

## Chapter 13. Pepper Production

Monica Ozores-Hampton, Nathan S. Boyd, Eugene J. McAvoy, Christian F. Miller, Joseph W. Noling, and Gary E. Vallad

### Botany and Planting

**Bell pepper** - *Capsicum annuum*, Solanaceae.

**Habanero and Bird's-eye pepper** - *Capsicum chinense*, Solanaceae.

Table 13.1. Planting information for pepper.

Planting dates	Traditional	Bird's Eye
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
Planting information		
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

### Cultivars

For more information on pepper varieties use the link below  
<http://edis.ifas.ufl.edu/pdf/files/IN/IN75700.pdf>

#### 1. SWEET BELL

**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).

**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.

**Crusader.** Plant erect with good cover. Extra-large fruit that are firm at mature red stage. R to Xcv 1-3, PVY, S, PeMo, TM.

**Gridiron.** Early to mid-maturing, extra-large blocky dark green-to-red bell with impressive yield potential. The fruit are smooth, glossy and high quality, with thick walls and a uniform blocky shape. HR: TMV: 0 / Xcv: 0-5, 7-9 and IR: TEV.

**HM 2641.** Tall erect vigorous plant with good leaf coverage suited for warm weather production. Glossy dark green large to extra-large sized fruit over an extended production period R to, Xcv 1-4 and TM.

**Hunter.** Early maturity. Medium size plant produces smooth, four-lobed, blocky dark green glossy fruit. Produces a large percentage of extra-large fruit. R to Xcv 1-5, TE, TM.

**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).

**PS 09979325.** Main-season hybrid that develops a mid-sized plant that produces green maturing to red fruit targeted to the south east US. 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™).

**Revolution.** Cold tolerance, concentrated early set, firm, uniform, extra-large green to red fruits. R to Xcv 1-3 and 5 and IR to CM and Pc.

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

**Tom Cat.** Mid-season. Medium plant size and a concentrated set that yields a high percentage of large size fruit. Blocky dark green color that turns a deep red upon maturity. R to Xcv 1-5, TE, and ToM.

**Touchdown.** Strong prolific plant with continuous setting ability and excellent cover. This variety has high yield potential of large to extra-large blocky fruit that mature from green to red. HR: TMV: 0 and Xcv: 0-5, 7-9.

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

#### 2. SWEET PEPPERS

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

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

**Orange You Sweet, Right On Red, and Yes To Yellow.** Mini hungarian cheese types, very early maturing, has a mid to strong plant vigor, with continuous setting ability. The fruit are flat round in shape and smooth with mid thick walls well suited for stuffing and pickling. See website for further details.

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

**Yellow Sparkler.** Sweet mini snacking pepper type, that turns from green to bright, rich yellow. Fruit have a great sweet flavor. HR: TMV: 0

**Yummy Yellow, Yummy Orange, Yummy Red, Red Sweetie, Yellow Sweetie, Orange Sweetie.** Brightly colored sweet mini bell types.

#### 3. CUBANELLE

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

#### 4. HOT ANCHO POBLANO

**Condor.** Dark green fruit. High percentage of two lobed fruit. R to Xcv

**Don Matias.** Large fruit maturing dark green to chocolate. Hot.

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

**San Ardo.** Early variety with 6"x3" uniform dark green fruit. Mildly hot firm flesh. R to TMV.

## 5. HOT CAYENNE

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

**Mesilla.** Long hot type produces very long (23-28 by 3.8 cm) 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.

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

## 6. HOT JALAPENO

**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.

**Jalafuego.** Extremely pungent. Large vigorous plant. Extra-large, smooth, very dark green fruit. HR: PVY: 0.1.2 / Xcv: 0-3, 7, 8

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

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

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

## 7. OTHER HOT PEPPERS

**Altiplano.** Vigorous serrano pepper with uniform 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.

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

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

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

**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 5 by 2.5 cm. 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 are pendant, large, smooth and tapered, matures from yellow to red, well-suited for fresh market and pickling.

**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"x2" fruit.

## 8. BIRD'S-EYE PEPPER – STRAIN 3

Table 13.2. Herbicides approved for managing weeds in pepper.

Labels change frequently. Be sure to read a current product label before applying any chemical.			
Active ingredient lb. a.i./A	Trade name product/A	MOA Code	Weeds controlled / remarks
*** PREPLANT / PREEMERGENCE ***			
Bensulide 5.0 - 6.0	(Prefar) 4 E 5 - 6 qt.	8	Broadleaves and grasses. Incorporate mechanically 1 - 2 in. deep or with irrigation 2 - 4 in. deep.
Carfentrazone up to 0.031	(Aim) 1.9 EW up to 2 fl. oz. (Aim) 2.0 EC up to 2 fl. oz.	14	Apply as a pre-plant 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 pre-transplant interval.
Clomazone 0.25 to 1	(Command) 3ME 0.67 to 2.67 pt.	15	Annual broadleaves and grasses.
Flumioxazin up to 0.128	(Chateau) 51 WDG up to 4 oz.	14	Annual broadleaves and grasses. Apply to row middles of raised plastic mulched beds that are at least 4 in. higher than the treated row middles and with a 24 in. bed width. 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 burn down herbicide to control emerged weeds. 0 day pre-transplant interval
Fomesafen 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 bareground 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. 7 and 0 day pre-transplant interval on bare ground and plastic mulch, respectively. 60 day PHI.
Glyphosate	(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.
Halosulfuron 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.
Lactofen 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. Cobra contacting green foliage or fruit can cause excessive injury. Drift of Cobra treated soil particles onto plants can cause contact injury. Limit of 1 PRE and 1 POST application per growing season. 30 day PHI.
S-metolachlor 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.

Table 13.2. Herbicides approved for managing weeds in pepper. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.			
Active ingredient lb. a.i./A	Trade name product/A	MOA Code	Weeds controlled / remarks
<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 in. 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 to preformed beds or banded treatment. 30 day pre-transplant 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>Pelargonic acid</b>	(Scythe) 4.2 EC 3 - 10% v/v		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 in. tall or rosettes less than 3 in. diameter. Apply as a preplant burndown treatment. Nonionic surfactant or crop oil concentrate recommended.
<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 in. or less within 8 hr. of application. Results in Florida are erratic on soils with low organic matter and clay contents. 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) 1.9 EW up to 2 fl. oz. (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	(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. 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 in. 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>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>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 in. 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>Pelargonic acid</b>	(Scythe) 4.2 EC 3 - 10% v/v		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 post transplant 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>*** 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.

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Aphids (including aphid transmitted viruses, green peach aphid, potato aphid)	1A	<b>*Lannate LV, *SP</b> (methomyl)	<b>LV: 1.5-3.0 pt; SP: 0.5-1.0 lb</b>	No more than 15 pt LV or 5 lb SP/acre crop	3	48	No more than 8 applications per crop.
	1A	<b>*Vydate L</b> (oxamyl)	<b>Foliar: 2-4 pt Drip Chemigation &amp; Soil Injection Systems: 2 to 4 pt/A of plant bed.</b>	Do not apply more than 24 pt per acre per season.	7	48	Do not make more than 8 applications per season.
	1B	<b>Acephate 90 WDG</b> (acephate)	0.55-1.11 lb	Do not apply more than 2.22 lb/ A per crop cycle	7	24	
	1B	<b>*Dibrom 8EC</b> (naled)	1pt	Do not apply more than 5 pints per acre per season.	1	48	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures is over 90F.
	1B	<b>Dimethoate 4EC</b> (dimethoate)	0.5-0.66 pt	Maximum total rate per year is 1.65 lb ai/A.	0	48	Highly toxic to bees.
	1B	<b>Malathion 5EC</b> (malathion)	1.5-2.5 pt	Maximum 2.5 pints per acre per year.	3	12	Maximum of 2 applications per year.
	1B	<b>Orthene 97</b> (acephate)	<b>0.5-1.0 lb—bell peppers; 0.5 lb—non-bell peppers</b>	Do not apply more than 2 lb ai per acre per crop cycle or 1 lb ai per acre per season for non-bell peppers.	7	24	
	3A	<b>*Karate with Zeon</b> (lambdacyhalothrin)	1.28-1.92 fl. oz.	Do not apply more than 23.04 fl. oz. /A per season.	5	24	Suppression only.
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	14-19 fl. oz.	Do not apply more than 57 fl. oz./A per 12 month cropping year.	7	12	
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	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 ai/acre per season.	5	24	Suppression only.
	3A & 4A	<b>*Endigo ZC</b> (lambdacyhalothrin & thiamethoxam)	4.0-4.5 fl. oz.	Do not exceed a total of 19.0 fl oz/A of Endigo ZC or 0.36 lb ai of lambda-cyhalothrin-containing products or 0.172 lb ai of thiamethoxam-containing-products per acre per growing season.	5	24	Toxic to bees.
	4A	<b>Actara</b> (thiamethoxam)	2.0-3.0 oz	Maximum of 11 oz/acre or 0.172 lb ai/acre of thiamethoxam containing products per growing season.	0	12	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 ai/A).	21	12	Most effective if applied to soil at transplanting.
	4A	<b>Admire Pro</b> (imidacloprid)	0.44 fl oz/10,000 plants		21 (soil)	12	<b>Planthouse:</b> 1 application to transplants. See label.
	4A	<b>Assail 30SG</b> (acetamiprid)	2.0-4.0 oz	Do not exceed a total of 16 oz. of Assail 30 SG per acre per growing season including any pretransplant applications of acetamiprid.	7	12	Do not apply more than 4 times per season or more often than every 7 days.
	4A	<b>Assail 70 WP</b> (acetamiprid)	0.8-1.7 oz.	Do not exceed a total of 6.8 oz. Assail 70 WP per acre per growing season including any pretransplant applications of acetamiprid.	7	12	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.	7	12	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.	
4A	<b>Belay 50 WDG</b> (clothianidin)	4.8 -6.4 oz (soil application)	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	Do not release irrigation water from the treated area.	

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	4A	<b>Platinum</b> (thiamethoxam)	5-11 fl oz	Do not exceed a total of 11 fl. oz. Platinum/A per growing season or 0.172 lb. a.i. of thiamethoxam containing products per acre per growing season.	30	12	Soil application. See label for rotational restrictions.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66-3.67 oz	Do not exceed a total of 3.67 Platinum 75 SG/A per growing season or 0.172 lb ai of thiamethoxam containing products per acre per growing season.	30	12	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.	0	12	Do not apply to crop that has been 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.	foliar - 1, soil - 21	12	Suppression only. Application restrictions exist for this product because of 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)	Foliar: 1-4 oz. 5-7.5 oz.	Soil: No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	foliar: 1; soil: 21	12	Suppression only. Use only one application method (soil or foliar). No more than 3 applications per season.
	4A & 28	<b>Voliam Flexi</b> (thiamethoxam & chlorantraniliprole)	4-7 oz	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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. Do not use an adjuvant with applications Flexi to chili pepper or pimento.
	4C	<b>Closer SC</b> (sulfoxaflor)	1.5-2.0 fl oz	Do not apply more than a total of 17 fl oz of Closer SC (0.266 lb ai of sulfoxaflor) per acre per year.	1	12	Do not apply this product until after petal fall. See label for tank mix restrictions.
	4D	<b>Sivanto 200 SL</b> (flupyradifurone)	7.0-12.0 fl. oz.	Do not apply more than 28.0 fl. oz./A per year.	1	4	Minimum interval between applications: 7 days.
	5	<b>Durivo</b> (thiamethoxam & chlorantraniliprole)	10-13 fl oz	Do not exceed a total of 13.0 fl oz product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole /A per growing season.	30	12	Make only one soil application per crop season. Several methods of soil application- see label.
	9B	<b>Fulfill</b> (pymetrozine)	2.75 oz	Do not apply more than 5.5 oz/acre per crop.	0	12	Do not make more than two applications.
	23	<b>Movento</b> (spirotetramat)	4.0-5.0 fl oz	Maximum of 10 fl oz per acre per season.	1	24	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 ai/A per crop.	1	12	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	soil at-planting or transplant tray treatment: 6.75-13.5 fl. oz.; drip chemigation or soil injection: 6.75-10 fl. oz.	Do not apply more than 0.4 lb ai/A per crop.	1	4	Suppression only.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.8-4.28 oz	Do not apply more than 8.4 oz/acre per season.	0	12	Begin applications before pests reach damaging levels.
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	10-21 fl oz		0	4	Antifeedant, repellent, insect growth regulator.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

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Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Beetles (including beetle larvae, blister beetle, Colorado potato beetle, cucumber beetle, flea beetle)	--	<b>M-Pede 49% EC (Soap, insecticidal)</b>	1-2% V/V		0	12	OMRI-listed.
	--	<b>Neemix 4.5 (azadirachtin)</b>	5-7 fl oz		0	4	Suppression of nymphs and adult feeding deterrence. IGR and feeding repellent. OMRI-listed.
	--	<b>Requiem 25EC (extract of <i>Chenopodium ambrosioides</i>)</b>	2-4 qts		0	4	Begin before pest reach damaging levels.
	--	<b>Suffoil-X (petroleum oil)</b>	1-2 gal per 100 gal. water		0	4	OMRI listed. Green house labeled.
	--	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others (oil, insecticidal)</b>	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	Stylet Oil helps manage aphid-borne viruses but does not kill aphids. Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
	1A	<b>Carbaryl 4L (carbaryl)</b>	1/2 to 2 quarts	Do not apply more than 8 quarts per crop per year.	3	12	BEE CAUTION: DO NOT apply to weeds or crops in bloom.
	1A	<b>Sevin XLR; 4F (carbaryl)</b>	<b>XLR, 4F: 0.5-2.0 qt</b>	Do not apply a total or more than 8 qt per acre per crop.	3	12	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	1B	<b>*Dibrom 8EC (Naled)</b>	1 pt	Do not apply more than 6 pints per acre per season.	1	48	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures is over 90F.
	3A	<b>*Hero (bifenthrin &amp; zeta-cypermethrin)</b>	4.0-10.3 oz.	Do not apply more than 27.39 oz of product or 0.266 lb ai /A per season.	7	12	
	3A	<b>*Karate with Zeon (lambda-cyhalothrin)</b>	1.28-1.92 fl. oz.	Do not apply more than 23.04 fl. oz. or 0.36 lb ai /A per season.	5	24	
	3A & 6	<b>*Gladiator (avermectin B1 &amp; zeta-cypermethrin)</b>	10-19 fl. oz.	Do not apply more than 57 fl. oz. of product or 0.036 # ai of avermectin or 0.078 # ai of zeta-cypermethrin/A per 12 month cropping year.	7	12	
	3A	<b>*Ambush 25W (permethrin)</b>	6.4-12.8 oz	Do not apply more than 1.6 lb ai/acre per season.	3	12	Bell peppers only.
	3A	<b>*Asana XL (esfenvalerate)</b>	5.8-9.6 fl oz	Do not apply more than 0.35 lb ai per acre per season, or treat more than 7 times at high rate.	7	12	
	3A	<b>*Brigade 2EC (bifenthrin)</b>	2.1-6.4 fl oz	Do not apply more than 0.2 lb active ingredient per acre per season.	7	12	Do not make applications less than 7 days apart.
	3A	<b>*Pounce 25 W (permethrin)</b>	6.4-12.8 oz	Do not apply more than 0.8 lb ai per acre per season.	3	12	Do not make applications less than 5 days apart.
	3A	<b>Pyganic EC 5.0 (pyrethrins)</b>	4.5-17 fl oz	10.6 pints.	0	12	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A & 4A	<b>*Endigo ZC (lambda-cyhalothrin &amp; thiamethoxam)</b>	4.0-4.5 fl. oz.	Do not exceed a total of 19.0 fl oz/A of Endigo ZC or 0.36 lb ai of lambda-cyhalothrin-containing products or 0.172 lb ai of thiamethoxam-containing-products per acre per growing season.	5	24	Toxic to bees.
4A	<b>Actara (thiamethoxam)</b>	2.0-3.0 oz	Maximum of 11 oz/acre or 0.172 lb ai/acre of thiamethoxam containing products per growing season.	0	12	Toxic to bees.	
4A	<b>Admire Pro (imidacloprid)</b>	7-14.0 fl oz	Maximum allowed on pepper is 14.0 fl. oz/A (0.5 lb ai/A).	21	12	Most effective if applied to soil at transplanting.	

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	4A	<b>Assail 70 WP</b> (acetamiprid)	0.6-1.1 oz.	Do not exceed a total of 6.8 oz. Assail 70 WP per acre per growing season including any pretransplant applications of acetamiprid.	7	12	No more than 4 applications per season.
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-2.1 oz	Do not apply more than 6.4 oz per acre per season.	7	12	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	4.8 -6.4 oz (soil application)	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	Do not release irrigation water from the treated area.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66-3.67 oz	Do not exceed a total of 3.67 Platinum 75 SG/A per growing season or 0.172 lb ai of thiamethoxam containing products per acre per growing season.	30	12	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.	0	12	Do not apply to crop that has been 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.	foliar - 1, soil - 21	12	Suppression only. Application restrictions exist for this product because of 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> 5-7.5 oz.	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	foliar: 1; soil: 21	12	Use only one application method (soil or foliar). No more than 3 applications per season.
	4A & 28	<b>Voliam Flexi</b> (thiamethoxam & chlorantraniliprole)	4-7 oz	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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. Do not use an adjuvant with applications Flexi to chili pepper or pimento.
	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.	1	4	Minimum interval between applications: 7 days.
	5	<b>Durivo</b> (thiamethoxam & chlorantraniliprole)	10-13 fl oz	Do not exceed a total of 13.0 fl oz product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole /A per growing season.	30	12	Make only one soil application per crop season. Several methods of soil application- see label.
	5	<b>Radiant SC</b> (spinetoram)	5-10 fl oz	Maximum of 34 fl oz product or 0.266 lb ai per acre per year.	1	4	Allow 4 days between applications. No more than 6 applications per year.
	28	<b>Coragen</b> (chlorantraniliprole)	<b>Foliar:</b> 3.5-7.5 fl oz.	Do not apply more than 15.4 fl oz or 0.2 lb ai per acre per crop.	1	4	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)	7-13.5 fl oz	Do not apply a total of more than 0.4 lb ai/A per crop.	1	12	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	soil at-planting or transplant tray treatment: 6.75-13.5 fl. oz.; drip chemigation or soil injection: 5-10 fl. oz.	Do not apply more than 0.4 lb ai/A per crop.	1	4	
	-	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Azatin XL</b> (azadirachtin)	5-16 fl oz		0	4	Antifeedant, repellent, insect growth regulator.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	-	<b>Neemix 4.5</b> (azadirachtin)	4-16 fl oz		0	12	IGR and feeding repellent. OMRI-listed.
	-	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water		0	4	OMRI listed
	-	Surround (kaolin)	12.50-50 lbs		0	4	12.5 lbs/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)	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	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.	3	12	Do not apply to target crop or weeds in bloom. Up to 7 applications allowed per year. Minimum spray interval is 7 days.
	1A	<b>*Lannate LV, *SP</b> (methomyl)	LV: 0.75-3.0 pt; SP: 0.25-1.0 lb	No more than 12 pt LV or 4 lb SP/acre crop	3	48	No more than 8 applications per crop.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	XLR, 4F: 1-2 qt	Do not apply a total or more than 8 qt per acre per crop.	3	12	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	7	24	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.	7	24	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)	0.25-1.00 lb—bell peppers	Do not apply more than 2 lb ai per acre per season.	7	24	
	3A	<b>*Hero</b> (bifenthrin & zeta-cypermethrin)	4.0-10.3 oz.	Do not apply more than 27.39 oz or 0.266 lbs ai /A per season.	7	12	Minimum interval between applications: 7 days.
	3A	<b>*Karate with Zeon</b> (lambdacyhalothrin)	0.96-1.92 fl. oz.	Do not apply more than 23.04 fl. oz. product or 0.36 lb ai /A per season.	5	24	
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	10-19 fl. oz.	Do not apply more than 57 fl. oz./A per 12 month cropping year.	7	12	
	3A	<b>*Ambush 25W</b> (permethrin)	6.4-12.8 oz	Do not apply more than 1.6 lb ai/acre per season.	3	12	Bell peppers only.
	3A	<b>*Asana XL</b> (esfenvalerate)	5.8-9.6 fl oz	Do not apply more than 0.35 lb ai per acre per season, or treat more than 7 times at high rate.	7	12	
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	1.6-2.8 fl oz	Do not apply more than 16.8 fl oz per acre per season.	7	12	(1) 1st and 2nd instars only
	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.	7	12	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 ai/acre) per season.	3	24	Do not mix with copper.
	3A	<b>*Pounce 25 W</b> (permethrin)	6.4-12.8 oz	Do not apply more than 0.8 lb ai per acre per season.	3	12	Do not make applications less than 5 days apart.
3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	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 ai/acre per season.	5	24		



**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	3A & 4A	*Endigo ZC (lambda-cyhalothrin & thiamethoxam)	4.0-4.5 fl. oz.	Do not exceed a total of 19.0 fl oz/A of Endigo ZC or 0.36 lb ai of lambda-cyhalothrin-containing products or 0.172 lb ai of thiamethoxam-containing-products per acre per growing season.	5	24	Toxic to bees.
	4A & 2B	<b>Voliam Flexi (thiamethoxam &amp; chlorantraniliprole)</b>	4-7 oz	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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>Durivo (thiamethoxam &amp; chlorantraniliprole)</b>	10-13 fl oz	Do not exceed a total of 13.0 fl oz product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole /A per growing season.	30	12	Several methods of soil application-see label.
	5	<b>Entrust SC (spinosad)</b>	1.5-8.0 fl oz	Do not use more than 29 oz or 0.45 lbs ai per acre per crop.	1	4	Maximum application is 6 per year. Do not apply to seedlings grown for transplant. OMRI-listed.
	5	<b>Radiant SC (spinetoram)</b>	5-10 fl oz	Maximum of 34 fl oz product or 0.266 lb ai per acre per year.	1	4	Allow 4 days between applications. No more than 6 applications per year.
	6	* <b>Proclaim (emamectin benzoate)</b>	2.4-4.8 oz	No more than 28.8 oz/acre per season.	7	12	
	11	Deliver ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.25-1.50 lb		0	4	Use higher rates for armyworms. OMRI-listed.
	11	<b>Javelin WG (Bacillus thuringiensis subspecies <i>kurstaki</i>)</b>	0.12-1.50 lb		0	4	Treat when larvae are young. Thorough coverage is essential. OMRI listed.
	11A	<b>Agree WG (Bacillus thuringiensis subspecies <i>aizawai</i>)</b>	0.5-2.0 lb		0	4	Apply when larvae are small for best control. Can be used in greenhouse. OMRI-listed <sup>2</sup> .
	11A	<b>Crymax WDG (Bacillus thuringiensis subspecies <i>kurstaki</i>)</b>	0.5-2.0 lb		0	4	Use high rate for armyworms. Treat when larvae are young.
	11A	<b>DiPel DF (Bacillus thuringiensis subspecies <i>kurstaki</i>)</b>	0.5-2.0 lb		0	4	Treat when larvae are young. Good coverage is essential. OMRI-listed.
	11A	<b>Xentari DF (Bacillus thuringiensis subspecies <i>aizawai</i>)</b>	0.5-2.0 lb		0	4	Treat when larvae are young. Thorough coverage is essential. May be used in the greenhouse. Can be used in organic production.
	11B	<b>Biobit HP (Bacillus thuringiensis subspecies <i>kurstaki</i>)</b>	0.5-2.0 lb		0	4	Treat when larvae are young. Good coverage is essential. Can be used in the greenhouse. OMRI-listed.
	15	* <b>Dimilin 25 W, *2 L (diflubenzuron)</b>	4-8 oz	Apply no more than 24 oz per acre per season	7	12	Up to 5 applications per season. IGR - effects not seen for 5-7 days.
	15	<b>Rimon 0.83EC (novaluron)</b>	9-12 fl oz	Do not apply more than 36 fl oz per acre per season.	1	12	Do not use with an adjuvant.
	18	<b>Confirm 2F (tebufenozide)</b>	6-16 fl oz	Do not apply more than 1.0 lb ai per acre per season.	7	4	
	18	<b>Intrepid 2F (methoxyfenozide)</b>	4-16 fl oz	Do not apply more than 64 fl oz per acre per season.	1	4	
	22	<b>Avaunt (indoxacarb)</b>	2.5-3.5 oz	Do not use more than 14 ounces of product per acre per crop. Do not apply more than 0.26 lb ai per acre per year.	3	12	Minimum spray interval is 5 days.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Fire ants	28	<b>Coragen</b> (chlorantraniliprole)	3.5-7.5 fl oz.	Do not apply more than 15.4 fl oz per acre per crop.	1	4	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 ai/A per crop.	1	12	Minimum spray interval is 5 days.
	28	Verimark (cyantraniliprole)	<b>soil at-planting or transplant tray treatment: 5-13.5 fl. oz.; drip, soil injection or chemigation: 5-10 fl. oz.</b>	Do not apply more than 0.4 lb ai/A per crop.	1	4	
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	5-21 fl oz		0	4	Antifeedant, repellent, insect growth regulator.
	--	<b>Grandevo</b> ( <i>Chromobacterium subtsugae</i> strain PRAA4-1)	1-3 lb		0	4	Can be used in organic production. OMRI-listed.
	--	MBI-203 EP ( <i>Chromobacterium subtsugae</i> )	4.0-8.0 quarts		0	4	OMRI listed. Can be used in the greenhouse.
	--	<b>Neemix 4.5</b> (azadirachtin)	4-10 fl oz		0	12	IGR and feeding repellent. OMRI-listed.
	--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water			4	OMRI listed
	7A	Extinguish (S-Methoprene)	1.0-1.5 lb		0	4	Slow-acting IGR (insect growth regulator). Best applied early spring and fall where crop will be grown. Colonies will be reduced after three weeks and eliminated after 8 to 10 weeks. May be applied by ground equipment or aerially.
Grasshoppers	7C	<b>Esteem Ant Bait</b> (pyriproxyfen)	1.5-2.0 lb		1	12	Apply when ants are actively foraging.
	1B	<b>Acephate 90 WDG</b> (acephate)	0.28-1.11 lb	Do not apply more than 2.22 lb product or 2.0 lb ai/A per crop cycle.	7	24	Bell type peppers only.
	1B	<b>Orthene 97</b> (acephate)	0.25-0.5 lb—bell peppers	Do not apply more than 2 lb ai per acre per season.	7	24	Bell type peppers only.
	3A	*Hero (bifenthrin & zeta-cypermethrin)	4.0-10.3 oz.	Do not apply more than 27.39 oz of product or 0.266 lb ai /A per season.	7	12	Do not make applications less than 7 days apart.
	3A	*Karate with Zeon (lambda-cyhalothrin)	1.28-1.92 fl. oz.	Do not apply more than 23.04 fl. oz. or 0.36 lb ai /A per season.	5	24	
	3A & 6	* <b>Gladiator</b> (avermectin B1 & zeta-cypermethrin)	14-19 fl. oz.	Do not apply more than 57 fl. oz. of product or 0.036 lb avermectin or 0.078 lb zeta-cypermethrin /A per 12 month cropping year.	7	12	
	3A & 4A	*Endigo ZC (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.	5	24	
3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.	

Table 13.3. Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28-1.92 fl oz	Do not apply more than 0.36 lb ai/acre per season.	5	24	
	4A	<b>Scorpion 35SL</b> (dinotefuran)	Foliar: 2-7 fl oz Soil: 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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of 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)	Foliar: 1-4 oz. Soil: 5.0-7.5 oz.	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	foliar: 1; soil: 21	12	Use only one application method (soil or foliar). No more than 3 applications per season. Toxic to bees.
	--	Surround (kaolin)	12.50-50 lbs		0	4	12.5 lb is the preferred rate up to fruit set.
	Lace bugs	1A	<b>Carbaryl 4L</b> (carbaryl)	1 to 2 quarts	Do not apply more than 8 quarts per crop per year.	3	12
1A		<b>Sevin XLR; 4F</b> (carbaryl)	XLR, 4F: 1.0-2.0 qt	Do not apply a total or more than 8 qt per acre per crop.	3	12	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
Leafhoppers		1A	Carbaryl 4L (carbaryl)	1/2 to 1 quarts	Do not apply more than 8 quarts per crop per year.	3	12
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	XLR, 4F: 0.5-1.0 qt	Do not apply a total or more than 8 qt per acre per crop.	3	12	Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	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 ai /A per season.	7	12	
	3A	<b>*Karate with Zeon</b> (lambdacyhalothrin)	1.28-1.92 fl. oz.	Do not apply more than 23.04 fl oz of product or 0.36 lb ai /A per season.	5	24	
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	10-19 fl. oz.	Do not apply more than 57 fl oz of product or 0.036 ib avermectin or 0.078 zeta-cypermethrin /A per 12 month cropping year.	7	12	
	3A	<b>*Baythroid XL</b> beta-cyfluthrin)	1.6-2.8 fl oz	Do not apply more than 16.8 fl oz of product or 0.132 ib ai per acre per season.	7	12	
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMR1-listed.
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28-1.92 fl oz	Do not apply more than 0.36 lb ai/acre per season.	5	24	
	3A & 4A	<b>*Endigo ZC</b> (lambdacyhalothrin & 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 ib thiamethoxam /acre per season.	5	24	
	4A	<b>Admire Pro</b> (imidacloprid)	7-14.0 fl oz	Maximum allowed on pepper is 14.0 fl. oz/A (0.5 lb ai/A).	21	12	Most effective if applied to soil at transplanting.
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-2.1 oz (foliar)	Do not apply more than 6.4 oz product or 0.2 lb ai /acre per season.	7	12	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	Belay 50 WDG (clothianidin)	4.8 -6.4 oz application)	(soil) Do not apply more than 6.4 oz product or 0.2 ib ai /acre per season.	Apply at planting	12	Do not release irrigation water from the treated area.
4A	<b>Platinum</b> (thiamethoxam)	5-11 fl oz	Do not exceed a total of 11 fl. oz. Platinum or 0.172 lb ai /A per growing season.	30	12	Soil application. See label for rotational restrictions.	

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	4A	<b>Provado 1.6F</b> (imidacloprid)	3.8- 6.2 oz	Maximum per crop per season 19.2 fl oz/A.	0	12	Do not apply to crop that has been 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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of 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	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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.	Do not apply more than 28.0 fl oz product or 0.365 lb ai /A per year.	1	4	Minimum interval between applications: 7 days.
	5	<b>Durivo</b> (thiamethoxam & chlorantraniliprole)	10-13 fl oz	Do not exceed a total of 13.0 fl oz product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole /A per growing season.	30	12	Several methods of soil application- see label.
	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.	1	12	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>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	10-16 fl oz		0	4	Antifeedant, repellent, insect growth regulator.
	--	<b>M-Pede 49% EC (Soap, insecticidal)</b>	1-2% V/V		0	12	OMRI-listed.
	--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water		0	4	OMRI listed
	--	Surround (kaolin)	12.50-50 lbs		0	4	12.5 is the preferred rate up to fruit set.
	--	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	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.	7	48	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.	1	48	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures is over 90F.
	1B	<b>Dimethoate 4EC</b> (dimethoate)	0.5-0.67 pt	Maximum total rate per year is 1.65 lb ai/A.	0 for mechanical harvesting	48	Highly toxic to bees.
	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 ai /A per season.	7	12	
	3A	<b>*Karate with Zeon</b> (lambdacyhalothrin)	1.28-1.92 fl. oz.	Do not apply more than 23.04 fl oz product or 0.36 lb ai /A per season.	5	24	Suppression only.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	19 fl. oz.	Do not apply more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb zeta-cypermethrin /A per 12 month cropping year.	7	12	
	3A	<b>*Ambush 25W</b> (permethrin)	6.4-12.8 oz	Do not apply more than 1.6 lb ai/acre per season.	3	12	Bell peppers only. Suppression only.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	2.8 fl oz	Do not apply more than 16.8 fl oz product or 0.132 lb ai / acre per season.	7	12	Suppression only.
	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.	7	12	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 ai per acre per season.	3	12	Do not make applications less than 5 days apart.
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	Pyrethrins degrade rapidly in sunlight. Thorough coverage is important. OMRI-listed.
	3A & 4A	<b>*Endigo ZC</b> (lambdacyhalothrin & thiamethoxam)	4.5 fl. oz.	Do not exceed a total of 19.0 fl oz per acre per season.	5	24	Suppression only. For control: tank-mix with 2-2.5 oz/A of Actara
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-2.1 oz (foliar)	Do not apply more than 6.4 oz per acre per season.	7	12	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)	4.8 -6.4 oz (soil application)	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of 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	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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 ai /acre per crop.	1	4	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	Maximum of 34 fl oz or 0.266 lb ai /acre per year.	1	4	Allow 4 days between applications. No more than 6 applications per year.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.7-3.5 fl oz	Do not apply more than 10.25 fl. oz./A (0.056 lb ai/A) of Agri-Mek SC or any other foliar applied abamectin-containing product in a growing season.	7	12	Do not make more than 2 sequential applications per year. Must be used with a non-ionic 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.	1	12	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.	0	12	No more than 6 applications per crop.
	28	<b>Coragen</b> (chlorantraniliprole)	3.5-7.5 fl oz.	Do not apply more than 15.4 fl oz product or 0.2 lb ai / acre per crop.	1	4	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.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	28	<b>Exirel</b> (cyantraniliprole)	13-20.5 fl. oz.	Do not apply a total of more than 0.4 lb ai/A per crop.	1	12	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	soil at-planting or transplant tray treatment: 6.75-13.5 fl. oz.; drip chemigation or soil injection: 6.75-10 fl. oz.	Do not apply more than 0.4 lb ai/A per crop.	1	4	
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	10-16 fl oz		0	4	Antifeedant, repellent, insect growth regulator. Foliar application to larvae. Use with oil.
	--	<b>Neemix 4.5</b> (azadirachtin)	4-7 fl oz		0	12	IGR and feeding repellent. OMRI-listed. For larvae and nymphs.
	--	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	3-4 qts		0	4	Begin before pest reach damaging levels.
	--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water			4	OMRI listed
	--	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	Organic Stylet-Oil and Saf-T-Side are OMRI- listed.
<b>Mealybugs</b>	16	<b>Courier SC</b> (buprofezin)	13.6 fl oz	Do not apply more than 27.2 fl. oz./A per crop cycle.	1	12	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>Mites</b> (including broad mites, carmine spider mite, tomato russett mite, two spotted spider mite)	1B	<b>*Dibrom 8EC</b> (naled)	1 pt	Do not apply more than 6 pints per acre per season.	1	48	Apply no more than 1 pt/acre in Florida. Do not apply when temperatures is over 90F.
	3A	<b>*Hero</b> (bifenthrin & zeta-cypermethrin)	10.3 oz.	Do not apply more than 27.39 oz or 0.266 lb ai /A per season.	7	12	
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28-1.92 fl. oz.	Do not apply more than 23.04 fl oz or 0.36 lb ai /A per season.	5	24	Suppression only (spider mite species).
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	19 fl. oz.	Do not apply more than 57 fl. oz./A per 12 month cropping year.	7	12	Do not make applications less than 7 days apart.
	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.	7	12	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 ai/acre) per season.	3	24	Do not apply with copper.
	3A	<b>Pyganic EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	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 ai/acre per season.	5	24	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 ai lambda-cyhalothrin or 0.172 lb ai thiamethoxam / acre per season.	5	24	Suppression only. For control: tank-mix with 2-2.5 oz/A of Actara
	6	<b>*Agri-Mek SC</b> (abamectin)	1.7-3.5 fl oz	Do not apply more than 10.25 fl. oz./A (0.056 lb ai/A) of Agri-Mek SC or any other foliar applied abamectin-containing product in a growing season.	7	12	Do not make more than 2 sequential applications. Must be used with a non-ionic activator type wetting, spreading, or penetrating adjuvant.
	10B	<b>Zeal Miticide</b> (etoxazole)	2-3 oz	Do not make more than one application per season.	7	12	Do not use with an adjuvant or surfactant.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Plant bugs (includes Tarnished plant bug)	20B	<b>Kanemite 15 SC</b> (acequinocyl)	31 fl oz	Do not apply more than 62 fl. oz./A per season.	1	12	Allow a minimum of 21 days between treatments. Do not make more than two applications per year. Do not use an adjuvant.
	21A	<b>Portal</b> (fenpyroximate)	2.0 pt	Do not apply more than 4.0 pints/A per crop cycle.	1	12	Do not make more than two applications per season. Allow 14 dys between applications.
	23	<b>Oberon 2SC</b> (spiromesifen)	7.0-8.5 fl oz	Maximum amount per crop: 25.5 fl oz/acre.	7	12	No more than 3 applications.
	--	<b>Acramite-50WS</b> (bifenazate)	0.75-1.0 lb	One application allowed per season.	3	12	
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. 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		0	4	
	--	M-Pede 49% EC (Soap, insecticidal)	1-2% V/V		0	12	OMRI-listed.
	--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water			4	OMRI listed
	--	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	Organic Stylet-Oil and Saf-T-Side are OMRI- listed.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F: 1-2 qt</b>	Do not apply a total or more than 10 lb or 8 qt per acre per crop.	3	12	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	Do not apply more than 23.04 fl oz of product or 0.36 lb ai /A per season.	5	24	
	3A	<b>Pyganic Crop Protection EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	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 ai/acre per season.	5	24	
	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.	5	24	
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-2.1 oz (foliar)	Do not apply more than 6.4 oz per acre per season.	7	12	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	4.8 -6.4 oz (soil application)	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	Do not release irrigation water from the treated area.
	4C	<b>Closer SC</b> (sulfoxaflor)	2.75-4.5 fl oz	Do not apply more than a total of 17 fl oz of Closer SC (0.266 lb ai of sulfoxaflor) per acre per year.	1	12	Do not apply this product until after petal fall. See label for tank mix restrictions.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.0-4.28 oz	Do not apply more than 8.4 oz/acre per season.	0	12	Begin applications before pests reach damaging levels.
	--	<b>M-Pede 49% EC</b> (Soap, insecticidal)	1-2% V/V		0	12	OMRI-listed.
--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water			4	OMRI listed	
Planthoppers	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.	1	12	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.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Psyllids	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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method
	4D	<b>Sivanto Prime</b> (flupyradifurone)	10.5-14.0 fl. oz.	Do not apply more than 28.0 fl. oz./A per year.	1	4	Minimum interval between applications: 7 days.
	23	<b>Movento</b> (spirotetramat)	4.0-5.0 fl oz	Maximum of 10 fl oz per acre per season.	1	24	Minimum interval between applications: 7 days
Stinkbugs (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.	3	12	Suppression only.
	1A	<b>Sevin XLR; 4F (carbaryl)</b>	<b>XLR, 4F: 0.5-2.0 qt</b>	Do not apply a total or more than 10 lb or 8 qt per acre per crop.	3	12	Suppression. Do not apply more than seven times. Do not apply to crops or weeds in bloom.
	3A	<b>*Hero</b> (bifenthrin & zeta-cypermethrin)	4.0-10.3 oz.	Do not apply more than 27.39 oz or 0.266 lb ai /A per season.	7	12	
	3A	<b>*Karate with Zeon</b> (lambdacyhalothrin)	1.28-1.92 fl oz	Do not apply more than 23.04 fl oz of product or 0.36 lb ai /A per season.	5	24	
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	10-19 fl. oz.	Do not apply more than 57 fl oz product or 0.036 ib avermectin or 0.078 lb zeta-cypermethrin /A per 12 month cropping year.	7	12	
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	1.6-2.8 fl oz	Do not apply more than 16.8 fl oz per acre per season.	7	12	
	3A	<b>*Danitol 2.4 EC</b> (fenpropathrin)	10.67 fl oz	Maximum of 4 applications (0.8 lb ai/acre) per season.	3	24	
	3A	<b>*Warrior II</b> (lambda-cyhalothrin)	1.28-1.92 fl oz	Do not apply more than 0.36 lb ai/acre per season.	5	24	
	3A & 4A	<b>*Endigo ZC</b> (lambdacyhalothrin & thiamethoxam)	4.0-4.5 fl. oz.	Do not exceed a total of 19.0 fl oz per acre per season.	5	24	
	4A	<b>Actara</b> (thiamethoxam)	3.0-5.5 oz	Maximum of 11 oz/acre or 0.172 lb ai/acre of thiamethoxam containing products per growing season.	0	12	Toxic to bees.
	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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of 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)	Foliar (only): 1-4 oz.	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	foliar: 1; soil: 21	12	Use only one application method (soil or foliar). No more than 3 applications per season.
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-2.4 oz (foliar)	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	Do not use 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	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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.	1	12	Do not use with an adjuvant.



**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Thrips: check label for species controlled (includes eastern flower thrips, foliar feeding thrips, chilli thrips, melon thrips, western flower thrips)	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	1A	<b>Carbaryl 4L</b> (carbaryl)	1-2 quarts	Do not apply more than 8 quarts per crop per year.	3	12	Suppression.
	1A	<b>Sevin XLR; 4F</b> (carbaryl)	<b>XLR, 4F: 0.5-2.0 qt</b>	Do not apply a total or more than 10 lb or 8 qt per acre per crop.	3	12	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: 2-4 pt</b>	Do not apply more than 24 pt per acre per season.	7	48	(1) 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.	7	24	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>*Hero</b> (bifenthrin & zeta-cypermethrin)	10.3 oz.	Do not apply more than 27.39 oz or 0.266 lb ai /A per season.	7	12	
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	19 fl. oz.	Do not apply more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb zeta-cypermethrin /A per 12 month cropping year.	7	12	
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	2.1-2.8 fl oz	Do not apply more than 16.8 fl oz per acre per season.	7	12	<i>Not effective on 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.	7	12	Do not make applications less than 7 days apart.
	3A	<b>Pyganic Crop Protection EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	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 ai/acre per season.	5	24	Will not control Western Flower Thrips.
	3A & 4A	<b>*Endigo ZC</b> (lambdacyhalothrin & thiamethoxam)	4.5 fl. oz.	Do not exceed a total of 19.0 fl oz per acre per season.	5	24	Will not control Western Flower Thrips.
	4A	<b>Admire Pro</b> (imidacloprid)	7-14.0 fl oz	Maximum allowed on pepper is 14.0 fl. oz/A (0.5 lb ai/A).	21	12	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 30 SG per acre per growing season including any pretransplant applications of acetamiprid.	7	12	Do not apply more than 4 times per season or apply more often than every 7 days.
	4A	<b>Assail 70 WP</b> (acetamiprid)	1.7 oz.	Do not exceed a total of 6.8 oz. Assail 70 WP per acre per growing season including any pretransplant applications of acetamiprid.	7	12	
	4A	<b>Belay 50 WDG</b> (clothianidin) (soil application)	4.8 -6.4 oz	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	Do not release irrigation water from the treated area.
4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66-3.67 oz	Do not exceed a total of 11 fl. oz. Platinum or 0.172 lb. a.i. of thiamethoxam /A per growing season.			Soil application. See label for rotational restrictions.	
4A	<b>Platinum</b> (thiamethoxam)	5-11 fl oz	Do not exceed a total of 11 fl. oz. Platinum or 0.172 lb. a.i. of thiamethoxam /A per growing season.	30	12	Soil application. See label for rotational restrictions.	

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	4A	<b>Scorpion 35SL</b> (dinotefuran)	Foliar: 2-7 fl oz Soil: 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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of 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)	Foliar: 1-4 oz. Soil: 5.0-7.5 oz.	No more than 6 oz (foliar) or 12 oz (soil) per acre per season.	foliar: 1; soil: 21	12	Use only one application method (soil or foliar). No more than 3 applications per season.
	4C	<b>Closer SC (sulfoxaflor)</b>	4.25-4.5 fl oz	Do not apply more than a total of 17 fl oz of Closer SC (0.266 lb ai of sulfoxaflor) per acre per year.	1	12	Do not apply this product until after petal fall. See label for tank mix restrictions.
	4D	<b>Sivanto 200 SL</b> (flupyradifurone)	12-14.0 fl. oz.	Do not apply more than 28.0 fl. oz./A per year.	1	4	Minimum interval between applications: 7 days.
	5	<b>Durivo</b> (thiamethoxam & chlorantraniliprole)	10-13 fl oz	Do not exceed a total of 13.0 fl oz product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole /A per growing season.	30	12	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 ai /acre per crop.	1	4	Maximum application is 6 per year. Do not apply to seedlings grown for transplant. OMRI-listed.
	5	<b>Radiant SC</b> (spinetoram)	5-10 fl oz	Maximum of 34 fl oz product or 0.266 lb ai per acre per year.	1	4	Allow 4 days between applications. No more than 6 applications per year.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.7-3.5 fl oz	Do not apply more than 10.25 fl. oz./A (0.056 lb ai/A) of Agri-Mek SC or any other foliar applied abamectin-containing product in a growing season.	7	12	Do not make more than 2 sequential applications. Must be used with a non-ionic 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.	1	12	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 ai/A per crop.	1	12	Minimum spray interval is 5 days.
	28	<b>Verimark</b> (cyantraniliprole)	soil at-planting or transplant tray treatment: 10-13.5 fl. oz.; drip chemigation or soil injection: 10 fl. oz.	Do not apply more than 0.4 lb ai/A per crop.	1	4	
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	10-21 fl oz		0	4	Antifeedant, repellent, insect growth regulator.
	--	M-Pede 49% EC (Soap, insecticidal)	1-2% V/V		0	12	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		0	4	
	--	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2-4 qts		0	4	Begin before pest reach damaging levels.
	--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water			4	OMRI listed
	--	<b>Surround</b> (kaolin)	12.50-50 lbs		0	4	12.5 is the preferred rate up to fruit set.
	--	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	Organic Stylet-Oil and Saf-T-Side are OMRI- listed.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Weevils (including pepper weevil, vegetable weevil)	1A	<b>*Vydate L</b> (oxamyl)	foliar: 2-4 pt	Do not apply more than 24 pt per acre per season.	7	48	
	1B	<b>Lorsban 75WG</b> (chlorpyrifos) [24(c) label] SLN FL-040005	1.33 lb	10.64 lb per crop maximum.	7	24	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>*Hero</b> (bifenthrin & zeta-cypermethrin)	4.0-10.3 oz.	Do not apply more than 27.39 oz or 0.266 lb ai /A per season.	7	12	
	3A	<b>*Karate with Zeon</b> (lambda-cyhalothrin)	1.28-1.92 fl oz	Do not apply more than 23.04 fl oz of product or 0.36 lb ai /A per season.	5	24	Suppression.
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	10-19 fl. oz.	Do not apply more than 57 fl oz product or 0.036 ib avermectin or 0.078 lb zeta-cypermethrin /A per 12 month cropping year.	7	12	
	3A	<b>*Ambush 25W (permethrin)</b>	6.4-12.8 oz	Do not apply more than 1.6 lb ai/acre per season.	3	12	Bell peppers only.
	3A	<b>*Asana XL (0.66EC) (esfenvalerate)</b>	5.8-9.6 fl oz	Do not apply more than 0.35 lb ai per acre per season, or treat more than 7 times at high rate.	7	12	Aids in control.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	2.8 fl oz	Do not apply more than 16.8 fl oz per acre per season.	7	12	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.	7	12	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 ai per acre per season.	3	12	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 ai/acre per season.	5	24	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.	5	24	Suppression only. For control, tank-mix with 2-2.5 oz/A of Actara.
	4A	<b>Assail 30SG</b> (acetamiprid)	2.5-4.0 oz	Do not exceed a total of 16 oz. of Assail 30 SG per acre per growing season including any pretransplant applications of acetamiprid.	7	12	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 70 WP</b> (acetamiprid)	1.1-1.7 oz.	Do not exceed a total of 6.8 oz. Assail 70 WP per acre per growing season including any pretransplant applications of acetamiprid.	7	12	
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-2.1 oz (foliar)	Do not apply more than 6.4 oz per acre per season.	7	12	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	Maximum per crop per season 19.2 fl oz/A.	0	12	Do not apply to crop that has been treated with imidacloprid or thiamethoxam. Allow 5 days between applications.
4A	<b>Scorpion 35SL</b> (dinotefuran)	Foliar: 2-7 fl oz Soil: 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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of risk to bees and other insect pollinators. Follow application restrictions found in the directions for use to protect pollinators. Use only one application method	

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical.  
Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
Whiteflies (adults, immatures)	15	<b>*Dimilin 25 W, *2 L</b> (diflubenzuron)	4-8 oz	Apply no more than 24 oz per acre per season	7	12	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.	1	12	Do not use with an adjuvant.
	28	<b>Exirel</b> (cyantraniliprole)	7-20.5 fl oz	Do not apply a total of more than 0.4 lb ai/A per crop.	1	12	Minimum spray interval is 5 days.
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	10-21 fl oz		0	4	Antifeedant, repellent, insect growth regulator.
	--	<b>Neemix 4.5</b> (azadirachtin)	4-16 fl oz		0	12	IGR and feeding repellent. OMRI-listed.
	3A	<b>*Hero</b> (bifenthrin & zeta-cypermethrin)	10.3 oz	Do not apply more than 27.39 oz or 0.266 lb ai /A per season.	7	12	
	3A	<b>*Karate with Zeon</b> (lambdacyhalothrin)	1.28-1.92 fl oz	Do not apply more than 23.04 fl oz of product or 0.36 lb ai /A per season.	5	24	Suppression.
	3A & 6	<b>*Gladiator</b> (avermectin B1 & zeta-cypermethrin)	14-19 fl. oz.	Do not apply more than 57 fl oz product or 0.036 lb avermectin or 0.078 lb zeta-cypermethrin /A per 12 month cropping year.	7	12	
	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.	7	12	Do not make applications less than 7 days apart.
	3A	<b>Pyganic Crop Protection EC 5.0</b> (pyrethrins)	4.5-17 fl oz	10.6 pints.	0	12	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 ai/acre per season.	5	24	Suppression.
	3A & 4A	<b>*Endigo ZC</b> (lambdacyhalothrin & thiamethoxam)	4.5 fl. oz.	Do not exceed a total of 19.0 fl oz per acre per season.	5	24	Suppression only. For control, tank-mix with 2-2.5 oz/A of Actara.
	4A	<b>Actara</b> (thiamethoxam)	3.0-5.5 oz	Maximum of 11 oz/acre or 0.172 lb ai/acre of thiamethoxam containing products per growing season.	0	12	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 ai/A).	21	12	Most effective if applied to soil at transplanting.
	4A	<b>Admire Pro</b> (imidacloprid)	0.44 fl oz/10,000 plants		21 (soil)	12	<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 30 SG per acre per growing season including any pretransplant applications of acetamiprid.	7	12	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 70 WP</b> (acetamiprid)	1.1-1.7 oz.	Do not exceed a total of 6.8 oz. Assail 70 WP per acre per growing season including any pretransplant applications of acetamiprid.	7	12	
	4A	<b>Belay 50 WDG</b> (clothianidin)	1.6-3.2 oz (foliar)	Do not apply more than 6.4 oz per acre per season.	7	12	Do not use an adjuvant. Toxic to bees. Do not release irrigation water from the treated area.
	4A	<b>Belay 50 WDG</b> (clothianidin)	4.8 -6.4 oz (soil application)	Do not apply more than 6.4 oz per acre per season.	Apply at planting	12	Do not release irrigation water from the treated area.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	4A	<b>Platinum</b> (thiamethoxam)	5-11 fl oz	Do not exceed a total of 11 fl. oz. Platinum or 0.172 lb. a.i. of thiamethoxam /A per growing season.	30	12	Soil application. See label for rotational restrictions.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66-3.67 oz	Do not exceed a total of 3.67 Platinum 75 SG or 0.172 lb. a.i. of thiamethoxam /A per growing season.			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.	0	12	Do not apply to crop that has been 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.	foliar - 1, soil - 21	12	Application restrictions exist for this product because of 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.	foliar: 1; soil: 21	12	Use only one application method (soil or foliar). No more than 3 applications per season.
	4A & 28	<b>Voliam Flexi</b> (thiamethoxam & chlorantraniliprole)	4-7 oz	Do not exceed 14 oz per acre per season, or 0.172 lb ai of thiamethoxam-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per season.	1	12	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>Closer SC</b> (sulfoxaflor)	4.25-4.5 fl oz	Do not apply more than a total of 17 fl oz of Closer SC (0.266 lb ai of sulfoxaflor) per acre per year.	1	12	Do not apply this product until after petal fall. See label for tank mix restrictions.
	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.	1	4	Minimum interval between applications: 7 days.
	5	<b>Durivo</b> (thiamethoxam & chlorantraniliprole)	10-13 fl oz	Do not exceed a total of 13.0 fl oz product or 0.172 lb thiamethoxam or 0.2 lb chlorantraniliprole /A per growing season.	30	12	Several methods of soil application-see label.
	7C	<b>Knack IGR</b> (pyriproxyfen)	8-10 fl oz	Do not exceed 20 fl. oz./A per season.	1	12	Immatures only. Apply when nymphs first appear. Do not make more than 2 applications per growing season.
	9B	<b>Fulfill</b> (pymetrozine)	2.75 oz	Do not apply more than 5.5 oz/acre per crop.	0	12	Suppression. Do not make more than two applications.
	15	<b>Rimon 0.83EC</b> (novaluron)	12 fl oz	Do not apply more than 36 fl oz per acre per season.	1	12	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.	1	12	Immatures only. 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.
	21A	<b>Portal</b> (fenpyroximate)	2.0 pt	Do not apply more than 4.0 pints/A per crop cycle.	1	12	Do not make 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.	1	24	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.	7	12	No more than 3 applications.
	28	<b>Exirel</b> (cyantraniliprole)	7-20.5 fl oz	Do not apply a total of more than 0.4 lb ai/A per crop.	1	12	Minimum spray interval is 5 days.

**Table 13.3.** Insecticides labeled for management of arthropod pests of peppers. (continued)

Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 19.2 for biopesticide and other alternative products labeled for disease management.

Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate	Rate per season	Days to Harvest	REI (hours)	Remarks <sup>2</sup>
	28	<b>Verimark</b> (cyantraniliprole)	soil at-planting or transplant tray treatment: 6.75-13.5 fl. oz.; drip chemigation or soil injection: 6.75-10 fl. oz.	Do not apply more than 0.4 lb ai/A per crop.	1	4	
	--	<b>Aza-Direct</b> (azadirachtin)	1-2 pts, up to 3.5 pts, if needed		0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	--	<b>Azatin XL</b> (azadirachtin)	10-21 fl oz		0	4	Antifeedant, repellent, insect growth regulator.
	--	<b>M-Pede 49% EC (Soap, insecticidal)</b>	1-2% V/V		0	12	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		0	4	
	--	<b>Neemix 4.5 (azadirachtin)</b>	4-16 fl oz		0	12	IGR and feeding repellent. OMRI-listed.
	--	<b>Requiem 25EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2-3 qts		0	4	Begin before pest reach damaging levels.
	--	<b>Suffoil-X</b> (petroleum oil)	1-2 gal per 100 gal. water			4	OMRI listed
	--	<b>Ultra-Fine Oil, JMS Stylet-Oil, Saf-T-Side, others</b> (oil, insecticidal)	3-6 qt/100 gal (JMS); 1-2 gal/100 gal		0	4	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. 8.2, March 2017. Number codes (1 through 29) are used to distinguish the main insecticide mode of action groups, with additional letters for certain sub-groups within each main group. All insecticides within the same group (with same number) indicate 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 the University of Florida Cooperative Extension Service 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. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Applic.	Season	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>							
	11 & 3	Quadris Top (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 apps per season; no more than 2 sequential apps; 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 & 7	Priaxor (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 apps per season; no more than 2 sequential apps. See label about compatibility with other formulated products and adjuvants.
	11 & 27	Tanos (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	Ph-D WDG (polyoxin D zinc salt)	6.2 oz	31.0 oz	0	4 hr	Limit is 5 apps. on 10-14 day interval. Alternate with a fungicide from a different FRAC group.
	27 & M5	Ariston (cymoxanil + chlorothalonil)	2.44 pt	18.1 pt	3	0.5	
<b>Bacterial spot</b>	M1	<b>(copper compounds)</b> <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, C-O-C-S WDG, Champ DP, Champ F2 FL, Champ WG, Champion WP, C-O-C DF, C-O-C WP, Copper Count N, Cuprofix Ultra 40D, Cueva, Kentan DF, Kocide 3000, Kocide 2000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 50WP, Nu Cop 3L, Nu Cop 50DF, Nu Cop HB	<b>SEE INDIVIDUAL LABELS</b>		1	Varies by product from 4 hrs to 2 days	For best possible chemical control of bacterial spot, tank-mix copper with a mancozeb fungicide.
	M1 & M3	Mankocide (copper hydroxide + mancozeb)	3 lbs	39 lb	7	2	
	M3	<b>(mancozeb)</b> <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	*Bacterial spot control only when tank mixed with a copper fungicide. Use of 1 lb of mancozeb/A per app. is sufficient.
(suppression)	11 & 27	Tanos (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	Quintec (quinoxifen)	6 fl oz	24 fl oz	3	0.5	<b>Supplemental Section 2(ee) 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.
	25	Agri-mycin 17 Ag Streptomycin Firewall (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.
	21	Actigard* (acibenzolar-S-methyl)	0.75 oz	6 oz	14	0.5	*Labeled for chili pepper only. Begin applications within one week of transplanting or emergence. Make up to 8 weekly, sequential applications.
<b>Bacterial soft rot</b> (suppression)	11 & 27	Tanos (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.



Table 13.4 Pepper fungicides ordered by disease and then FRAC group according to their mode of action. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Applic.	Season	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>							
Botrytis or Gray mold	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, Orondis Opti B	SEE INDIVIDUAL LABELS		3	1	
(suppression)	7	Endura (boscalid)	3.5 oz	21 oz	0	0.5	Limit is 6 apps per season at lower rate with no more than 2 sequential apps before alternating with another effective fungicide from another FRAC group.
(suppression)	7	Fontelis (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 useage.
	7 & 11	Luna Sensation (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 apps per a year.
	9 & 3	Inspire Super (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 apps per season with no more than 2 sequential apps. Must tank mix or alternate with another effective fungicide from another FRAC group. Has up to a 8 month plant back restriction with off label crops.
	9 & 12	Switch (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Limit is 56 oz per year; after 2 apps of Switch alternate with another effective fungicide from a different FRAC group.
(suppression)	11	Cabrio 2.08 F (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 apps. of Cabrio or other group 11 fungicides/season.
(suppression)	11 & 7	Priaxor (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 apps per season; no more than 2 sequential apps. See label about compatibility with other formulated products and adjuvants.
	12	Emblem (fludioxonil)	7 fl oz	28 fl oz	0	0.5	<u>Transplant and Greenhouse use only.</u> Limit to 4 applications per year. No more than 2 sequential applications before rotating to a different mode of action for 2 applications.
	17	Decree 50 WDG (fenhexamid)	1.5 lb	6 lb	0	0.5	<u>Transplant and Greenhouse use only.</u> Do not make more than 2 consecutive applications.
	19	Ph-D WDG (polyoxin D zinc salt)	6.2 oz	31.0 oz	0	4 hr	Limit is 5 apps. on 10-14 day interval. Alternate with a fungicide from a different FRAC group.
	27 & M5	Ariston (cymoxanil + chlorothalonil)	2.44 pt	18.1 pt	3	0.5	
Frogeye leaf spot, Cercospora leaf spot ( <i>Cercospora spp.</i> )	M1	(copper compounds) <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, C-O-C-S WDG, Champ DP, Champ F2 FL, Champ WG, Champion WP, C-O-C DF, C-O-C WP, Copper Count N, Cuprofix Ultra 40D, Cueva, Kentan DF, Kocide 3000, Kocide 2000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 50WP, Nu Cop 3L, Nu Cop 50DF, Nu Cop HB	SEE INDIVIDUAL LABELS		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	Mankocide (copper hydroxide + mancozeb)	3 lb	39 lb	7	2	

Table 13.4 Pepper fungicides ordered by disease and then FRAC group according to their mode of action. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Applic.	Season	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>							
Gray leaf spot ( <i>Stemphyllium spp.</i> )	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, Orondis Opti B	SEE INDIVIDUAL LABELS		3	1	
	3	Rhyme (flutriafol)	7 fl oz	28 fl oz	0	0.5	Limit is 4 applications per season.
	11 & 3	Topguard EQ (azoxystrobin + flutriafol)	8 fl oz	32 fl oz	0	0.5	Limit is 4 applications per season.
	11 & 3	Quadris Top (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 apps per season; no more than 2 sequential apps; 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.
	27 & M5	Ariston (cymoxanil + chlorothalonil)	2.44 pt	18.1 pt	3	0.5	
	7 & 11	Luna Sensation (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 apps per a year.
	9 & 3	Inspire Super (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 apps per season with no more than 2 sequential apps. Must tank mix or alternate with another effective fungicide from another FRAC group. Has up to a 8 month plant back restriction with off label crops.
	11	Flint 50 WGD (trifloxystrobin)	4 oz	16 oz	3	0.5	Maximum of 4 appl/ season & alternate with a fungicide from a different FRAC group
	11 & 3	Quadris Top (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 apps per season; no more than 2 sequential apps; 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.
Powdery mildew	M2	(sulfur) <b>Many brands available:</b> Cosavet DF, Kumulus DF, Micro Sulf, Microfine Sulfur, Microthiol Disperss, Sulfur 6L, Sulfur 90W, Super Six, That Flowable Sulfur, Tiolux Jet, Thiosperse 80%, Wettable Sulfur, Wettable Sulfur 92, Yellow Jacket Dusting Sulfur, Yellow Jacket Wettable Sulfur	SEE INDIVIDUAL LABELS		1	1	Follow label closely, it 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, Orondis Opti B	SEE INDIVIDUAL LABELS		3	1	
	3	Rhyme (flutriafol)	7 fl oz	28 fl oz	0	0.5	Limit is 4 applications per season.

**Table 13.4** Pepper fungicides ordered by disease and then FRAC group according to their mode of action. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Applic.	Season	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>							
	3	Indar 75WSP (fenbuconazole)	4 oz	16 oz	7	0.5	No more than 2 sequential appl. before alternating with a fungicide from a different FRAC group. A 35 to 210 day plantback interval exists for non-labeled crops.
	3	Rally Sonoma 40WSP (myclobutanil)	5 oz	20 oz	0	1	No more than 4 applications per season on a 10 – 14 day treatment interval. Should be alternated or tank mixed with a fungicide from a different FRAC group.
	7	Fontelis (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 useage.
	7 & 11	Luna Sensation (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 apps per a year.
	9 & 3	Inspire Super (cyprodinil + difenoconazole)	20 fl oz	47 fl oz	0	0.5	Limit is 5 apps per season with no more than 2 sequential apps. Must tank mix or alternate with another effective fungicide from another FRAC group. Has up to a 8 month plant back restriction with off label crops.
	9 & 12	Switch (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Limit is 56 oz per year; after 2 apps of Switch alternate with another effective fungicide from a different FRAC group.
	11	Heritage (azoxystrobin)	8 oz	2 lbs	0	4 hr	Limit is 4 appl/season. No more than 2 sequential apps. before alternating with a fungicide from a different FRAC group.
	11	Flint 50 WGD (trifloxystrobin)	4 oz	16 oz	3	0.5	Maximum of 4 appl/season & alternate with a fungicide from a different FRAC group
	11	Quadris 2.08 FL Equation Satori (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	Limit is 6 appl/crop & alternate with a fungicide from a different FRAC group.
	11 & 3	Topguard EQ (azoxystrobin + flutriafol)	8 fl oz	32 fl oz	0	0.5	Limit is 4 applications per season.
	11 & 3	Quadris Top (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Only 4 apps per season; no more than 2 sequential apps; 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 & 7	Priaxor (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 apps per season; no more than 2 sequential apps. See label about compatibility with other formulated products and adjuvants.
	12	Emblem (fludioxonil)	7 fl oz	28 fl oz	0	0.5	<u>Transplant and Greenhouse use only.</u> Limit to 4 applications per year. No more than 2 sequential applications before rotating to a different mode of action for 2 applications.
	13	Quintec (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	Ph-D WDG (polyoxin D zinc salt)	6.2 oz	31.0 oz	0	4 hr	Limit is 5 apps. on 10-14 day interval. Alternate with a fungicide from a different FRAC group.
	27 & M5	Ariston (cymoxanil + chlorothalonil)	2.44 pt	18.1 pt	3	0.5	

Table 13.4 Pepper fungicides ordered by disease and then FRAC group according to their mode of action. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>	
			Applic.	Season	Harvest	Reentry		
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>								
Phytophthora blight, Phytophthora root rot, Phytophthora crown rot ( <i>Phytophthora</i> spp.)	U8	Vivando (metrafenone)	15.4 fl oz	46.2 fl oz	0	0.5	3 apps per season; no more than 2 sequential apps. Do not mix with horticultural oils.	
	M1	(copper compounds) <b>Many brands available:</b> Americop 40 DF, Badge SC, Badge X2, Basic Copper 50W HB, Basic Copper 53, C-O-C-S WDG, Champ DP, Champ F2 FL, Champ WG, Champion WP, C-O-C DF, C-O-C WP, Copper Count N, Cuprofix Ultra 40D, Cueva, Kentan DF, Kocide 3000, Kocide 2000, Kocide DF, Nordox, Nordox 75WG, Nu Cop 50WP, Nu Cop 3L, Nu Cop 50DF, Nu Cop HB	<b>SEE INDIVIDUAL LABELS</b>		1	Varies by product from 4 hr to 2 days		
	(suppression)	M1 & M3	Mankocide (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	
		4	Orondis Gold B Ridomil Gold SL Ultra Flourish (mefenoxam)	1 pt 1 pt 2 pt	3 pt 3 pt 6 pt	28 7 7	0 2* 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	Ridomil Gold Copper 64.8 W (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 appl. Use 1 pt/A and apply at a 30 day interval.
	(suppression)	11	Reason 500 SC (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.
	(suppression)	11 & 27	Tanos (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	Ranman (cyazofamid)	2.75 fl oz	16.5 fl oz	0	0.5	Limit is 6 apps. 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.
		28	Previcur Flex or Promess (propamocarb hydrochloride)	<b>SEE INDIVIDUAL LABELS</b>		5	0.5	GREENHOUSE APPLICATION: 6 apps./crop cycle. Do not mix with other products. Can cause phytotoxicity if applied in intense sunlight.
			1.2 pt	6 pt	5	0.5	FIELD APPLICATION: Apply prior to infection when conditions are favorable for disease.	
	29	Omega (fluazinam)	1.5 pt	9 pt	30	0.5	May be applied at transplanting. Begin foliar applications 7 days after transplant.	
	33	Aliette 80 WDG (fosetyl-al)	5 lbs	20lbs	14	0.5	See label for warnings concerning the use of copper compounds.	
	40	Forum (dimethomorph)	6 oz	30 oz	0	0.5	Apply with another fungicide from a different FRAC group.	
	40	Orondis Ultra B Revus (mandipropamid)	8 fl oz 8 fl oz	32 fl oz 32 fl oz	1 1	4 hr 4 hr	No more than 2 sequential appl.; Alternate with another effective fungicide; See label.	

Table 13.4 Pepper fungicides ordered by disease and then FRAC group according to their mode of action. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Applic.	Season	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>							
(suppression)		Micora (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.
	43	Presidio (fluopicolide)	4 fl oz	12 fl oz	2	0.5	4 apps per season; no more than 2 sequential apps. 10 day spray interval; Tank mix with another labeled non-FRAC code 43 fungicide; 18 month rotation with off label crops.
	45 & 40	Zampro (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.
	U15	Orondis Gold 200 (oxathiapiprolin)	19.2 fl oz	38.6 fl oz	0	4 hr	Soil applications cannot be combined or followed by foliar applications of Orondis Opti A or Orondis Ultra A. 4 apps per season; no more than 2 sequential apps. 7 day minimum app. interval; Applications should not exceed more than 33% of the total soil fungicide apps. See label for soil application instructions.
	U15	Orondis Opti A	4.8 fl oz	19.2 fl oz	0	4 hr	Do not combine foliar apps of Orondis with soil apps of Orondis for disease control. 6 apps per season; no more than 2 sequential apps. 5 day minimum app. interval; Applications should not exceed more than 33% of the total foliar fungicide apps. See Orondis Ultra A label for greenhouse use.
		Orondis Ultra A (oxathiapiprolin)	4.8 fl oz	19.2 fl oz	0	4 hr	
<b>Pythium damping-off, Pythium root rot, or Pythium seedling blights (<i>Pythium</i> spp.)</b>	4	Allegiance-FL Acquire (metalaxyl)	0.75 fl oz/ 100 lbs seed	-	-	-	Seed treatment only
	4	Apron XL (mefenoxam)	0.64 fl oz/ 100 lbs seed	-	-	-	Seed treatment only
	4	Orondis Gold B Ridomil Gold SL Ultra Flourish (mefenoxam)	1 pt 1 pt 2 pt	3 pt 3 pt 6 pt	28 7 7	0 2* 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	Ridomil Gold Copper 64.8 W (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 appl. Use 1 pt/A and apply at a 30 day interval.
(suppression)	12	Maxim 4 FS (fludioxonil)	0.16 fl oz/ 100 lbs seed	-	-	-	Seed treatment only
	28	Previcur Flex or Promess (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.
	U15	Orondis Gold 200 (oxathiapiprolin)	19.2 fl oz	38.6 fl oz	0		Soil applications cannot be combined or followed by foliar applications of Orondis Opti A or Orondis Ultra A. 4 apps per season; no more than 2 sequential apps. 7 day minimum app. interval; Applications should not exceed more than 33% of the total soil fungicide apps. See label for soil application instructions.
<b>Rhizoctonia solani</b>	11	Cabrio 2.08 F (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 appl. of Cabrio or other group 11 fungicides/season.
	11	Quadris 2.08 FL Equation Satori (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	Limit is 6 apps/crop & alternate with a fungicide from a different FRAC group.

**Table 13.4** Pepper fungicides ordered by disease and then FRAC group according to their mode of action. (continued)

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (active ingredients)	Max. Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Applic.	Season	Harvest	Reentry	
<b>Labels change frequently. Be sure to read a current product label before applying any chemical. Refer to Table 19.1 for biopesticide and other alternative products labeled for disease management.</b>							
<b>Southern blight</b> ( <i>Sclerotium rolfsii</i> )			0.8 fl oz/ 1,000 row feet		0	4 hr	Soil application through drip irrigation
	14	Par-Flo 4F (PCNB)	12 fl oz/ 100 gal.	2 apps	Soil drench	0.5	Limited to only container-grown plants in nurseries or greenhouse.
	7	Fontelis (penthiopyrad)	24 fl oz	72 fl oz	0	0.5	No more than 2 sequential apps. before switching to another effective fungicide with a different mode of action. See label for additional instructions pertaining to greenhouse useage.
	11	Cabrio 2.08 F (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 appl. of Cabrio or other group 11 fungicides/season.
	11	Aftershock Evito 480 SC (fluxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Limit is 4 apps/crop. Must alternate or tank mix with a fungicide from a different FRAC group.
	(suppression)	11 & 7	Priaxor (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5
<b>White mold</b> ( <i>Sclerotinia sclerotiorum</i> ) (suppression)	14	Blocker 4F Terraclor 75 WP (PCNB)	<b>SEE INDIVIDUAL LABELS</b>		Soil treat- ment at planting	0.5	See label for application type and restrictions.
	7 & 11	Luna Sensation (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 apps per a year.
	11	Cabrio 2.08 F (pyraclostrobin)	16 fl oz	96 fl oz	0	0.5	No more than 6 apps. of Cabrio or other group 11 fungicide/season.
	11 & 7	Priaxor (pyraclostrobin + fluxapyroxad)	8 fl oz	24 fl oz	7	0.5	Limit is 3 apps per season; no more than 2 sequential apps. 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 same number or letter) indicate 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 2017; <http://www.frac.info/> (FRAC = Fungicide Resistance Action Committee).

<sup>2</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 the University of Florida Cooperative Extension Service nor discrimination against similar products or services not mentioned.

**Table 13.5.** Non-fumigant nematicides for peppers in Florida.

Product	Application Rates and Procedures
Vydate L	Treat soil before or at planting with any other appropriate nematicide or a Vydate transplant water drench followed by Vydate foliar sprays or via drip irrigation system delivery at 7 to 14 day intervals through the season; do not apply within 7 days of harvest; refer to directions in appropriate "state labels," which must be in the hand of the user when applying pesticides under state registrations. Consult supplemental labeling for additional use rate, drip application recommendations.
Nimitz	All applications to peppers must be incorporated either physically or via drip or overhead irrigation. Make preplant applications at a rate of 3.5 to 5 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 and provides no residual control. 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. Other restrictions may apply. Product is commercially available but is still actively under assessment in field trial evaluations.

These productions may not be as consistently effective against root-knot nematodes as the fumigants, but are registered as indicated. The product is currently unavailable and new production and marketplace sales of Vydate L is not expected until September 2017.

**Table 13.6.** Fumigant nematicides for peppers in Florida.

Nematicide	Broadcast Application <sup>1</sup>		In the Row Applications
	Gallons or Lbs Per acre	Fl oz /1000 ft / chisel spaced 12" apart	
Telone II 2,3	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 2,3	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 2,3	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 2,3	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 2,3	19.5 - 31.5 gal	57 to 90	Consult product label for overall rate and chisel flow modifying application directions.
Pic Clor 60 EC 2,3	19.5 - 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.
Dimethyl2 Disulfide (DMDS)	51.3 gal	-	Compared to broadcast application, apply proportionately less for in the row applications based on the ratio of bed width to row spacing. Consult the product label for additional detail and rate modifying recommendation and mandatory requirements for totally impermeable plastic mulch films (TIF).
Allyl Isothiocyanate (AITC)	40 gal	-	For drip or in-row fumigation and crop termination, consult product label for overall rates, drip concentration and flow modifying directions
Dominus			

1 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.

2 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 (GAP's), product and applicator training certification, and rate modifying recommendations with use of highly retentive Totally Impermeable mulch films (TIF).

3 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.