: Listed by the Organic Materials Review Institute for use in organic production.

**\*Restricted use insecticide.**

Table 13.4. Pepper fungicides ordered by disease and then FRAC group according to their mode of action. Contact: Gary E. Vallad, UF/IFAS Gulf Coast Research and Education Center.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Please refer to Chapter 19 for information on biopesticides, including materials labeled for certified organic production.</b>							
<b>Anthraco</b>	M1	(copper compounds) <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, Champ DP, Champ F2 FL, Champion WP, Champ WG, C-O-C DF, C-O-C-S WDG, C-O-C WP, Copper Count N, Cueva, Cuprofix Ultra 40D, Kentan DF, Kocide 2000, Kocide 3000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 3L, Nu Cop 50DF, Nu Cop 50WP, Nu Cop HB, Previsto	SEE INDIVIDUAL LABELS		1	Varies by product from 4 hr to 2 days	
	M1 + M3	<b>Mankocide</b> (copper hydroxide + mancozeb)	3 lb	39 lb	7	2	
	M3	(mancozeb) <b>Many brands available:</b> Dithane F45, Dithane M45, Koverall, Manzate MAX, Manzate Pro-Stik, Penncozeb 75DF, Roper DF	SEE INDIVIDUAL LABELS		7	1	
	M5	(chlorothalonil) <b>Many brands available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo Zn, Chloronil 720, Echo 720, Echo 90 DF, Echo Zn, Equus 500 Zn, Equus 720 SST, Equus DF, Initiate 720	SEE INDIVIDUAL LABELS		3	1	
	3	<b>Cevya</b> (mefentrifluconazole)	5 fl oz	15 fl oz	0	0.5	Limit is 3 applications per year. Supplemental label expires Oct. 30, 2023
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	0	0.5	Limit is 4 applications per season.
	3 + BM 01	<b>Regev</b> (difenoconazole + tea tree oil)	8.5 fl oz	34 fl oz	2	0.5	Limit is 4 applications per year. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
(suppression)	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	0	0.5	For disease suppression only. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. See label for additional instructions pertaining to greenhouse usage.
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	No more than 2 sequential applications on a 7-to-10-day interval before rotating to a non-FRAC group 7 fungicide. Limit of 4 applications per year. See label for surfactant precautions. Not labeled for greenhouse use.
(suppression)	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	27.3 fl oz	3	0.5	No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. Limit of 5 applications per year.
	9 + 3	<b>Inspire Super</b> (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 applications per season with no more than 2 sequential applications. Must tank-mix or alternate with another effective fungicide from another FRAC group. Has up to an 8-month plant-back restriction with off-label crops.
	11	(azoxystrobin) <b>Many brands available:</b> AFrame, Arius, Azoxystar, Azoxystrobin 100ST, Azoxystrobin, Azteroid FC, Dynasty, Gold Rush, Heritage, Mazolin, Quadris FL, Satori, Tetraban, Trevo, Willowood Azoxy 25C	<b>SEE INDIVIDUAL LABELS</b>		0	4 hr	Must alternate or tank-mix with a fungicide from a different FRAC group; see specific label for mixing instructions and precautions.
	11	<b>Cabrio 2.08 F</b> (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 applications of Cabrio or other group 11 fungicides/season.
(suppression)	11	<b>Flint 50 WGD</b> (trifloxystrobin)	4 oz	16 oz	3	0.5	Maximum of 4 appl./season & alternate with a fungicide from a different FRAC group.
	11 + M3	<b>Dexter Max</b> (azoxystrobin + mancozeb)	3.4 lb	20.5 lb	7	2	Limit is a single application before alternating to a non-FRAC group 11 fungicide.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 applications per season; no more than 2 sequential applications; use of a spreading- or penetrating-type adjuvant may enhance efficacy. Not labeled for transplants. Up to a 1-year plant-back restriction for certain off-label crops.
	11 + 3	<b>Topguard EQ</b> (azoxystrobin + flutriafol)	8 fl oz	32 fl oz	0	0.5	Limit is 4 applications per season.
	11 + 7	<b>Priaxor</b> (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 applications per season; no more than 2 sequential applications. See label about compatibility with other formulated products and adjuvants.
	11 + 27	<b>Tanos</b> (famoxadone + cymoxanil)	10 oz	72 oz	3	0.5	Tank-mix with contact fungicides. Tank-mix or rotate with a fungicide from a different FRAC group.
(suppression)	19	<b>Ph-D WDG</b> (polyoxin D zinc salt)	6.2 oz	31.0 oz	0	4 hr	Limit is 5 applications in a 10-to-14-day interval. Alternate with a fungicide from a different FRAC group.
	27 + M5	<b>Ariston</b> <b>Symbol Advance</b> (cymoxanil + chlorothalonil)	2.44 pt	17.5 pt	3	0.5	
	49 + M5	<b>Orondis Opti</b> (oxathiapiprolin + chlorothalonil)	2.5 pt	10 pt	3	4 hr	Do not use Orondis Opti following a soil application of another oxathiapiprolin product. No more than 2 sequential applications before rotating to another mode of action; 7-day minimum application interval. Applications of Orondis Opti should not exceed more than 33% of the total foliar fungicide applications or 4 applications per crop, whichever is fewer. Limit on multiple crops is 6 applications per acre per year. Not labeled for greenhouse use.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
<b>Bacterial spot</b>	M1	(copper compounds) <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, Champ DP, Champ F2 FL, Champion WP, Champ WG, C-O-C DF, C-O-C-S WDG, C-O-C WP, Copper Count N, Cueva, Cuprofix Ultra 40D, Kentan DF, Kocide 2000, Kocide 3000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 3L, Nu Cop 50DF, Nu Cop 50WP, Nu Cop HB, Previsto	SEE INDIVIDUAL LABELS	SEE INDIVIDUAL LABELS	1	Varies by product from 4 hr to 2 days	For best possible chemical control of bacterial spot, tank-mix copper with a mancozeb fungicide.
	M1 + M3	<b>Mankocide</b> (copper hydroxide + mancozeb)	3 lb	39 lb	7	2	
	M3	(mancozeb) <b>Many brands available:</b> Dithane F45, Dithane M45, Koverall, Manzate MAX, Manzate Pro-Stik, Penncozeb 75DF, Roper DF	SEE INDIVIDUAL LABELS	SEE INDIVIDUAL LABELS	7	1	*Bacterial spot control only when tank-mixed with a copper fungicide. Use of 1 lb of mancozeb/A per application is sufficient.
	3 + BM 01	<b>Regev</b> (difenoconazole + tea tree oil)	8.5 fl oz	34 fl oz	2	0.5	Limit is 4 applications per year. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group.
	11 + M3	<b>Dexter Max</b> (azoxystrobin + mancozeb)	3.4 lb	20.5 lb	7	2	Combine with a fixed-copper fungicide. Limit is a single application before alternating to a non-FRAC group 11 fungicide.
(suppression)	11 + 27	<b>Tanos</b> (famoxadone + cymoxanil)	10 oz	72 oz	3	0.5	Tank-mix with contact fungicides. Tank-mix or rotate with a fungicide from a different FRAC group. Tank-mix with copper fungicides for suppression of Phytophthora blight, bacterial spot, and bacterial soft rot.
(suppression)	13	<b>Quintec</b> (quinoxifen)	6 fl oz	24 fl oz	3	0.5	<b>Supplemental Section 2(1ee)</b> <b>Label:</b> Must be alternated with another product effective against bacterial spot. If multiple applications are made, at least one application must be a tank mix with another product effective against bacterial spot.



Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	21	<b>*Actigard</b> (acibenzolar-S-methyl)	0.75 oz	6 oz	14	0.5	*Labelled for chili pepper only. Begin applications within one week of transplanting or emergence. Make up to 8 weekly, sequential applications.
	25	<b>Agri-mycin 50</b> <b>AG Streptomycin</b> <b>Harbour</b> (streptomycin sulfate)	200 ppm	-	-	0.5	For use on transplants only. Initiate when seedling is in 2-leaf stage. Apply at 4–5 day intervals until transplanting.
<b>Bacterial soft rot</b> (suppression)	11 + 27	<b>Tanos</b> (famoxadone + cymoxanil)	10 oz	72 oz	3	0.5	Tank-mix with contact fungicides. Tank-mix or rotate with a fungicide from a different FRAC group.
<b>Bacterial wilt</b> ( <i>Ralstonia solanacearum</i> )	3 + BM 01	<b>Regev</b> (difenoconazole + tea tree oil)	8.5 fl oz	34 fl oz	2	0.5	Limit is 4 applications per year. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group.
<b>Botrytis or Gray mold</b>	M5	(chlorothalonil) <b>Many brands available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo Zn, Chloronil 720, Echo 720, Echo 90 DF, Echo Zn, Equus 500 Zn, Equus 720 SST, Equus DF, Initiate 720	<b>SEE INDIVIDUAL LABELS</b>		3	1	
(suppression)	7	<b>Endura</b> (boscalid)	3.5 oz	21 oz	0	0.5	Limit is 6 applications per season at lower rate, with no more than 2 sequential applications before alternating with another effective fungicide from another FRAC group.
(suppression)	7	<b>Fontelis</b> (penthioopyrad)	24 fl oz	72 fl oz	0	0.5	For disease suppression only. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. See label for additional instructions pertaining to greenhouse usage.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	27.3 fl oz	3	0.5	No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. Limit of 5 applications per year.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
(suppression)	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	11.4 fl oz	22.8 fl oz	0	0.5	No more than 2 sequential applications before rotating to a non-FRAC group 7 or non-FRAC group 12 fungicide; no more than 2 applications at maximum rate per year; can be applied via chemigation in 0.1–0.25 inches/A of water. Not for use in transplant or greenhouse production.
	9	<b>Vango</b> (cyprodinil)	7 oz	28 oz	0	0.5	No more than 2 sequential applications before rotating to a non-FRAC group 9 for at least 2 sequential applications; no more than 4 applications per year. Can be applied via chemigation.
	9 + 3	<b>Inspire Super</b> (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 applications per season with no more than 2 sequential applications. Must tank-mix or alternate with another effective fungicide from another FRAC group. Has up to an 8-month plant-back restriction with off-label crops.
	9 + 12	<b>Alterity 62.5WG</b> <b>Switch 62.5WG</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Limit is 56 oz per year; after 2 applications of Switch, alternate with another effective fungicide from a different FRAC group.
(suppression)	11	<b>Cabrio 2.08 F</b> (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 applications of Cabrio or other group 11 fungicides/season.
	11 + 7	<b>Pageant</b> (pyraclostrobin + fluxapyroxad)	23 oz	54 oz	0	0.5	<b>Greenhouse production only:</b> Limit is 2 applications per crop cycle. No sequential applications; must rotate to another fungicide with a different mode of action.
(suppression)	11 + 7	<b>Priaxor</b> (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 applications per season; no more than 2 sequential applications. See label about compatibility with other formulated products and adjuvants.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	12	<b>Spirato GHN</b> (fludioxonil)	7 fl oz	28 fl oz	0	0.5	<b>For use in greenhouse and other enclosed structures only.</b> Limit to 4 applications per year. No more than 2 sequential applications before rotating to a different mode of action for 2 applications.
	17	<b>Decree 50 WDG</b> (fenhexamid)	1.5 lb	6 lb	0	0.5	<b>Transplant and greenhouse use only.</b> Do not make more than 2 consecutive applications.
	19	<b>Ph-D WDG</b> (polyoxin D zinc salt)	6.2 oz	31.0 oz	0	4 hr	Limit is 5 applications on 10-to-14-day interval. Alternate with a fungicide from a different FRAC group.
	27 + M5	<b>Ariston Cymbol Advance</b> (cymoxanil + chlorothalonil)	2.44 pt	17.5 pt	3	0.5	
	49 + M5	<b>Orondis Opti</b> (oxathiapiprolin + chlorothalonil)	2.5 pt	10 pt	3	4 hr	Do not use Orondis Opti following a soil application of another oxathiapiprolin product. No more than 2 sequential applications before rotating to another mode of action; 7-day minimum application interval. Applications of Orondis Opti should not exceed more than 33% of the total foliar fungicide applications or 4 applications per crop, whichever is fewer. Limit on multiple crops is 6 applications per acre per year. Not labeled for greenhouse use.
<b>Frogeye leaf spot, Cercospora leaf spot</b> ( <i>Cercospora</i> spp.)	M1	(copper compounds) <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, Champ DP, Champ F2 FL, Champion WP, Champ WG, C-O-C DF, C-O-C-S WDG, C-O-C WP, Copper Count N, Cueva, Cuprofix Ultra 40D, Kentan DF, Kocide 2000, Kocide 3000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 3L, Nu Cop 50DF, Nu Cop 50WP, Nu Cop HB, Previsto	<b>SEE INDIVIDUAL LABELS</b>		1	Varies by product from 4 hr to 2 days	For best possible chemical control of bacterial spot, a copper fungicide should be tank-mixed with a mancozeb fungicide.
	M1 + M3	<b>Mankocide</b> (copper hydroxide + mancozeb)	3 lb	39 lb	7	2	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	M3	(mancozeb) <b>Many brands available:</b> Dithane F45, Dithane M45, Koverall, Manzate MAX, Manzate Pro-Stik, Penncozeb 75DF, Roper DF	SEE INDIVIDUAL LABELS		7	1	
	M5	(chlorothalonil) <b>Many brands available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo Zn, Chloronil 720, Echo 720, Echo 90 DF, Echo Zn, Equus 500 Zn, Equus 720 SST, Equus DF, Initiate 720	SEE INDIVIDUAL LABELS		3	1	
	3	<b>Inder 2F</b> (fenbuconazole)	12 fl oz	48 fl oz	7	0.5	No more than 2 consecutive applications before alternating with a fungicide from another FRAC group. A 35-to-210-day plant-back interval exists for nonlabeled crops.
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	0	0.5	Limit is 4 applications per season.
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	No more than 2 sequential applications on a 7-to-10-day interval before rotating to a non-FRAC group 7 fungicide. Limit of 4 applications per year. See label for surfactant precautions. Not labeled for greenhouse use.
	11 + M3	<b>Dexter Max</b> (azoxystrobin + mancozeb)	3.4 lb	20.5 lb	7	2	Limit is a single application before alternating to a non-FRAC group 11 fungicide.
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 applications per season; no more than 2 sequential applications; use of a spreading- or penetrating-type adjuvant may enhance efficacy. Not labeled for transplants. Up to a 1-year plant-back restriction for certain off-label crops.
	11 + 3	<b>Topguard EQ</b> (azoxystrobin + flutriafol)	8 fl oz	32 fl oz	0	0.5	Limit is 4 applications per season.
	27 + M5	<b>Ariston Cymbol Advance</b> (cymoxanil + chlorothalonil)	2.44 pt	17.5 pt	3	0.5	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	49 + M5	<b>Orondis Opti</b> (oxathiapiprolin + chlorothalonil)	2.5 pt	10 pt	3	4 hr	Do not use Orondis Opti following a soil application of another oxathiapiprolin product. No more than 2 sequential applications before rotating to another mode of action; 7-day minimum application interval. Applications of Orondis Opti should not exceed more than 33% of the total foliar fungicide applications or 4 applications per crop, whichever is fewer. Limit on multiple crops is 6 applications per acre per year. Not labeled for greenhouse use.
<b>Gray leaf spot</b> ( <i>Stemphyllium</i> spp.)	3 + BM 01	<b>Regev</b> (difenoconazole + tea tree oil)	8.5 fl oz	34 fl oz	2	0.5	Limit is 4 applications per year. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group.
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	No more than 2 sequential applications on a 7-to-10-day interval before rotating to a non-FRAC group 7 fungicide. Limit of 4 applications per a year. See label for surfactant precautions. Not labeled for greenhouse use.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	27.3 fl oz	3	0.5	No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. Limit of 5 applications per year.
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	11.4 fl oz	22.8 fl oz	0	0.5	No more than 2 sequential applications before rotating to a non-FRAC group 7 or non-FRAC group 12 fungicide; no more than 2 applications at maximum rate per year; can be applied via chemigation in 0.1–0.25 inches/A of water. Not for use in transplant or greenhouse production.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	9 + 3	<b>Inspire Super</b> (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 applications per season with no more than 2 sequential applications. Must tank-mix or alternate with another effective fungicide from another FRAC group. Has up to an 8-month plant-back restriction with off-label crops.
	11	<b>Flint 50 WGD</b> (trifloxystrobin)	4 oz	16 oz	3	0.5	Maximum of 4 appl./season, and alternate with a fungicide from a different FRAC group.
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 applications per season; no more than 2 sequential applications; use of a spreading- or penetrating-type adjuvant may enhance efficacy. Not labeled for transplants. Up to a 1-year plant-back restriction for certain off-label crops.
<b>Powdery mildew</b>	M2	(sulfur) <b>Many brands available:</b> Cosavet DF, Kumulus DF, Microfine Sulfur, Micro Sulf, Microthiol Dispers, Sulfur 6L, Sulfur 90W, Super Six, That Flowable Sulfur, Thiolux Jet, Thiosperse 80%, Wettable Sulfur, Wettable Sulfur 92, Yellow Jacket Dusting Sulfur, Yellow Jacket Wettable Sulfur	<b>SEE INDIVIDUAL LABELS</b>		1	1	Follow label closely; sulfur may cause phytotoxicity.
	M5	(chlorothalonil) <b>Many brands available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo Zn, Chloronil 720, Echo 720, Echo 90 DF, Echo Zn, Equus 500 Zn, Equus 720 SST, Equus DF, Initiate 720	<b>SEE INDIVIDUAL LABELS</b>		3	1	
	3	<b>Cevya</b> (mefentrifluconazole)	5 fl oz	15 fl oz	0	0.5	Limit is 3 applications per year. Supplemental label expires Oct. 30, 2023.
	3	<b>Iandar 2F</b> (fenbuconazole)	12 fl oz	48 fl oz	7	0.5	No more than 2 sequential applications before alternating with a fungicide from a different FRAC group. A 35-to-210-day plant-back interval exists for nonlabeled crops.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	3	<b>Rally Sonoma 40WSP</b> (myclobutanil)	5 oz	20 oz	0	1	No more than 4 applications per season on a 10-to-14-day treatment interval. Should be alternated or tank-mixed with a fungicide from a different FRAC group.
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	0	0.5	Limit is 4 applications per season.
	3 + BM 01	<b>Regev</b> (difenoconazole + tea tree oil)	8.5 fl oz	34 fl oz	2	0.5	Limit is 4 applications per year. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group.
	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	0	0.5	For disease suppression only. No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. See label for additional instructions pertaining to greenhouse usage.
	7	<b>Velum Prime</b> (fluopyram)	6.84 fl oz	13.7 fl oz	0	0.5	For soil application only; the first foliar fungicide application following Velum Prime should be from a different FRAC group.
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	No more than 2 sequential applications on a 7-to-10-day interval before rotating to a non-FRAC group 7 fungicide. Limit of 4 applications per year. See label for surfactant precautions. Not labeled for greenhouse use.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	27.3 fl oz	3	0.5	No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. Limit of 5 applications per year.



Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	11.4 fl oz	22.8 fl oz	0	0.5	No more than 2 sequential applications before rotating to a non-FRAC group 7 or non-FRAC group 12 fungicide; no more than 2 applications at maximum rate per year; can be applied via chemigation in 0.1–0.25 inches/A of water. Not for use in transplant or greenhouse production.
	9	<b>Vango</b> (cyprodinil)	7 oz	28 oz	0	0.5	No more than 2 sequential applications before rotating to a non-FRAC group 9 for at least 2 sequential applications; no more than 4 applications per year. Can be applied via chemigation.
	9 + 3	<b>Inspire Super</b> (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 applications per season with no more than 2 sequential applications. Must tank-mix or alternate with another effective fungicide from another FRAC group. Has up to an 8-month plant-back restriction for off-label crops.
	9 + 12	<b>Alterity 62.5WG</b> <b>Switch 62.5WG</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Limit is 56 oz per year; after 2 applications of Switch, alternate with another effective fungicide from a different FRAC group.
	11	(azoxystrobin) <b>Many brands available:</b> AFrame, Arius, Azoxystar, Azoxystrobin 100ST, Azoxystrobin, Azteroid FC, Dynasty, Gold Rush, Heritage, Mazolin, Quadris FL, Satori, Tetraban, Trevo, Willowood Azoxy 25C	<b>SEE INDIVIDUAL LABELS</b>		0	4 hr	Must alternate or tank-mix with a fungicide from a different FRAC group; see specific label for mixing instructions and precautions.
	11	<b>Flint 50 WGD</b> (trifloxystrobin)	4 oz	16 oz	3	0.5	Maximum of 4 appl./season, and alternate with a fungicide from a different FRAC group.
(suppression)	11 + M3	<b>Dexter Max</b> (azoxystrobin + mancozeb)	3.4 lb	20.5 lb	7	2	Limit is a single application before alternating to a non-FRAC group 11 fungicide.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 applications per season; no more than 2 sequential applications; use of a spreading- or penetrating-type adjuvant may enhance efficacy. Not labeled for transplants. Up to a 1-year plant-back restriction for certain off-label crops.
	11 + 3	<b>Topguard EQ</b> (azoxystrobin + flutriafol)	8 fl oz	32 fl oz	0	0.5	Limit is 4 applications per season.
	11 + 7	<b>Pageant</b> (pyraclostrobin + fluxapyroxad)	18 oz	54 oz	0	0.5	<b>Greenhouse production only:</b> Limit is 3 applications per crop cycle. No sequential applications; must rotate to another fungicide with a different mode of action.
	11 + 7	<b>Priaxor</b> (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 applications per season; no more than 2 sequential applications. See label about compatibility with other formulated products and adjuvants.
	12	<b>Spirato GHN</b> (fludioxonil)	7 fl oz	28 fl oz	0	0.5	<b>For use in greenhouse and other enclosed structures only.</b> Limit to 4 applications per year. No more than 2 sequential applications before rotating to a different mode of action for 2 applications.
	13	<b>Quintec</b> (quinoxifen)	6 fl oz	24 fl oz	3	0.5	Will not control latent or established infections. Must alternate or tank-mix with an effective fungicide from a different FRAC group.
	19	<b>Ph-D WDG</b> (polyoxin D zinc salt)	6.2 oz	31.0 oz	0	4 hr	Limit is 5 applications on 10-to-14-day intervals. Alternate with a fungicide from a different FRAC group.
	27 + M5	<b>Ariston Cymbol Advance</b> (cymoxanil + chlorothalonil)	2.44 pt	17.5 pt	3	0.5	
(suppression)	39	<b>Torac</b> (tofenpyrad)	21 fl oz	42 fl oz	1	0.5	Primarily an insecticide. Limit 2 applications per season, 4 applications per year. 14-day minimum application interval.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	49 + M5	<b>Orondis Opti</b> (oxathiapiprolin + chlorothalonil)	2.5 pt	10 pt	3	4 hr	Do not use Orondis Opti following a soil application of another oxathiapiprolin product. No more than 2 sequential applications before rotating to another mode of action; 7-day minimum application interval. Applications of Orondis Opti should not exceed more than 33% of the total foliar fungicide applications or 4 applications per crop, whichever is fewer. Limit on multiple crops is 6 applications per acre per year. Not labeled for greenhouse use.
	50	<b>Prolivo</b> (pyriofenone)	5 fl oz	16 fl	0	4 hr	No more than 2 sequential applications. Limit is 4 applications per year.
	50	<b>Vivando</b> (metrafenone)	15.4 fl oz	46.2 fl oz	0	0.5	3 applications per season; no more than 2 sequential applications. Do not mix with horticultural oils.
	U6	<b>Torino</b> (cyflufenamid)	3.4 oz	10.2 oz	0	4 hr	3 applications per season with at least 14 days between applications.
<b>Phytophthora blight,</b> <b>Phytophthora root rot,</b> <b>Phytophthora crown rot</b> ( <i>Phytophthora</i> spp.)	M1	(copper compounds) <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, Champ DP, Champ F2 FL, Champion WP, Champ WG, C-O-C DF, C-O-C-S WDG, C-O-C WP, Copper Count N, Cueva, Cuprofix Ultra 40D, Kentan DF, Kocide 2000, Kocide 3000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 3L, Nu Cop 50DF, Nu Cop 50WP, Nu Cop HB, Previsto	<b>SEE INDIVIDUAL LABELS</b>		1	Varies by product from 4 hr to 2 days	
(suppression)	M1 + M3	<b>Mankocide</b> (copper hydroxide + mancozeb)	3 lb	39 lb	7	2	
	M3	(mancozeb) <b>Many brands available:</b> Dithane F45, Dithane M45, Koverall, Manzate MAX, Manzate Pro-Stik, Penncozeb 75DF, Roper DF	<b>SEE INDIVIDUAL LABELS</b>		7	1	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	4	<b>Metastar 2E</b> <b>ReCon 4F</b> <b>Xyler FC</b> (metalaxyl)	<b>Metastar:</b> 8 qt <b>ReCon:</b> 4 qt <b>Xyler:</b> 4 qt	<b>Metastar:</b> 1.2 qt <b>ReCon:</b> 6 qt <b>Xyler:</b> 4.3 qt	2	7	Must be soil applied. See labels.
	4	<b>Ridomil Gold SL</b> <b>Ultra Flourish</b> (mefenoxam)	<b>Ridomil:</b> 1 pt <b>Ultra:</b> 2 pt	<b>Ridomil:</b> 3 pt <b>Ultra:</b> 6 pt	7	2*	Do not apply more than 1.5 lb mefenoxam/A per crop to the soil. *There is a reentry interval exemption if material is soil-injected or soil-incorporated.
	4 + M1	<b>Ridomil Gold Copper 64.8 W</b> (mefenoxam + copper hydroxide)	2.5 lb	10 lb	7	2	Use Ridomil Gold EC on soil preplant or at planting. Make up to 2 additional applications. Use 1 pt/A and apply at a 30-day interval.
(suppression)	11	<b>Reason 500 SC</b> (fenamidone)	8.2 fl oz	24.6 fl oz	14	0.5	Ground application only. Must alternate with a fungicide from a different FRAC group. See supplemental label for restrictions and details.
	11 + M3	<b>Dexter Max</b> (azoxystrobin + mancozeb)	3.4 lb	20.5 lb	7	2	Limit is a single application before alternating to a non-FRAC group 11 fungicide.
(suppression)	11 + 27	<b>Tanos</b> (famoxadone + cymoxanil)	10 oz	72 oz	3	0.5	Tank-mix with contact fungicides. Tank-mix or rotate with a fungicide from a different FRAC group.
	21	<b>Ranman</b> (cyazofamid)	2.75 fl oz	16.5 fl oz	0	0.5	Limit is 6 applications per crop. Must be rotated with an effective fungicide from a different FRAC group. See label for application instructions, including the recommended use of specific surfactants.
	21	<b>Segway O</b> <b>Ranman</b> (cyazofamid)	3.2 fl oz/100 gal	13.5 fl oz/plant	0	-	<b>Greenhouse production only;</b> apply at transplant or up to first fruit set, followed by second application 42 days later. Soil drench only. Do not use any surfactant.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	22	<b>Elumin</b> (ethaboxam)	8 fl oz	16 fl oz	2	0.5	Limit is 2 applications per year, with at least 14 days between applications. Do not apply sequentially. Alternate with an effective fungicide from a different FRAC group. See label of additional instructions for foliar and soil applications.
	28	<b>Bruin</b> <b>Previcur Flex</b> <b>Promess</b> (propamocarb hydrochloride)	<b>SEE INDIVIDUAL LABELS</b>		5	0.5	<b>Greenhouse application:</b> 6 appl./crop cycle. Do not mix with other products. Can cause phytotoxicity if applied in intense sunlight.
	28	<b>Bruin</b> <b>Previcur Flex</b> <b>Promess</b> (propamocarb hydrochloride)	1.2 pt	6 pt	5	0.5	<b>Field application:</b> Apply prior to infection when conditions are favorable for disease.
	29	<b>Lektivar</b> (fluazinam)	24 fl oz	144 fl oz	30	0.5	May be applied at transplanting. Begin foliar applications 7 days after transplant.
	29	<b>Omega</b> (fluazinam)	1.5 pt	9 pt	30	0.5	May be applied at transplanting. Begin foliar applications 7 days after transplant.
	33	<b>Aliette 80 WDG</b> (fosetyl-al)	5 lb	20 lb	14	0.5	See label for warnings concerning the use of copper compounds.
	40	<b>Forum</b> (dimethomorph)	6 oz	30 oz	0	0.5	Apply with another fungicide from a different FRAC group.
(suppression)	40	<b>Micora</b> (mandipropamid)	8 fl oz/5,000 sq ft	16 fl oz/5,000 sq ft	N/A	4 hr	Micora is only labeled for transplant and retail sale to consumers.
	40	<b>Revus</b> (mandipropamid)	8 fl oz	32 fl oz	1	4 hr	No more than 2 sequential appl. Alternate with another effective fungicide. See label.
	43	<b>Presidio</b> (fluopicolide)	4 fl oz	12 fl oz	2	0.5	4 applications per season; no more than 2 sequential applications. 10-day spray interval. Tank-mix with another labeled non-FRAC code 43 fungicide; 18-month rotation with off-label crops.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
	45 + 40	<b>Zampro</b> (ametoctradin + dimethomorph)	14 fl oz	42 fl oz	4	0.5	Addition of a spreading or penetrating adjuvant is recommended to improve performance. Limit of 3 applications per season.
	49 + M5	<b>Orondis Opti</b> (oxathiapiprolin + chlorothalonil)	2.5 pt	10 pt	3	4 hr	Do not use Orondis Opti following a soil application of another oxathiapiprolin product. No more than 2 sequential applications before rotating to another mode of action; 7-day minimum application interval. Applications of Orondis Opti should not exceed more than 33% of the total foliar fungicide applications or 4 applications per crop, whichever is fewer. Limit on multiple crops is 6 applications per acre per year. Not labeled for greenhouse use.
	49 + 4	<b>Orondis Gold</b> (oxathiapiprolin + mefenoxam)	55 fl oz	55 fl oz	0	2	Soil applications cannot be combined or followed by foliar applications of Orondis Opti or Orondis Ultra. Not labeled for greenhouse use.
	49 + 40	<b>Orondis Ultra</b> (oxathiapiprolin + mandipropamid)	8.0 fl oz	32 fl oz	1	4 hr	Do not use Orondis Ultra following a soil application of another oxathiapiprolin product. No more than 2 sequential applications before rotating to another mode of action; 7-day minimum application interval. Applications of Orondis Ultra should not exceed more than 33% of the total foliar fungicide applications or 4 applications per crop, whichever is fewer. Limit on multiple crops is 6 applications per acre per year. Not labeled for greenhouse use.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
Pythium damping-off, Pythium root rot, or Pythium seedling blights ( <i>Pythium</i> spp.)	4	<b>Allegiance-FL Acquire</b> (metalaxyl)	0.75 fl oz/100 lb seed	-	-	-	Seed treatment only
	4	<b>Apron XL</b> (mefenoxam)	0.64 fl oz/100 lb seed	-	-	-	Seed treatment only
	4	<b>Metastar 2E ReCon 4F Xylar FC</b> (metalaxyl)	<b>Metastar:</b> 8 qt <b>ReCon:</b> 4 qt <b>Xylar:</b> 4 qt	<b>Metastar:</b> 1.2 qt <b>ReCon:</b> 6 qt <b>Xylar:</b> 4.3 qt	2	7	Must be soil applied. See labels.
	4	<b>Ridomil Gold SL Ultra Flourish</b> (mefenoxam)	<b>Ridomil:</b> 1 pt <b>Ultra:</b> 2 pt	<b>Ridomil:</b> 3 pt <b>Ultra:</b> 6 pt	7	2*	Do not apply more than 1.5 lb mefenoxam/A per crop to the soil. *There is a reentry interval exemption if material is soil-injected or soil-incorporated.
(suppression)	4 + M1	<b>Ridomil Gold Copper 64.8 W</b> (mefenoxam + copper hydroxide)	2.5 lb	10 lb	7	2	Use Ridomil Gold EC on soil preplant or at planting. Make up to 2 additional application. Use 1 pt/A, and apply at a 30-day interval.
	12	<b>Maxim 4 FS</b> (fludioxonil)	0.16 fl oz/100 lb seed	-	-	-	Seed treatment only
	21	<b>Ranman Segway O</b> (cyazofamid)	3.2 fl oz/100 gal	13.5 fl oz/plant	0	-	<b>Greenhouse production only;</b> apply at transplant or up to first fruit set, followed by second application 42 days later. Soil drench only. Do not use any surfactant.
	28	<b>Bruin Previcur Flex Promess</b> (propamocarb hydrochloride)	1.2 pt	6 pt	5	0.5	Apply prior to infection when conditions are favorable for disease. See label for greenhouse applications.
	49 + 4	<b>Orondis Gold</b> (oxathiapiprolin + mefenoxam)	55 fl oz	55 fl oz	7	2	Soil applications cannot be combined or followed by foliar applications of Orondis Opti or Orondis Ultra. Not labeled for greenhouse use.



Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>	
			Appl.	Season <sup>2</sup>	Harvest	Reentry		
<i>Rhizoctonia solani</i>	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	No more than 2 sequential applications on a 7-to-10-day interval before rotating to a non-FRAC group 7 fungicide. Limit of 4 applications per year. See label for surfactant precautions. Not labeled for greenhouse use.	
	11	(azoxystrobin) <b>Many brands available:</b> AFrame, Arius, AzoxyStar, Azoxystrobin 100ST, Azoxystrobin, Azteroid FC, Dynasty, Gold Rush, Heritage, Mazolin, Quadris FL, Satori, Tetraban, Trevo, Willowood Azoxy 25C	<b>SEE INDIVIDUAL LABELS</b>					Must alternate or tank-mix with a fungicide from a different FRAC group; see specific label for mixing instructions and precautions.
	11	<b>Cabrio 2.08 F</b> (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 applications of Cabrio or other group 11 fungicides/season.	
	14	<b>Par-Flo 4F</b> (PCNB)	12 fl oz/100 gal	2 appl.	Soil drench	0.5	Limited to only container-grown plants in nurseries or greenhouse.	
<b>Southern blight</b> ( <i>Sclerotium rolfsii</i> )	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	0	0.5	No more than 2 sequential applications before switching to another effective fungicide with a different mode of action. See label for additional instructions pertaining to greenhouse usage.	
(suppression)	7+ 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	No more than 2 sequential applications on a 7-to-10-day interval before rotating to a non-FRAC group 7 fungicide. Limit of 4 applications per year. See label for surfactant precautions. Not labeled for greenhouse use.	
	11	<b>Aftershock Evito Tepera</b> (fluoxastrobin)	<b>Aftershock, Evito:</b> 5.7 fl oz <b>Tepera:</b> 12.6 fl oz	<b>Aftershock, Evito:</b> 22.8 fl oz <b>Tepera:</b> 12.6 fl oz	3	0.5	Limit is 4 applications/crop. Must alternate or tank-mix with a fungicide from a different FRAC group.	
	11	<b>Cabrio 2.08 F</b> (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 applications of Cabrio or other group 11 fungicides/season.	
	11 + IRAC 3	<b>Tepera Plus</b> (fluoxastrobin + bifenthrin)	15.4 fl oz	61.6 fl oz	7	0.5	Contains bifenthrin insecticide. Limit is 4 appl./year. Minimum 7-day interval. No use in greenhouse.	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>3</sup>
			Appl.	Season <sup>2</sup>	Harvest	Reentry	
(suppression)	11 + 7	<b>Priaxor</b> (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 applications per season; no more than 2 sequential applications. See label about compatibility with other formulated products and adjuvants.
	14	<b>Blocker 4F Terraclor 75 WP</b> (PCNB)	<b>SEE INDIVIDUAL LABELS</b>		Soil treatment at planting	0.5	See label for application type and restrictions.
<b>White mold</b> ( <i>Sclerotinia sclerotiorum</i> ) (suppression)	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	27.3 fl oz	3	0.5	No more than 2 sequential applications before rotating with another effective fungicide from a different FRAC group. Limit of 5 applications per a year.
	11	<b>Cabrio 2.08 F</b> (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 applications of Cabrio or other group 11 fungicide/season.
	11 + 7	<b>Priaxor</b> (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 applications per season; no more than 2 sequential applications. See label about compatibility with other formulated products and adjuvants. White mold suppression only.

<sup>1</sup> FRAC code (fungicide group); Number (1 through 46) and letters (U and P) are used to distinguish the fungicide mode of action groups. All fungicides within the same group (with the same number or letter) indicate the same active ingredient or similar mode of action. This information must be considered for the fungicide resistance management decisions. U = unknown, or a mode of action that has not been classified yet and is typically associated with another number; P = host plant defense inducers. Source: FRAC Code List 2022; <http://www.frac.info/> (FRAC = Fungicide Resistance Action Committee).

<sup>2</sup> Always double-check labels regarding maximum application limits. Many labels are changing from a maximum rate per a season (or crop cycle) to a maximum rate per a year.

<sup>3</sup> 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 UF/IFAS Extension nor discrimination against similar products or services not mentioned.

Table 13.5. Nonfumigant nematicides for peppers in Florida.

Product	Application Directions
Vydate L (a.i. oxamyl)	Apply ½ to 1 gal/acre at planting, preferably via drip application. Make additional applications on a 10-to-14-day interval. Do not apply more than 3 gallons per acre per season. Minimum retreatment interval is 7 days unless a longer interval is stated. Do not make more than 8 applications per season.
Nimitz (a.i. fluensulfone)	All applications must be incorporated either physically or via drip or overhead irrigation. Make preplant applications at a rate of 3.5 to 7 pints (56.0 to 80.0 fl oz) per acre a minimum of seven days before planting. Do not plant any unlisted crops into treated land for 365 days after application of the product. Do not apply more than one application per crop and no more than 112 fl oz of product per acre per year (365 days). Provides control only for nematodes. Growers applying Nimitz must consult the product label to observe the plant-back (recropping) intervals for a variety of leafy vegetables and brassica crops, onions, bananas, sugarcane, and other crops.
Velum (a.i. fluopyram)	Apply max 6.84 fl oz/acre using only chemigation into root zone through low-pressure drip, trickle, microsprinkler, or equivalent equipment. Observe minimum 5-day interval between soil applications. Do not apply more than 13.7 fl oz of Velum (0.446 lb fluopyram) per acre per year, regardless of formulation (Velum and/or Luna) or method of application (soil or foliar). For soil application, to limit the potential for development of disease resistance to this chemical class, the first foliar fungicide application after Velum should be a product from a different FRAC group.

Vydate is an insecticide/nematicide; Velum is a fungicide/nematicide; Nimitz is a true nematicide. Unlike fumigants, these products are not volatile and will move through the soil via water; depending on the water solubility, these products will have different recommendations for how to best apply them (see specific label recommendations); when nematode pressure is high, they may not be as consistently effective against root nematodes as the fumigants.

Table 13.6. Fumigant nematicides for peppers in Florida. Contact: Johan Desaegeer, UF/IFAS Gulf Coast Research and Education Center.

Nematicide	Broadcast Application <sup>1</sup>		In-the-Row Applications
	Gallons or lb per Acre	fl oz/1000 ft/ chisel-spaced 12" apart	
Telone II <sup>2,3</sup>	9 to 12 gal	26 to 35	For any row spacing, application rates given may be concentrated in the row but shall never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone C-17 <sup>2,3</sup>	10.8 to 17.1 gal	31.8 to 50.2	For any row spacing, application rates given may be concentrated in the row but shall never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone C-35 <sup>2,3</sup>	13 to 20.5 gal	38 to 60	For any row spacing, application rates given may be concentrated in the row but shall never exceed labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone InLine <sup>2,3</sup>	13 to 20.5 gal	-	For drip fumigation, consult the product label for overall rate, drip concentration, and flow-modifying application directions.
Pic Clor 60 <sup>2,3</sup>	19.5 to 31.5 gal	57 to 90	Consult product label for overall rate and chisel flow-modifying application directions.
Pic Clor 60 EC <sup>2,3</sup>	19.5 to 31.5 gal	-	For drip fumigation, consult product label for proportionately reduced overall rates, drip concentration, and drip flow-modifying directions and procedures.
Vapam HL	75 gal	-	For drip or in-row fumigation and crop termination, consult product label for proportionately reduced overall rates, drip concentration, and flow-modifying directions and procedures.
KPam HL	60 gal	-	For drip or in-row fumigation and crop termination, consult product label for proportionately reduced overall rates, drip concentration, and flow-modifying directions.
Allyl Isothiocyanate (AITC) Dominus	40 gal	-	For drip or in-row fumigation and crop termination, consult product label for overall rates, drip concentration, and flow-modifying directions.

<sup>1</sup> Gallons/acre and fl oz/1000 feet provided only for mineral soils. Higher rates may be possible for heavier-textured (loam, silt, clay) or highly organic soils.

<sup>2</sup> All of the fumigants mentioned are for retail sale and use only by state-certified applicators or persons under their direct supervision. New supplemental labeling for the Telone products must be in the hands of the user at the time of application. See label details for additional use restrictions based on soil characteristics, buffer zones, requirements for personal protective equipment (PPE), mandatory good agricultural practices (GAPs), product and applicator training certification, and rate-modifying recommendations with use of highly retentive Totally Impermeable mulch films (TIF).

<sup>3</sup> Higher application rates are possible in the presence of cyst-forming nematodes.

Rates are believed to be correct for products named and similar products of other brand names, when applied to mineral soils. Higher rates are required for muck (organic) soils. However, the **grower** has the final responsibility to see that each product is used legally; **read the label** of the product to be sure that you are using it properly.