

# Chapter 10. Minor Vegetable Crop Production<sup>1</sup>

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## Celery, Okra, and Parsley Botany and Planting

**Celery**—*Apium graveolens*, Apiaceae (Umbelliferae)

**Okra**—*Abelmoschus esculentus*, Malvaceae

**Parsley**—*Petroselinum crispum*, Apiaceae (Umbelliferae)

Table 1. Planting information for celery, okra, and parsley.

Planting Dates	Celery	Okra	Parsley
North Florida	Aug–Feb	Mar–Jun	Sept–Mar
Central Florida	Sept–Mar	Feb–Aug	Sept–Mar
South Florida	Oct–Mar	Jan–Mar/Aug–Oct	All year
Planting Information			
Distance between rows (in)	18–40	36–60	6–12
Distance between plants (in)	6–12	4–10	drilled
Seeding depth (in)	on surface	0.5–1.0	0.25
Seed per acre (lb)	1–2	6–81	6–8
Days to maturity from seed	75–90	60–70	70–80
Plant population (acre)	58,080	43,560	1 million+

1. This document is CV294. Original publication date June 1995. Revised May 2021. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.
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# Cultivars

Table 2. Common cultivars of celery, okra, and parsley.

<b>Celery</b>	<b>Okra</b>	<b>Parsley</b>
Tall Utah 52-70R Improved*	Annie Oakley II (H <sup>1</sup> )	Dark Green Italian (PL)
	Cajun Delight (H)	Forest Green (CL <sup>1</sup> )
	Clemson Spineless	Improved Market Gardeners (CL)
	Clemson Spineless 80	Jade (CL, H)
	Millionaire (H)	
	North and South (H)	
	Spike (H)	
* Note the vast majority of celery production in FL uses proprietary varieties <sup>1</sup> H=hybrid, CL=curley leaf, PL=plain leaf		

Table 3. Herbicides approved for managing weeds in celery.

Active Ingredient lb a.i./A	Trade Name Product/A	MOA Code	Weeds Controlled/Remarks
<b>Labels change frequently. Be sure to read a current product label before applying any chemical.</b>			
<b>*** PREPLANT/PREEMERGENCE ***</b>			
<b>Bensulide</b> 5.0–6.0	(Prefar) 4 E 5–6 qt	8	Broadleaf and grass weeds. Incorporate mechanically 1–2 in. deep or with irrigation 2–4 in. deep.
<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	Apply as a preplant burndown for emerged broadleaf weeds. Use crop oil concentrate, methylated seed oil, or nonionic surfactant at recommended rates. Maximum rate of 0.096 lb a.i./A per season. No pretransplant interval.
<b>Glyphosate</b>	(various formulations) consult labels	9	Emerged broadleaf and grass weeds. Apply as a preplant burndown. Consult label for individual product directions.
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Emerged broadleaf and grass weeds. Apply as a preplant burndown treatment. Scythe is a contact and postemergent/nonresidual herbicide and can be tank-mixed with residual/preemergence herbicides to lengthen control.
<b>Prometryn</b> 1.0–2.0	(Caparol) 4 L 2–4 pt	5	Most annual broadleaf and grass weeds. Do not exceed one application. Consult label for rotational crop restrictions.
<b>Pyraflufen ethyl</b> 0.0008–0.003	(ET Herbicide/Defoliant) 0.5–2.0 fl oz	14	Broadleaf and grass weeds. Burndown preplant application 1 day before planting. Include a nonionic surfactant or crop oil concentrate in the spray solution.
<b>S-metolachlor</b> 0.95–1.26	(Dual Magnum) 1.0–1.33 pt	15	Broadleaf, grass weeds, and nutsedge. Label is a Third-Party Registration (TPR, Inc.), and authorization and waiver agreements must be obtained prior to use. Rates are based on soil organic matter.
<b>Trifluralin</b> 0.5	(Treflan, Trifluralin) 4EC 1 pt (Treflan, Trifluralin) 10 G 5 lb	3	Annual broadleaf and grass weeds. Do not apply to muck soils. For mineral soils with 2%–5% organic material, apply 0.75 lb a.i./A. Incorporate 4 in. or less within 8 hr of application.
<b>*** POSTTRANSPLANT/POSTEMERGENCE ***</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 broadleaf weeds. Apply as hooded application to row middles only. Use crop oil concentrate or nonionic surfactant at recommended rates. May be tank-mixed with other herbicides. Do not exceed 6.1 fl oz per cropping season. PHI 0 days.
<b>Clethodim</b> 0.09–0.13 0.07–0.13	(Select, Arrow) 2 EC 6–8 fl oz (Select Max) 1 EC 9–16 fl oz	1	Perennial and annual grass weeds. In fields with heavy grass pressure or larger grass weeds, use higher rates or repeat applications 14 days apart. Use a crop oil concentrate at 1% v/v in the finished spray volume. Use anionic surfactant with Select Max. PHI 30 days.
<b>Linuron</b> 0.5–1.0	(Lorox DF) 50 DF 1–2 lb	7	Broadleaf and grass weeds. Apply after transplanting but before celery is 8 in. tall. Do not apply when temperatures exceed 85°F nor as a tank mix with surfactants, nitrogen, or fertilizer solution. PHI 45 days.
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Emerged broadleaf and grass weeds. Direct spray to row middles with hooded or shielded sprayer. Product is a contact, nonselective herbicide with no residual control. May be tank-mixed with several soil residual compounds.
<b>Prometryn</b> 0.8–1.6	(Caparol) 4 L 1.6–3.2 pt	5	Broadleaf weeds. Apply one application during the 2-to-6-week period after transplanting. Weeds should not exceed 2 in.
<b>Sethoxydim</b> 0.28	(Poast) 1.5EC 1.5 pt	1	Emerged grass weeds. A maximum of 3 pt/A per season. Include a crop oil concentrate. Unsatisfactory results may occur if applied to grasses under stress. PHI 30 days.
<b>S-metolachlor</b> 0.95–1.26	(Dual Magnum) 1.0–1.33 pt	15	Broadleaf, grass weeds, and nutsedge. Label is a ThirdParty Registration (TPR, Inc.), and authorization and waiver agreements must be obtained prior to use. Rates are based on soil organic matter.
<b>*** CELERY SEEDBEDS ***</b>			
<b>Prometryn</b> 0.6–0.8	(Caparol) 4 L 1.2–1.6 pt	5	Broadleaf weeds. Apply once per year to seedbeds. Apply after celery has 2–5 true leaves. Apply after seedbed covers have been removed for at least one week.

Table 4. Herbicides approved for managing weeds in okra.

Active Ingredient lb a.i./A	Trade Name Product/A	MOA Code	Weeds Controlled/Remarks
<b>Labels change frequently. Be sure to read a current product label before applying any chemical.</b>			
<b>*** PREEMERGENCE ***</b>			
<b>Carfentrazone</b> up to 0.031	(Aim) 1.9 EW up to 2 fl oz (Aim) 2 EC up to 2 fl oz	14	Apply as a preplant burndown for emerged broadleaf weeds. Use crop oil concentrate, methylated seed oil, or nonionic surfactant at recommended rates. Maximum rate of 0.096 lb a.i./A per season. No pretransplant interval.
<b>Flumioxazin</b> up to 0.128	(Chateau) 51 WDG up to 4 oz	14	Annual broadleaf weeds. Apply to row middles of raised plastic-mulched beds that are at least 4 in. higher than the treated row middle and 24 in. bed width. Label is a Third-Party Registration (TPR, Inc.). Use without a signed authorization is a waiver of liability and is a misuse of the product. Tank-mix with a burndown herbicide to control emerged weeds. 0-day pretransplant interval.
<b>Glyphosate</b>	(various formulations) consult labels	9	Emerged broadleaf and grass weed control. Apply as a preplant burndown for emerged weeds. Read label for individual product directions.
<b>Lactofen</b> 0.25–0.5	(Cobra) 2 EC 16–32 fl oz	14	Broadleaf weeds. Apply to row middles only with a shielded or hooded sprayer. A minimum of 24 fl oz/A is required for residual control. Add a crop oil concentrate or nonionic surfactant for control of emerged weeds. Registration is through Third Party Registrations, Inc. (TPR, Inc.), and a copy of the label must be on-hand at time of application. PHI 30 days.
<b>Mesotrione</b> 0.19	(Callisto) 4 L 6 fl oz	28	Broadleaf and grass weeds. Apply to row middles only. Leave one-foot untreated area or 6" on either side of the plant row. Injury risk is greatest on coarse-textured soils (sand, sandy loam, or loamy sand). Apply as one preemergence application OR one postemergence application. Callisto will cause whitening of the okra leaves.
<b>Paraquat</b> 0.5–1.0	(Gramoxone) 2 SL 2.0–4.0 pt	22	Emerged broadleaf and grass weed control. Apply one application before crop emergence. Do not exceed 8 pt/A per season. Consult label for new restrictions.
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Broadleaf and grass weeds. Scythe is a contact, nonselective herbicide with no residual activity. May be tank-mixed with trifluralin for soil residual activity. Consult label for rates and other information.
<b>Prometryn</b> 0.75–1.5	(Caparol) 4 L 1.5–3.0 pt	5	Apply after planting, but before crop emergence. Apply as one preemergence application at 3 pt OR 1 preemergence application at 1.5 pt followed by one POSTdirected application at 1.5 pt. Do not exceed 3 pt/A per crop cycle.
<b>Sulfentrazone</b> 0.07–0.09	(Willowood sulfentrazone) 4SC 2.25–3.0 fl oz	14	Broadleaf and grass weed control, nutsedge suppression. Do not apply on sands with less than 1% organic matter. Do not apply more than 12 fl oz/A within a 12-month period. Should be trialed on a small area to find suitable rate for the soil type in your area.
<b>Trifluralin</b> 0.5–0.75	(Treflan, Trifluralin) 4EC 0.5–1.5 pt (Treflan, Trifluralin) 10G 5.0–7.5 lb	3	Annual broadleaf and grass weeds. Incorporate 4 in. or less within 8 hr. Results in Florida are erratic on soils with low organic matter and clay contents. Note precautions against planting nonregistered crops within 5 months.
<b>*** POSTEMERGENCE ***</b>			
<b>Carfentrazone</b> up to 0.031	(Aim) 1.9 EW up to 2 fl oz (Aim) 2 EC up to 2 fl oz	14	Emerged broadleaf weeds. Apply to row middles only with a hooded sprayer. Maximum rate of 0.096 lb a.i./A per season. Rates apply to mineral and muck soils. Use crop oil concentrate or nonionic surfactant at recommended rates. PHI 0 days.
<b>Glyphosate</b>	(various formulations) consult labels	9	Emerged broadleaf and grass weeds. Apply to row middles only with a hooded sprayer. PHI 14 days.
<b>Halosulfuron</b> 0.024–0.05	(Sandea) 75 WG 0.5–1.0 oz	2	Broadleaf and purple/yellow nutsedge weeds. Apply to row middles of direct-seeded or transplanted okra. If plastic is used, prevent herbicide contact with the plastic. Do not apply more than 2 oz/A per 12-month period. PHI 30 days.

Active Ingredient lb a.i./A	Trade Name Product/A	MOA Code	Weeds Controlled/Remarks
<b>Lactofen</b> 0.25–0.5	(Cobra) 2 EC 16–32 fl oz	14	Broadleaf weeds. Apply to row middles only with a shielded or hooded sprayer. A minimum of 24 fl oz/A is required for residual control. Add a crop oil concentrate or nonionic surfactant for control of emerged weeds. One POST application may be made per growing season at 18 days after transplanting. Cobra contacting green foliage or fruit can cause excessive injury. Registration is through Third Party Registration, Inc., and a copy of the label must be on hand at time of application. PHI 30 days.
<b>Mesotrione</b> 0.09	(Callisto) 4 L 3 fl oz	28	Broadleaf and grass weeds. Direct spray with hooded sprayer to minimize contact with okra plants. Okra must be at least 3 in. tall. Use of a nonionic surfactant is required. Injury risk is greatest on coarse-textured soils. Apply as one preemergence or one postemergence application. PHI 28 days.
<b>Paraquat</b> 0.5–1.0	(Gramoxone) 2 SL 2.0 pt	22	Emerged broadleaf and grass weeds. Apply to row middles only and do not allow contact to okra plants. Limit of 2 applications after crop emergence. Do not exceed 8 pt/A per season. PHI 60 days. Consult label for new restrictions.
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Broadleaf and grass weeds. Apply to row middles only with a shielded sprayer.
<b>Prometryn</b> 0.75	(Caparol) 4 L 1.5 pt	5	Apply 1 postemergence application directed to the base of the crop. If a preemergence application was made, do not exceed 3 pt/A. PHI 14 days.
<b>Sethoxydim</b> 0.19–0.28	(Poast) 1.5EC 1.0–1.5 pt	1	Grass weeds. Efficacy will be decreased if grass weeds are under stress. Include a crop oil concentrate or methylated seed oil in the spray. PHI 14 days.

Table 5. Herbicides approved for managing weeds in parsley.

Active Ingredient lb a.i./A	Trade Name Product/A	MOA Code	Crops	Weeds Controlled/Remarks
<b>Labels change frequently. Be sure to read a current product label before applying any chemical.</b>				
<b>*** PREEMERGENCE ***</b>				
<b>Bensulide</b> 5.0–6.0	(Prefar) 4 E 5–6 qt	8	Parsley	Annual broadleaf and grass weeds. Incorporate or irrigate 1–2 in. deep within 36 hr of application. Consult label for rotation restrictions.
<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	Parsley, cilantro	Apply as a preplant burndown for emerged broadleaf weeds. Use crop oil concentrate, methylated seed oil, or nonionic surfactant at recommended rates. Maximum rate of 0.096 lb a.i./A per season. No pretransplant interval.
<b>Glyphosate</b>	(various formulations) consult labels	9	Parsley, cilantro	Control emerged broadleaf and grass weeds. Consult individual labels for restrictions.
<b>Linuron</b> 0.5–1.5	(Lorox DF) 50 DF 1–3 lb	7	Parsley, cilantro	Mineral and muck soils. Apply after planting and before crop emergence. Use lower rates on coarse soils.
<b>Pelargonic acid</b>	(Scythe) 4.2 EC 3%–10% v/v	27	Parsley, cilantro	Controls emerged weeds. Apply before emergence of crop. Product is a contact, nonselective, foliar-applied herbicide. There is no residual activity.
<b>Prometryn</b> 1.0–1.6	(Caparol) 4 L 1.0 pt	5	Parsley, cilantro	A single preemergence application can be applied up to 14 days after planting. A second application can be made up to 30 days prior to harvest. Do not apply on sand or loamy sand. Read label for rotation restrictions.
<b>Pyraflufen</b> 0.001–0.003	(ET Herbicide/Defoliant) 0.5–2.0 fl oz	14	Parsley	Emerged broadleaf and grass weeds. Plant 1 day after application. Apply as a preplant burndown treatment.
<b>*** POSTEMERGENCE ***</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	Parsley, cilantro	Emerged broadleaf control. Post-direct hooded application to row middles. Read the label for adjuvant requirements. PHI 0 days.
<b>Clethodim</b> 0.10–0.13 0.07–0.13	(Arrow, Select) 2 EC 6–8 fl oz (Select Max) 1 EC 9–16 fl oz	1	Parsley, cilantro	Annual and perennial grass control. Read the label for required adjuvants.
<b>Linuron</b> 0.5	(Lorox DF) 50 DF 1 lb	7	Parsley, cilantro	Apply after the crop has a minimum of 3 true leaves or crop injury may result. Apply when weeds are in the 1 to 3 true leaf stage. Do not exceed 3 lb of Lorox per acre per season. PHI 30 days.
<b>Prometryn</b> 0.5	(Caparol) 4 L 1.0 pt	5	Parsley, cilantro	An application can be made up to 30 days prior to harvest. Another application can be applied after harvest to the new regrowth. Do not use on sand or loamy sands. Read label for rotation restrictions.
<b>Sethoxydim</b> 0.19–0.28	(Poast) 1.5EC 1.0–1.5 pt	1	Parsley, cilantro	Growing grass weeds. Decreased efficacy if weeds are under stress. Do not exceed 3.0 pt/A per season. Include a crop oil concentrate in the spray solution. PHI 15 days.

Table 6. Insecticides approved for management of arthropod pests of celery.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
<b>Aphids</b>	1B	<b>Malathion 5EC, 8F</b> (malathion)	<b>5EC:</b> 2.4 pt <b>8F:</b> 1–1.5 pt	24	7	Maximum of 2 applications per year.
	1B	<b>Orthene 97</b> (acephate)	0.5–1.0 lb	24	21	Do not use more than 2 lb a.i. per acre per season. All tops must be removed before shipment.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	12	7	Maximum of 32 fl oz/acre per season.
	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	3.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A	<b>*Pounce 25 WP</b> (permethrin)	6.4–12.8 oz	12	1	Maximum of 0.8 lb a.i./acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Actara</b> (thiamethoxam)	1.5–3.0 oz	12	7	Maximum of 11 oz/acre per season.
	4A	<b>Admire Pro</b> (imidacloprid)	<b>Soil:</b> 4.4–10.5 fl oz	12	45	Maximum of 10.5 fl oz/acre per year.
	4A	<b>Assail 30SG</b> <b>Assail 70WP</b> (acetamiprid)	<b>30SG:</b> 2.0–4.0 oz <b>70WP:</b> 0.8–1.7 oz	12	7	<b>30SG:</b> Maximum of 20.0 oz/acre or 0.375 lb a.i. per year. <b>70SP:</b> Maximum of 8.5 oz/acre or 0.375 lb a.i. per year.
	4A	<b>Belay</b> (clothianidin)	<b>Foliar:</b> 3–4 fl oz <b>Soil:</b> 9–12 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.
4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.	
4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.	

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10.0–13.0 fl oz	12	30	Maximum of 13 fl oz/acre per season.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. An adjuvant may be used when applying to celery.
	4C	<b>Closer SC</b> (sulfoxaflor)	1.5–2.0 fl oz	12	3	Maximum of 17 fl oz/acre per year.
	4D	<b>Sivanto Prime</b> (flupyradifurone)	7–14 fl oz	4	1	Maximum of 28 fl oz/acre per crop season. Maximum of 3 crop seasons per year.
	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	10 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.
	9B	<b>Fulfil</b> (pymetrozine)	2.75 oz	12	7	Apply when aphids first appear, before populations build to damaging levels. Two applications (maximum allowed) may be needed to control persistent aphid populations.
	9B	<b>PQZ</b> (pyrifluquinazon)	2.4–3.2 fl oz	12	1	Maximum of 4.8 fl oz/acre per crop cycle.
	9D	<b>Versys</b> (afidopyropen)	1.5 fl oz	12	0	Maximum of 14 fl oz/acre per season.
	21A	<b>Torac</b> (tolfenpyrad)	14–21 fl oz	12	1	Do not apply until at least 14 days after emergence or after transplanting. Do not apply more than 42 fl oz per acre per crop cycle, and apply no more than twice per crop or 4 times per year.
	23	<b>Movento</b> (spirotetramat)	4.0–5.0 fl oz	24	3	Do not apply more than 10 fl oz/acre per crop.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	12	1	Maximum of 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Verimark), including all application types. For best performance, use an adjuvant.
	28	<b>Verimark</b> (cyantraniliprole)	6.75–13.5 fl oz	4	N/A—applied at planting	Maximum of 13.5 fl oz at planting or 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Exirel), including all application types.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.0–2.8 oz	12	0	Do not apply more than 8.4 oz/acre per season. Begin applications before pests reach damaging levels.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt	4	0	OMRI-listed.
	-	<b>BotaniGard ES</b> <b>Mycotrol ESO</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1 qt	4	0	Apply in sufficient water to cover foliage, typically 5–100 gallons/acre. Compatible in tank mix with some fungicides. Mycotrol ESO OMRI-listed.



Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	1–3 lb	4	0	OMRI-listed.
	-	<b>JMS Stylet-Oil, Saf-T-Side, Suffoil-X, Sun Spray 98.8%, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal	4	0	Organic Stylet-Oil, Saf-T-Side, and Suffoil-X are OMRI-listed <sup>2</sup> .
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>Neemix 4.5EC</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.
	-	<b>Requiem EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2.0–4.0 qt	4	0	Apply before pests reach damaging levels.
	-	<b>Trilogy</b> (extract of neem oil)	0.5%–2.0% v/v	4	0	Apply morning or evening to reduce potential for leaf burn. OMRI-listed.
Caterpillars (includes beet armyworm, cabbage looper, celery leaf-tier, corn earworm, cutworms, fall armyworm)	1A	<b>*Lannate LV, *SP</b> (methomyl)	<b>LV:</b> 0.75–3 pt <b>SP:</b> 0.25–1.0 lb	48	7	Do not apply more than 21 pt of LV or 7 lb SP per acre per season.
	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	1–2 qt	12	14	Maximum of 6 qt/acre per year.
	1B	<b>Orthene 97</b> (acephate)	1.0 lb	24	21	Do not use more than 2 lb a.i. per acre per season. All tops must be removed before shipment.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	12	7	Maximum of 32 fl oz/acre per season.
	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	2.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A	<b>*Pounce 25 WP</b> (permethrin)	3.2–12.8 oz	12	1	Maximum of 0.8 lb a.i./acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
		3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10.0–13.0 fl oz	12	30	Do not exceed more than 13 fl oz per acre per season.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. An adjuvant may be used when applying to celery.
	5	<b>Entrust SC</b> (spinosad)	1.5–10.0 fl oz	4	1	Maximum of 29 oz/acre per year. OMRI-listed.
	5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	4	1	Maximum of 6 applications, no more than 2 consecutive applications before rotating to another MOA.
	6	<b>*Proclaim</b> (emamectin benzoate)	2.4–4.8 oz	12	7	Provides suppression of leafminers. Rotate with other products with different modes of action.
	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10.0 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.
	11A	<b>Agree WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb	4	0	Apply when larvae are small for best control. OMRI-listed.
	11A	<b>Biobit HP</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	4	0	Treat when larvae are young. Good coverage is essential. Can be used in the greenhouse. OMRI-listed.
	11A	<b>Crymax WDG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	4	0	Use high rate for armyworms. Treat when larvae are young.
	11A	<b>Deliver</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.25–1.5 lb	4	0	Use higher rates for armyworms. OMRI-listed.
	11A	<b>DiPel DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	4	0	Treat when larvae are young. Good coverage is essential. See label for rates for specific pests. For organic production.
	11A	<b>Javelin WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.12–1.5 lb	4	0	Treat when larvae are young. Thorough coverage is essential. OMRI-listed.
	11A	<b>Xentari DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb	4	0	Treat when larvae are young. Thorough coverage is essential. May be used in the greenhouse. Can be used in organic production.
	18	<b>Confirm 2F</b> (tebufenozide)	6–8 fl oz	4	7	Maximum of 40 fl oz/acre per season.
	18	<b>Intrepid 2F</b> (methoxyfenozide)	4–10 fl oz	4	1	Maximum of 64 fl oz/acre per year.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	22	<b>Avaunt</b> <b>Avaunt eVo</b> (indoxacarb)	3.5 oz <b>eVo:</b> 3.5–6.0 oz	12	3	Maximum of 14 oz/acre per crop and 56 oz/acre per year (Avaunt) or 18 oz/acre per crop and 72 oz/acre per year (Avaunt eVo).
	28	<b>Coragen</b> (chlorantraniliprole)	3.5–7.5 fl oz	4	1	May be applied via drip chemigation in addition to foliar and various soil application methods.
	28	<b>Exirel</b> (cyantraniliprole)	7.0–20.5 fl oz	12	1	Maximum of 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Verimark), including all application types.
	28	<b>Verimark</b> (cyantraniliprole)	5.0–13.5 fl oz	4	N/A—applied at planting	Maximum of 13.5 fl oz at planting or 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Exirel), including all application types.
	32	<b>Spear-Lep</b> (GS-omega/kappa-Hxtx-Hv1a)	1–2 pt	4	0	Must be tank-mixed with a <i>Bacillus thuringiensis</i> (Bt) product. Maximum of 10 gallons/acre per year.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt	4	0	OMRI-listed.
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	1–3 lb	4	0	OMRI-listed.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>Neemix 4.5EC</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.
<b>Fire ants</b>	7A	<b>Extinguish</b> (S-methoprene)	1–1.5 lb	4	0	Slow-acting IGR (insect growth regulator). Best applied early spring and fall where crop will be grown. Colonies will be reduced after three weeks and eliminated after 8 to 10 weeks. May be applied by ground equipment or aerially.
<b>Flea beetles</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	0.5–1.0 qt	12	14	Maximum of 6 qt/acre per year.
	3A	<b>*Ambush 25W</b> (permethrin)	6.4–12.8 oz	12	1	Do not apply more than 128 oz/acre per season.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	12	7	Maximum of 32 fl oz/acre per season.
	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	2.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.

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	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.	
	4A	<b>Actara</b> (thiamethoxam)	1.5–3.0 oz	12	7	Maximum of 11 oz/acre per season.	
	4A	<b>Belay</b> (clothianidin)	<b>Foliar:</b> 3–4 fl oz <b>Soil:</b> 9–12 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.	
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant.	
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.	
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.	
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.	
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10.0–13.0 fl oz	12	30	Do not exceed 13 fl oz per acre per season.	
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. An adjuvant may be used when applying to celery.	
	21A	<b>Torac</b> (tolfenpyrad)	14–21 fl oz	12	1	Do not apply until at least 14 days after emergence or after transplanting. Do not apply more than 42 fl oz per acre per crop cycle and apply no more than twice per crop or 4 times per year.	
	<b>Grasshoppers</b>	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
		4A	<b>Belay</b> (clothianidin)	<b>Soil:</b> 9–12 fl oz	12	21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
		4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
<b>Leafhoppers</b>	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.	
	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	0.5–1.0 qt	12	14	Maximum of 6 qt/acre per year.	
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.	
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	12	7	Maximum of 32 fl oz/acre per season.	

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	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	2.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A	<b>Pyganic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Actara</b> (thiamethoxam)	1.5–3.0 oz	12	7	Maximum of 11 oz/acre per season.
	4A	<b>Admire Pro</b> (imidacloprid)	4.4–10.5 fl oz	12	45	Do not apply more than 0.38 lb a.i. (10.5 fl oz product) per acre per year.
	4A	<b>Belay</b> (clothianidin)	<b>Foliar:</b> 3–4 fl oz <b>Soil:</b> 9–12 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum 6.4 oz/acre per season. Do not use an adjuvant.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10.0–13.0 fl oz	12	30	Do not exceed more than 13 fl oz per acre per season.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. An adjuvant may be used when applying to celery.
	4D	<b>Sivanto Prime</b> (flupyradifurone)	7–14 fl oz	4	1	Maximum of 28 fl oz/acre per crop season. Maximum of 3 crop seasons per year.
	16	<b>Courier 40SC</b> (buprofezin)	9.0–13.6 fl oz	12	7	Do not make more than 2 applications per crop cycle. IGR targets immatures.
	21A	<b>Torac</b> (tolfenpyrad)	14–21 fl oz	12	1	Do not apply until at least 14 days after emergence or after transplanting. Do not apply more than 42 fl oz per acre per crop cycle and apply no more than twice per crop or 4 times per year.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt	4	0	OMRI-listed.

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	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>JMS Stylet-Oil, Saf-T-Side, Suffoil-X, Sun Spray 98.8%, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal	4	0	Organic Stylet-Oil, Saf-T-Side, and Suffoil-X are OMRI-listed.
<b>Leafminers</b>	1A	<b>*Vydate L</b> (oxamyl)	2–4 pt	48	21	Do not apply more than 24 pt/acre per season.
	1B	<b>Dimethoate 4EC</b> (dimethoate)	1 pt	48	7	Do not apply more than 3 pt per acre per year.
	3A	<b>*Ambush 25W</b> (permethrin)	6.4–12.8 oz	12	1	Do not apply more than 128 oz/acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Belay</b> (clothianidin)	<b>Soil:</b> 9–12 fl oz	12	21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
	5	<b>Entrust SC</b> (spinosad)	1.5–10.0 fl oz	4	1	Maximum of 29 oz/acre per year. OMRI-listed.
	5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	4	1	Maximum of 6 applications; no more than 2 consecutive applications before rotating to another MOA.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.75–3.5 fl oz	12	7	No more than 2 sequential applications. Must be used with an adjuvant (but not binder-sticker types). Not for use on leafy vegetables grown for transplant.
	6	<b>*Proclaim</b> (emamectin benzoate)	2.4–4.8 oz	12	7	Provides suppression of leafminers. Rotate with other products with different modes of action.

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	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10.0 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.
	17	<b>Trigard</b> (cyromazine)	2.66 oz	12	7	Do not make more than six applications per crop.
	28	<b>Coragen</b> (chlorantraniliprole)	5.0–7.5 fl oz	4	1	May be applied via drip chemigation in addition to foliar and various soil application methods.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	12	1	Maximum of 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Verimark), including all application types. For best performance, use an adjuvant.
	28	<b>Verimark</b> (cyantraniliprole)	6.75–13.5 fl oz	4	N/A—applied at planting	Maximum of 13.5 fl oz at planting or 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Exirel), including all application types.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>Neemix 4.5EC</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.
	-	<b>Requiem EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2.0–4.0 qt	4	0	Apply before pests reach damaging levels.
	-	<b>SunSpray 98.8% JMS Stylet-Oil, Saf-T-side, others</b> (oils, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100 gal	4	0	See label for cautions on tank mixes. Organic Stylet-Oil and Saf-T-Side are OMRI-listed.
<b>Plant bugs</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	1–2 qt	12	14	Repeat as needed, up to 5 times, at least 7 days apart.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	12	7	Maximum of 32 fl oz/acre per season.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.0–2.8 oz	12	0	Do not apply more than 8.4 oz/acre per season. Begin applications before pests reach damaging levels.
<b>Planthoppers</b>	16	<b>Courier 40SC</b> (buprofezin)	9.0–13.6 fl oz	12	7	Do not make more than 2 applications per crop cycle. IGR targets immatures.
<b>Stink bugs</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	1–2 qt	12	14	Repeat as needed, up to 5 times, at least 7 days apart.
	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	3.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.

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	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	3.2–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
<b>Two-spotted spider mite</b>	1B	<b>Malathion 5EC, 8F</b> (malathion)	<b>5EC:</b> 2.4 pt <b>8F:</b> 1–1.5 pt	24	7	Maximum of 2 applications per year.
	3A	<b>*Brigade 2EC</b> (bifenthrin)	2.1–6.4 fl oz	12	7	Maximum of 32 fl oz/acre per season.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.75–3.5 fl oz	12	7	No more than 2 sequential applications. Must be used with an adjuvant (but not binder-sticker types). Not for use on leafy vegetables grown for transplant.
	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10.0 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.
	-	<b>Suffoil-X</b> (mineral oil)	1–2 gal/100 gal	4	0	OMRI-listed <sup>2</sup> .

<sup>1</sup> Mode of Action (MOA) codes for plant pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v. 9.4 March 2020. Number codes (1 through 29) are used to distinguish the main insecticide mode of action groups, with additional letters for certain subgroups within each main group. All insecticides within the same group (with 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 UF/IFAS Extension nor discrimination against similar products or services not mentioned. OMRI-listed: Listed by the Organic Materials Review Institute for use in organic production.

\* **Restricted use insecticide.**



Table 7. Insecticides approved for managing insect pests of okra crops.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
Aphids	1B	*Malathion 5EC Malathion 8F (malathion)	5EC: 1.5 pt 8F: 1.2 pt	5EC: 9.5 pt/yr 8F: 6.0 pt/yr	12	1	
	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	12.8 fl oz	12	1	
	3A	PyGanic 5.0 (pyrethrins)	4.5–15.6 fl oz	10 appl.	12	0	OMRI-listed <sup>2</sup> .
	4A	Admire Pro (imidacloprid)	Soil: 7–14 fl oz Foliar: 1.3–2.2 fl oz	Soil: 14 fl oz Foliar: 6.7 fl oz	12	Soil: 21 Foliar: 0	Do not apply to both soil and foliage. Do not use other 4A insecticides if imidacloprid is used.
	4A	Assail 30SG (acetamiprid)	2.0–4.0 oz	16 oz	12	7	
	4D	Sivanto Prime (flupyradifurone)	Foliar: 7.0–14 fl oz Soil: 21–28 fl oz	28 fl oz/yr	4	Foliar: 1 Soil: 45	
	9D	Sefina Inscalis (afidopyropen)	3.0 fl oz	28 fl oz	12	0	
	23	Movento (spirotetramat)	4–5 fl oz	10.0 fl oz	24	1	
	28	Exirel (cyantraniliprole)	13.5–20.5 fl oz	0.4 lb a.i.; see label	12	1	
	29	Beleaf 50 SG (flonicamid)	2.8–4.28 oz	8.4 oz	12	0	
	-	Aza-Direct (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent insect growth regulator.
	-	Azatin O (azadirachtin)	5–16 fl oz	as needed	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent insect growth regulator. Rate depends on pest. See label.
	-	BotaniGard ES BotaniGard 22WP ( <i>Beauveria bassiana</i> strain GHA)	ES: 0.25–1.0 qt 22WP: 0.50–2.0 qt	no limit	4	0	Compatible in tank mix with some fungicides.
	-	Grandevo ( <i>Chromobacterium subtsugae</i> strain PRAA4-1)	2–3 lb	none	4	0	OMRI-listed <sup>2</sup> .
	-	Neemix 4.5 (azadirachtin)	4–16 fl oz	2.0 gm a.i. per appl.	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent insect growth regulator. May be used in greenhouses.
-	Sun Spray 98.8%, JMS Stylet Oil, Saf-T-Side, others (oil, insecticidal)	JMS: 3–6 qt/100 gal Others: 1–2 gal/100 gal	no limit	4	0	OMRI-listed <sup>2</sup> . See label for tank-mix cautions.	

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product/Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	- + 3A	<b>BotaniGard Maxx</b> ( <i>Beauveria bassiana</i> strain GHA + pyrethrins)	0.25–2.0 qt	no limit	12	0	
<b>Beetles</b> (including cucumber beetles, flea beetles)	1B	<b>*Malathion 5EC</b> <b>Malathion 8F</b> (malathion)	<b>5EC:</b> 1.9 pt <b>8F:</b> 1.2 pt	<b>5EC:</b> 9.5 pt/yr <b>8F:</b> 6.0 pt/yr	12	1	Do not graze or feed forage to livestock.
	3A	<b>*Capture LFR</b> (bifenthrin)	3.4–6.8 fl oz	0.2 lb a.i.	12	at plant	
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	24 fl oz	12	1	
	3A	<b>PyGanic 5.0</b> (pyrethrins)	4.5–15.6 fl oz	10 applications	12	0	OMRI-listed <sup>2</sup> .
	3A + 28	<b>Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	5–10 fl oz	31 fl oz	24	Edible podded succulent shelled: 7 Dry shelled: 21	
	4A	<b>Admire Pro</b> (imidacloprid)	<b>Soil:</b> 7–14 fl oz <b>Foliar:</b> 1.3–2.2 fl oz	<b>Soil:</b> 14 fl oz <b>Foliar:</b> 6.7 fl oz	12	<b>Soil:</b> 21 <b>Foliar:</b> 0	Do not apply to both soil and foliage. Do not use other 4A insecticides if imidacloprid is used.
	4A	<b>Assail 30SG</b> (acetamiprid)	1.5–2.5 oz	16 oz	12	7	
	15	<b>Rimon 0.83 EC</b> (novaluron)	9–12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent insect growth regulator.
<b>Caterpillars</b> (including armyworms, loopers, tomato fruitworm—also known as corn earworm, caterpillars, cutworms)	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	<b>4F:</b> 1–1.5 qt <b>XLR:</b> 1–1.5 qt	6 qt/year	12	3	
	3A	<b>*Asana XL</b> (esfenvalerate)	5.8–9.6 fl oz	38.4 fl oz	12	1	Do not feed or graze livestock on treated vines.
	3A	<b>*Brigade 2 EC</b> (bifenthrin)	2.1–6.4 fl oz	12.8 fl oz	12	1	
	3A	<b>*Capture LFR</b> (bifenthrin)	3.4–6.8 fl oz	0.2 lb a.i.	12	at plant	
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	24 fl oz	12	1	
	3A	<b>PyGanic 5.0</b> (pyrethrins)	4.5–15.6 fl oz	10 appl.	12	0	OMRI-listed <sup>2</sup> .

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	3A + 28	<b>Besiege</b> (lambda-cyhalothrin + chlorantraniliprole)	5–10 fl oz	31 fl oz	24	Edible podded succulent shelled: 7 Dry shelled: 21	
	5	<b>Entrust SC</b> (spinosad)	1.5–2.5 fl oz	9.0 fl oz	4	1	OMRI-listed <sup>2</sup> .
	5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	34 fl oz	4	1	
	6 + 28	<b>Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10.0 oz	0.4 lb a.i.; see label	12	Greenhouse tomato: 1 All other crops: 7	
	11A	<b>Crymax WDG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	no limit	4	0	Use high rate for armyworms. Treat when larvae are young.
	11A	<b>Deliver</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.25–1.5 lb	as needed	4	0	OMRI-listed <sup>2</sup> . Use higher rate for armyworms.
	11A	<b>DiPel</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	no limit	4	0	Can be used in organic production.
	11A	<b>Javelin WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.12–1.50 lb	no limit	4	0	OMRI-listed <sup>2</sup> . Treat when larvae are young. Thorough coverage is essential.
	11A	<b>Xentari DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb	no limit	4	0	OMRI-listed <sup>2</sup> .
	15	<b>Rimon 0.83 EC</b> (novaluron)	9–12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	18	<b>Intrepid</b> (methoxyfenozide)	4–16 fl oz	64 fl oz	4	1	
	22	<b>Avaunt</b> (indoxacarb)	2.5–3.5 oz	14 oz	12	3	
	28	<b>Coragen</b> (chlorantraniliprole)	3.5–7.5 fl oz	15.4 fl oz of chlorantraniliprole products	4	1	
	28	<b>Exirel</b> (cyantraniliprole)	7.0–13.5 fl oz	0.4 lb a.i. of cyantraniliprole or cyazapyr products	12	1	
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Azatin O</b> (azadirachtin)	5–16 fl oz	as needed	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator. Rate depends on pest. See label.
	-	<b>BotaniGard 22WP</b> ( <i>Beauveria bassiana</i> strain GHA)	0.50–2.0 qt	no limit			Contact dealer if an adjuvant must be used. Compatible in tank mix with some fungicides.
	-	<b>BotaniGard ES</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt	no limit	4	0	May be used in greenhouses.
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	1–3 lb	no limit	4	0	OMRI-listed <sup>2</sup> .
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz	20 gm a.i.	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.
	- + 3	<b>BotaniGard Maxx</b> ( <i>Beauveria bassiana</i> strain GHA + pyrethrins)	0.25–2.0 qt	no limit			
<b>Fire ants</b>	7A	<b>Extinguish</b> (S-methoprene)	1–1.5 lb broadcast	as needed	4	0	Insect Growth Regulator. Colonies will get reduced after three weeks and eliminated after 8–10 weeks.
	7C	<b>Esteem Ant Bait</b> (pyriproxyfen)	1.5–2.0 lb	0.134 lb a.i.	12	1	Insect Growth Regulator. Apply at first sign of ant activity.
<b>Leafminers</b>	3A	<b>*Brigade 2 EC</b> (bifenthrin)	2.1–6.4 fl oz	12.8 fl oz	12	7	
	5	<b>Entrust SC</b> (spinosad)	2–3 fl oz	9 fl oz	4	1	OMRI-listed <sup>2</sup> .
	5	<b>Radiant SC</b> (spinetoram)	6–10 fl oz	34 oz/yr	4	1	Use adjuvant for leafminer.
	6 + 28	<b>Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10.0 oz	0.4 lb a.i.; see label	12	Greenhouse tomato: 1 All other crops: 7	
	15	<b>Rimon 0.83 EC</b> (novaluron)	12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	0.4 lb a.i.; see label	12	1	
	28	<b>VeriMark</b> (cyantraniliprole)	6.75–13.5 fl oz	13.5 oz of cyantraniliprole or cyazapyr products	4	1	Apply at planting or in drip.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product/Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Azatin O</b> (azadirachtin)	5–16 fl oz	as needed	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator. Rate depends on pest. See label.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–7 oz	20 gm a.i.	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.
	-	<b>Sun Spray 98.8%, JMS Stylet Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100gal	no limit	4	0	OMRI-listed <sup>2</sup> . See label for tank-mix cautions.
<b>Mites</b>	3A	<b>PyGanic 5.0</b> (pyrethrins)	4.5–15.6 fl oz	10 appl.	12	0	OMRI-listed <sup>2</sup> .
	6 + 28	<b>Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10.0 oz	0.4 lb a.i.; see label	12	Greenhouse tomato: 1 All other crops: 7	
	10B	<b>Zeal</b> (etoxazole)	2.0–3.0 oz	3.0 oz	12	7	
	20B	<b>Kanemite 15 SC</b> (acequinocyl)	31 fl oz	62 oz	12	1	
	20D	<b>Acramite-50WS</b> (bifentate)	0.50–1.0 lb	1.0 lb	12	3	
	21A	<b>Portal</b> (fenpyroximate)	2.0 pt	4.0 pt	12	1	
	23	<b>Movento</b> (spirotetramat)	4–5 fl oz	10.0 fl oz	24	1	
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Insect growth regulator.
	-	<b>Sun Spray 98.8%, JMS Stylet Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100gal	no limit	4	0	OMRI-listed <sup>2</sup> .
	-	<b>Trilogy</b> (extract of neem oil)	1.0%–2.0% v/v	as needed	4	0	OMRI-listed <sup>2</sup> .
<b>Stink bugs</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	<b>4F:</b> 1–1.5 qt <b>XLR:</b> 1–1.5 qt	6 qt/year	12	3	
	3A	<b>*Brigade 2 EC</b> (bifenthrin)	2.1–6.4 fl oz	12.8 oz	7	1	
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	3.2–4.0 fl oz	24 fl oz	12	1	
	3A	<b>PyGanic 5.0</b> (pyrethrins)	4.5–15.6 fl oz	10 appl.	12	0	OMRI-listed <sup>2</sup> .

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product/Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
Thrips	15	<b>Rimon 0.83 EC</b> (novaluron)	12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	4A	<b>Admire Pro</b> (imidacloprid)	<b>Soil:</b> 7–14 fl oz	<b>Soil:</b> 10.5 fl oz	12	<b>Soil:</b> 21	Soil application only for thrips. Do not use other 4A insecticides if imidacloprid is used.
	5	<b>Entrust SC</b> (spinosad)	1.25–2.5 oz	9.0 oz	4	1	OMRI-listed <sup>2</sup> .
	6 + 28	<b>Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10.0 oz	0.4 lb a.i.	12	Greenhouse tomato: 1 All other crops: 7	
	15	<b>Rimon 0.83 EC</b> (novaluron)	12 fl oz	24.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.
	-	<b>BotaniGard 22WP</b> ( <i>Beauveria bassiana</i> strain GHA)	1.0–2.0 qt	as needed	4	0	Compatible in tank mix with some fungicides.
	-	<b>BotaniGard ES</b> ( <i>Beauveria bassiana</i> strain GHA)	1.0–2.0 qt	as needed	4	0	May be used in greenhouses.
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	2–3 lb	none	4	0	OMRI-listed <sup>2</sup> .
	-	<b>Requiem EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2.0–4.0 qt	10 appl.	4	0	
Whiteflies	-	<b>Sun Spray 98.8%, JMS Stylet Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100gal	no limit	4	0	OMRI-listed <sup>2</sup> .
	- + 3	<b>BotaniGard Maxx</b> ( <i>Beauveria bassiana</i> strain GHA + pyrethrins)	0.25–2.0 qt	as needed	12	0	
	3A	<b>*Brigade 2 EC</b> (bifenthrin)	2.1–6.4 fl oz	12.8 fl oz	12	7	
	3A	<b>PyGanic 5.0</b> (pyrethrins)	4.5–15.6 fl oz	10 appl.	12	0	OMRI-listed <sup>2</sup> .

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product/Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4A	<b>Admire Pro</b> (imidacloprid)	<b>Soil:</b> 7–14 fl oz <b>Foliar:</b> 1.3–2.2 fl oz	<b>Soil:</b> 14 fl oz <b>Foliar:</b> 6.7 fl oz	12	<b>Soil:</b> 21 <b>Foliar:</b> 0	Do not apply to both soil and foliage. Do not use other 4A insecticides if imidacloprid is used.
	4A	<b>Assail 30SG</b> (acetamiprid)	2.5–4.0 fl oz	16 oz	12	7	
	4D	<b>Sivanto Prime</b> (flupyradifurone)	<b>Foliar:</b> 10.5–14 fl oz <b>Soil:</b> 21–28 fl oz	28 fl oz/yr	4	<b>Foliar:</b> 1 <b>Soil:</b> 45	
	6 + 28	<b>Minecto Pro</b> (cyantraniliprole + abamectin)	5.5–10.0 oz	0.4 lb a.i.; see label	12	Greenhouse tomato: 1 All other crops: 7	
	7C	<b>Knack IGR</b> (pyriproxyfen)	8–10 fl oz	20 fl oz	12	1	Insect growth regulator
	9D	<b>Sefina Inscalis</b> (afidopyropen)	14 fl oz	28 fl oz	12	0	
	15	<b>Rimon 0.83 EC</b> (novaluron)	12.0 fl oz	24.0 oz	12	1	
	16	<b>Courier 40 SC</b> (buprofezin)	9.0–13.6 fl oz	27.2 fl oz	12	1	
	23	<b>Movento</b> (spirotetramat)	4–5 fl oz	10.0 fl oz	24	1	
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	0.4 lb a.i.; see label	12	1	
	28	<b>Verimark</b> (cyantraniliprole)	6.75–13.5 fl oz	13.5 fl oz of cyantraniliprole or cyazapyr products	4	1	
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt	3.5 pt	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.
	-	<b>Azatin O</b> (azadirachtin)	5–16 fl oz	as needed	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator. Rate depends on pest.
	-	<b>BotaniGard 22WP</b> ( <i>Beauveria bassiana</i> strain GHA)	0.50–2.0 qt	no limit			
	-	<b>BotaniGard ES</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1.0 qt	no limit	4	0	May be used in greenhouses.
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	2–3 lb	no limit	4	0	OMRI-listed <sup>2</sup> . Can be used in organic production.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	Max Rate Product per Season	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz	20 gm a.i.	4	0	OMRI-listed <sup>2</sup> . Antifeedant, repellent, insect growth regulator.
	-	<b>Requiem EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2–4 qt	as needed	4	0	
	-	<b>Sun Spray 98.8%, JMS Stylet Oil, Saf-T-Side, others</b> (oil, insecticidal)	<b>JMS:</b> 3–6 qt/100 gal <b>Others:</b> 1–2 gal/100gal	no limit	4	0	OMRI-listed <sup>2</sup> .
	- + 3	<b>BotaniGard Maxx</b> ( <i>Beauveria bassiana</i> strain GHA + pyrethrins)	0.25–2.0 qt	no limit	12	0	Compatible in tank mix with some fungicides.
<b>Wireworm</b>	3A	<b>*Capture LFR</b> (bifenthrin)	3.4–6.8 fl oz	0.2 lb a.i.	12	at plant	Extremely toxic to bees, fish, and aquatic invertebrates.

<sup>1</sup>Mode of Action (MOA) codes for plant pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v. 9.4, March 2020. Number codes (1 through 28) are used to distinguish the main insecticide mode of action groups, with additional letters for certain subgroups within each main group. All insecticides within the same group (with the same number) indicate the same active ingredient or similar mode of action. This information must be considered for the insecticide resistance management decisions. Un=unknown, or a mode of action that has not been classified yet.

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

**\* Restricted use insecticide**



Table 8. Insecticides labeled for management of arthropod pests of parsley.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
Aphids	1B	<b>Malathion 5EC, 8F</b> (malathion)	<b>5EC:</b> 1.5–2.4 pt <b>8F:</b> 1.5 pt	24	7	Maximum of 2 applications per year.
	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	3.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	3.2–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A	<b>*Pounce 25 WP</b> (permethrin)	6.4–12.8 oz	12	1	Maximum of 0.8 lb a.i./acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GH4)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Actara</b> (thiamethoxam)	1.5–3.0 oz	12	7	Maximum of 11 oz/acre per season.
	4A	<b>Admire Pro</b> (imidacloprid)	<b>Foliar:</b> 1.3 fl oz <b>Soil:</b> 4.4–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6.5 fl oz (foliar) or 10.5 fl oz (soil)/acre per year.
	4A	<b>Assail 30SG</b> <b>Assail 70WP</b> (acetamiprid)	<b>30SG:</b> 2.0–4.0 oz <b>70WP:</b> 0.8–1.7 oz	12	7	<b>30SG:</b> Maximum of 20.0 oz/acre or 0.375 lb a.i. per year. <b>70WP:</b> Maximum of 8.5 oz/acre or 0.375 lb a.i. per year.
	4A	<b>Belay</b> (clothianidin)	<b>Foliar:</b> 3–4 fl oz <b>Soil:</b> 9–12 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Belay 50WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant.
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10.0–13.0 fl oz	12	30	Maximum of 13 fl oz/acre per season.	
4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. Do not use an adjuvant.	
4C	<b>Closer SC</b> (sulfoxaflor)	1.5–2.0 fl oz	12	3	Do not make more than 2 consecutive applications or more than 4 total applications per season.	

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4D	<b>Sivanto Prime</b> (flupyradifurone)	7–14 fl oz	4	1	Maximum of 28 fl oz/acre per crop season. Maximum of 3 crop seasons per year.
	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.
	9B	<b>Fulfill</b> (pymetrozine)	2.75 oz	12	7	Apply when aphids first appear, before populations build to damaging levels. Two applications (maximum allowed) may be needed to control persistent aphid populations.
	9B	<b>PQZ</b> (pyrifluquinazon)	2.4–3.2 fl oz	12	1	Maximum of 4.8 fl oz/acre per crop cycle.
	9D	<b>Versys</b> (afidopyropen)	1.5 fl oz	12	0	Maximum of 14 fl oz/acre per season.
	23	<b>Movento</b> (spirotetramat)	4.0–5.0 fl oz	24	3	Do not apply more than 10 fl oz per acre per crop.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	12	1	Maximum of 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Verimark), including all application types. For best performance, use an adjuvant.
	28	<b>Verimark</b> (cyantraniliprole)	6.75–13.5 fl oz	4	N/A—applied at planting	Maximum of 13.5 fl oz at planting or 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Exirel), including all application types.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.0–2.8 oz	12	0	Do not apply more than 8.4 oz/acre per season. Begin applications before pests reach damaging levels.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, to 3.5 pt if needed	4	0	OMRI-listed.
	-	<b>BotaniGard ES</b> <b>Mycotrol ESO</b> ( <i>Beauveria bassiana</i> strain GHA)	0.25–1 qt	4	0	Apply in sufficient water to cover foliage, typically 5–100 gallon/acre. Compatible in tank mix with some fungicides. Mycotrol ESO OMRI-listed.
	-	<b>Grandevo</b> ( <i>Chromobacterium subtsugae</i> strain PRAA4-1)	1–3 lb	4	0	OMRI-listed.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>M-Pede 49% EC</b> (soap, insecticidal)	1%–2% v/v	12	0	OMRI-listed.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Trilogy</b> (extract of neem oil)	1.0%–2.0% v/v	4	0	Apply morning or evening to reduce potential for leaf burn. OMRI-listed.
<b>Caterpillars</b> (includes beet armyworm, cabbage looper, celery leaf-tier, corn earworm, cutworms, fall armyworm)	1A	<b>*Lannate LV, *SP</b> (methomyl)	<b>LV:</b> 1.5–3 pt <b>SP:</b> 0.5–1.0 lb	48	10	Do not apply more than 12 pt of LV or 4 lb SP per acre per season.
	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	1–2 qt	12	14	Maximum of 6 qt/acre per year.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
	3A	<b>*Fastac CS</b> (alpha-cypermethrin)	2.2–3.8 fl oz	12	1	Maximum of 11.4 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A	<b>*Pounce 25 WP</b> (permethrin)	3.2–12.8 oz	12	1	Maximum of 0.8 lb a.i./acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 oz	12	30	May be applied by one of several soil application methods. One application per season.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. Do not use an adjuvant.
	5	<b>Entrust SC</b> (spinosad)	1.5–10.0 fl oz	4	1	Maximum of 29 oz/acre per crop. OMRI-listed.
5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	4	1	Maximum of 6 applications, and no more than 2 consecutive applications before rotating to another MOA.	
6	<b>*Proclaim</b> (emamectin benzoate)	2.4–4.8 oz	12	7	Do not apply more than 28.8 oz/A per season.	
6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10.0 fl oz Cabbage looper: 7.5–10.0 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.	
11A	<b>Agree WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb	4	0	Apply when larvae are small for best control. OMRI-listed.	

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	11A	<b>Biobit HP</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	4	0	Treat when larvae are young. Good coverage is essential. Can be used in the greenhouse. OMRI-listed.
	11A	<b>Crymax WDG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	4	0	Use high rate for armyworms. Treat when larvae are young.
	11A	<b>Deliver</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.25–1.5 lb	4	0	Use higher rates for armyworms. OMRI-listed.
	11A	<b>DiPel DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.5–2.0 lb	4	0	Treat when larvae are young. Good coverage is essential. See label for rates for specific pests. Can be used for organic production.
	11A	<b>Javelin WG</b> ( <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> )	0.12–1.5 lb	4	0	Treat when larvae are young. Thorough coverage is essential. OMRI-listed.
	11A	<b>Xentari DF</b> ( <i>Bacillus thuringiensis</i> subspecies <i>aizawai</i> )	0.5–2.0 lb	4	0	Treat when larvae are young. Thorough coverage is essential. May be used in the greenhouse. Can be used in organic production.
	18	<b>Confirm 2F</b> (tebufenozide)	6–8 fl oz	4	7	Maximum of 40 fl oz/acre per season.
	18	<b>Intrepid 2F</b> (methoxyfenozide)	4–10 fl oz	4	1	Maximum of 64 fl oz/acre per year.
	22	<b>Avaunt</b> <b>Avaunt eVo</b> (indoxacarb)	2.5–3.5 oz <b>eVo:</b> 2.5–6.0 oz	12	3	Maximum of 24 oz/acre per crop and 96 oz/acre per year (Avaunt) or 18 oz/acre per crop and 72 oz/acre per year (Avaunt eVo).
	28	<b>Coragen</b> (chlorantraniliprole)	3.5–7.5 fl oz	4	1	May be applied via drip chemigation in addition to foliar and various soil application methods.
	28	<b>Exirel</b> (cyantraniliprole)	7.0–20.5 fl oz	12	1	Maximum of 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Verimark), including all application types.
	28	<b>Verimark</b> (cyantraniliprole)	5.0–13.5 fl oz	4	N/A—applied at planting	Maximum of 13.5 fl oz at planting or 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Exirel), including all application types.
	32	<b>Spear-Lep</b> (GS-omega/kappa-Hctx-Hv1a)	1–2 pt	4	0	Must be tank-mixed with a <i>Bacillus thuringiensis</i> (Bt) product. Maximum of 10 gallons/acre per year.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, up to 3.5 pt if needed	4	0	Antifeedant, repellent, insect growth regulator. OMRI-listed.
	-	<b>Grandevo</b> ( <i>Chromobacterium subsugae</i> strain PRAA4-1)	1–2 lb	4	0	OMRI-listed.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.
<b>Fire ants</b>	7A	<b>Extinguish</b> (S-methoprene)	1.0–1.5 lb	4	0	Slow-acting IGR (insect growth regulator). Best applied early spring and fall where crop will be grown. Colonies will be reduced after three weeks and eliminated after 8 to 10 weeks. May be applied by ground equipment or aerially.
<b>Flea beetles</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	0.5–1.0 qt	12	14	Maximum of 6 qt/acre per year.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Actara</b> (thiamethoxam)	1.5–3.0 oz	12	7	Maximum of 11 oz/acre per season.
	4A	<b>Admire Pro</b> (imidacloprid)	1.3 fl oz	12	7	Maximum of 6.5 fl oz/acre per year.
	4A	<b>Belay</b> (clothianidin)	<b>Foliar:</b> 3–4 fl oz <b>Soil:</b> 9–12 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year. <b>Flea beetles only.</b>
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant. <b>Flea beetles only.</b>
	4A	<b>Platinum 75 SG</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
	4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 oz	12	30	May be applied by one of several soil application methods. One application per season.
	4A + 28	<b>Voliam Flexi</b> (thiamethoxam + chlorantraniliprole)	4.0–7.0 oz	12	7	Do not apply more than 14 oz per acre per growing season. Do not use an adjuvant. Do not allow drift to weeds or nearby crops in bloom.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
Grasshoppers	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
	4A	<b>Belay</b> (clothianidin)	<b>Soil:</b> 9–12 fl oz	12	21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
Leafhoppers	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	0.5–1.0 qt	12	14	Maximum of 6 qt/acre per year.
	3A	<b>*Baythroid XL</b> (beta-cyfluthrin)	0.8–3.2 fl oz	12	0	Maximum of 12.8 fl oz/acre per season.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	2.24–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.
	3A	<b>*Pounce 25 WP</b> (permethrin)	3.2–12.8 oz	12	1	Maximum of 0.8 lb a.i./acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Actara</b> (thiamethoxam)	1.5–3.0 oz	12	7	Maximum of 11 oz/acre per season.
	4A	<b>Admire Pro</b> (imidacloprid)	<b>Foliar:</b> 1.3 fl oz <b>Soil:</b> 4.4–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6.5 fl oz (foliar) or 10.5 fl oz (soil)/acre per year.
	4A	<b>Belay</b> (clothianidin)	<b>Foliar:</b> 3–4 fl oz <b>Soil:</b> 9–12 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant.
4A	<b>Platinum 755G</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.	
4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.	
4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.	
4A + 28	<b>Durivo</b> (thiamethoxam + chlorantraniliprole)	10–13 oz	12	30	May be applied by one of several soil application methods. One application per season.	

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	4D	<b>Sivanto Prime</b> (flupyradifurone)	7–14 fl oz	4	1	Maximum of 28 fl oz/acre per crop seasons. Maximum of 3 crop seasons per year.
	16	<b>Courier 40SC</b> (buprofezin)	9.0–13.6 fl oz	12	7	Do not make more than 2 applications per crop cycle. IGR targets immatures.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, to 3.5 pt if needed	4	0	OMRI-listed.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.
<b>Leafminers</b>	3A	<b>*Pounce 25 WP</b> (permethrin)	3.2–12.8 oz	12	1	Maximum of 0.8 lb a.i./acre per season.
	3A	<b>PyGanic Crop Protection EC 5.0</b> (pyrethrins)	4.5–15.6 fl oz	12	0	Breaks down rapidly in sunlight. OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	4A	<b>Belay</b> (clothianidin)	<b>Soil:</b> 9–12 fl oz	12	21	Maximum of 12 fl oz/acre or 0.2 lb a.i./acre per year.
	4A	<b>Belay 50 WDG</b> (clothianidin)	<b>Foliar:</b> 1.6–2.1 oz <b>Soil:</b> 4.8–6.4 oz	12	7	Maximum of 6.4 oz/acre per season. Do not use an adjuvant.
	4A	<b>Platinum 755G</b> (thiamethoxam)	1.66–3.67 oz	12	30	Maximum of 3.67 oz/acre per season.
	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
	5	<b>Entrust SC</b> (spinosad)	1.5–10.0 fl oz	4	1	Maximum of 29 oz/acre per crop. OMRI-listed.
	5	<b>Radiant SC</b> (spinetoram)	5–10 fl oz	4	1	Maximum of 6 applications, and no more than 2 consecutive applications before rotating to another MOA.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.75–3.5 fl oz	12	7	No more than 2 sequential applications. Must be used with an adjuvant (but not binder-sticker types). Not for use on leafy vegetables grown for transplant.
	6	<b>*Proclaim</b> (emamectin benzoate)	2.4–4.8 oz	12	7	Do not apply more than 28.8 oz/A per season.

Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10.0 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.
	17	<b>Trigard</b> (cyromazine)	2.66 oz	12	7	No more than 5 applications per crop.
	28	<b>Coragen</b> (chlorantraniliprole)	5.0–7.5 fl oz	4	1	May be applied by drip chemigation, in addition to foliar and various soil application methods.
	28	<b>Exirel</b> (cyantraniliprole)	13.5–20.5 fl oz	12	1	Maximum of 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Verimark), including all application types. For best performance, use an adjuvant.
	28	<b>Verimark</b> (cyantraniliprole)	6.75–13.5 fl oz	4	N/A—applied at planting	Maximum of 13.5 fl oz at planting or 0.4 lb a.i./acre per year of cyantraniliprole-containing products (such as Exirel), including all application types.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, to 3.5 pt if needed	4	0	OMRI-listed.
	-	<b>Molt-X</b> (azadirachtin)	10 fl oz	4	0	OMRI-listed.
	-	<b>Neemix 4.5</b> (azadirachtin)	4–16 fl oz	12	0	OMRI-listed.
	-	<b>Requiem EC</b> (extract of <i>Chenopodium ambrosioides</i> )	2.0–4.0 qt	4	0	Apply before pests reach damaging levels.
<b>Plant bugs</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	1–2 qt	12	14	Maximum of 6 qt/acre per year.
	3A +-	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	29	<b>Beleaf 50 SG</b> (flonicamid)	2.0–2.8 oz	12	0	Do not apply more than 8.4 oz/acre per season. Begin applications before pests reach damaging levels.
<b>Planthoppers</b>	16	<b>Courier 40SC</b> (buprofezin)	9.0–13.6 fl oz	12	7	Do not make more than 2 applications per crop cycle. IGR targets immatures.
<b>Stink bugs</b>	1A	<b>Sevin 4F, XLR Plus</b> (carbaryl)	1–2 qt	12	14	Maximum of 6 qt/acre per year.
	3A	<b>*Mustang Maxx</b> (zeta-cypermethrin)	3.2–4.0 fl oz	12	1	Maximum of 24 fl oz/acre per season.



Insect or Mite Pest	MOA Code <sup>1</sup>	Trade Name (Active Ingredient) *Restricted	Rate (Product/Acre)	REI (Hours)	Days to Harvest	Remarks <sup>2</sup>
Two-spotted spider mite	4A	<b>Scorpion 35 SL</b> (dinotefuran)	<b>Foliar:</b> 2–5.25 fl oz <b>Soil:</b> 9–10.5 fl oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 10.5 fl oz (foliar) or 21 fl oz (soil)/acre per season.
	4A	<b>Venom</b> (dinotefuran)	<b>Foliar:</b> 1.0–3.0 oz <b>Soil:</b> 5.0–6.0 oz	12	<b>Foliar:</b> 7 <b>Soil:</b> 21	Maximum of 6 oz (foliar) or 12 oz (soil)/acre per season.
	-	<b>Aza-Direct</b> (azadirachtin)	1–2 pt, to 3.5 pt if needed	4	0	OMRI-listed.
	3A + -	<b>BotaniGard Maxx</b> (pyrethrins + <i>Beauveria bassiana</i> strain GHA)	<b>Ground appl.:</b> 0.25–2.00 qt <b>Aerial appl.:</b> 0.25–1.00 qt	12	0	Apply in sufficient water to cover foliage. Compatible in tank mix with some fungicides. May not be compatible with adjuvants.
	6	<b>*Agri-Mek SC</b> (abamectin)	1.75–3.5 fl oz	12	7	No more than 2 sequential applications. Must be used with an adjuvant (but not binder-sticker types). Not for use on leafy vegetables grown for transplant.
	6 + 28	<b>*Minecto Pro</b> (abamectin + cyantraniliprole)	5.5–10.0 fl oz	12	7	Maximum of 20 fl oz/acre per year, or 0.4 lb a.i./acre per year of cyantraniliprole-containing products and 0.056 lb a.i./acre per year of abamectin-containing products, including all application types.

<sup>1</sup> Mode of Action (MOA) codes for plant pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v. 9.4 March 2020. Number codes (1 through 29) are used to distinguish the main insecticide mode of action groups, with additional letters for certain subgroups within each main group. All insecticides within the same group (with 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 UF/IFAS Extension nor discrimination against similar products or services not mentioned. OMRI-listed: Listed by the Organic Materials Review Institute for use in organic production.

**\* Restricted use insecticide.**

Table 9. Celery fungicides ordered by disease and then FRAC group according to their mode of action.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Alternaria	7	<b>Endura</b> (boscalid)	9 oz	18 oz	0	0.5	Alternate with non-FRAC code 7 fungicide.
	9 + 12	<b>Switch</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Rotate with fungicides of dissimilar mode of action.
	11	(azoxystrobin) <b>Many brands available:</b> Azoxystrobin, Azteroid SC, Equation SC, Quadris SC, Satori, Willowood Azoxystrobin	15.4 fl oz	96 fl oz	0	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
<b>Bacterial blight</b>	M1	(copper compounds) <b>Many labels available:</b> Badge SC, Badge X2, Basic Copper 53, Champ DP, Champ Formula 2, Champ WG, Champ WP, Champion++, COC DF, C-O-C-S WDG, COC WP, Copper Count N, Cueva, Cuprofix Ultra, Kentan DF, Kocide DF, Kocide 2000, Kocide 3000, Kocide 4.5 LF, Kop-hydroxide, Mastercop, Nordox 75 WG, Nu-Cop 3L, Nu-Cop 50WP, Nu-Cop DF, Nu-Cop HB, Previs-to, Stretch, Tenn-Cop 5E, Top Cop w/Sulfur	<b>SEE INDIVIDUAL LABELS</b>		1	Varies by product from 4 hr to 2 days.	
	25	<b>Agri-mycin 17</b> <b>AG Streptomycin</b> <b>Bac-Master</b> <b>Firewall 17 WP</b> (streptomycin)	200 ppm			0.5	See label for details. For transplant production.
<b>Early blight (Cercospora)</b>	M2	(sulfur) <b>Many labels available:</b> Cosavet, Dusting Sulfur – IAP, Kumulus DF, Micro Sulf, Microfine Sulfur, Microthiol Disperss, Sulfur 90W, Super-Six, Top Cop w/Sulfur	<b>SEE INDIVIDUAL LABELS</b>		1	1	Do not apply during periods of weather. Do not apply within 2 weeks of an oil spray.
	M5	(chlorothalonil) <b>Many labels available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo ZN, Chloronil 720, Chlorothalonil 720 SC, Echo 720, Echo 90DF, Echo ZN, Equus 500 ZN, Equus 720SST, Equus DF, Initiate 720, Initiate ZN, Praiz	<b>SEE INDIVIDUAL LABELS</b>		7	0.5	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	M5 + 33	<b>Catamaran</b> (chlorothalonil + phosphite)	4 pt	60 pt	7	0.5	
	3	(propiconazole) <b>Many labels available:</b> Amicide Propiconazole, Bumper 41.8EC, Fitness, Propicure, Propimax EC, Propi-Star EC, Shar-Shield PPZ, Tilt, Topaz	4 fl oz	16 fl oz	14	0.5	Do not exceed 4 total applications.
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	7	0.5	Do not apply more than 4 applications per year.
	3 + 11	<b>Topguard EQ</b> (flutriafol + azoxystrobin)	8 fl oz	32 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	5.8 fl oz	23 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7 + 11	<b>Merivon SC</b> (pyraclostrobin + fluxapyroxad)	11.0 fl oz	33 fl oz	1	0.5	Alternate with fungicides of dissimilar modes of action.
	7 + 11	<b>Pristine</b> (boscalid + pyraclostrobin)	15 oz	50 oz	0	0.5	Do not make more than 1 application without rotating to a fungicide of dissimilar mode of action.
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	0	0.5	See label for restrictions.
	9 + 12	<b>Switch</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Rotate with fungicides of dissimilar mode of action.
	11	<b>Aftershock</b> (fluoxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	(azoxystrobin) <b>Many brands available:</b> Azoxyzone, Azteroid SC, Equation SC, Quadris SC, Satori, Willowood Azoxy	15.4 fl oz or 0.8 fl oz/1000 row ft	96 fl oz	0	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Evito 480SC</b> (fluoxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Flint Extra</b> (trifloxystrobin)	2.9 oz	11.6 oz	7	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Gem 500SC</b> (trifloxystrobin)	2.9 fl oz	11.6 fl oz	7	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11 + M5	<b>Quadris Opti</b> (azoxystrobin + chlorothalonil)	3.7 pt	22.2 pt	7	0.5	Do not exceed 2 sequential and 6 total applications of Quadris Opti or rotate with non-Qol fungicides.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Late blight (Septoria)	11 + 3	<b>Quilt</b> <b>Quilt XCEL</b> (azoxystrobin + propiconazole)	14 fl oz	56 fl oz	14	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	27 + 11	<b>Tanos</b> (cymoxanil + famoxadone)	8 oz	72 oz	3	0.5	Do not alternate or tank-mix with another FRAC group 11 fungicide.
	M2	(sulfur) <b>Many labels available:</b> Cosavet, Dusting Sulfur – IAP, Kumulus DF, Micro Sulf, Microfine Sulfur, Microthiol Disperss, Sulfur 90W, Super-Six, Top Cop w/Sulfur	<b>SEE INDIVIDUAL LABELS</b>		1	1	Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray.
	M5	(chlorothalonil) <b>Many labels available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo ZN, Chloronil 720, Chlorothalonil 720 SC, Echo 720, Echo 90DF, Echo ZN, Equus 500 ZN, Equus 720SST, Equus DF, Initiate 720, Initiate ZN, Praiz	<b>SEE INDIVIDUAL LABELS</b>		7	0.5	
	M5 + 33	<b>Catamaran</b> (chlorothalonil + phosphite)	4 pt	60 pt	7	0.5	
	3	(propiconazole) <b>Many labels available:</b> Amtide Propiconazole, Bumper 41.8EC, Fitness, Propicure, Propimax EC, Propi-Star EC, Shar-Shield PPZ, Tilt, Topaz	4 fl oz	16 fl oz	14	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	7	0.5	Do not apply more than 4 applications per year.
	3 + 11	<b>Topguard EQ</b> (flutriafol + azoxystrobin)	8 fl oz	32 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7	<b>Fontelis</b> (penthioopyrad)	24 fl oz	72 fl oz	3	0.5	Alternate with non-FRAC code 7 fungicide. See label for directions.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	5.8 fl oz	23 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7 + 11	<b>Merivon SC</b> (pyraclostrobin + fluxapyroxad)	11.0 fl oz	33 fl oz	1	0.5	Alternate with fungicides of dissimilar modes of action.
7 + 11	<b>Pristine</b> (boscalid + pyradostrobin)	15 oz	50 oz	0	0.5	Do not make more than 1 application without rotating to a fungicide of dissimilar mode of action.	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	0	0.5	See label for restrictions.
	9 + 12	<b>Switch</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Rotate with fungicides of dissimilar mode of action.
	11	<b>Aftershock</b> (fluoxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	(azoxystrobin) <b>Many brands available:</b> Azoxystrobin, Azteroid SC, Equaton SC, Quadris SC, Satori, Willowood Azoxy	15.4 fl oz	96 fl oz	0	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Evito 480SC</b> (fluoxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Flint Extra</b> (trifloxystrobin)	2.9 oz	11.6 oz	7	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Gem 500SC</b> (trifloxystrobin)	2.9 fl oz	11.6 fl oz	7	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Reason</b> (fenamidone)	8.2 fl oz	24.6 fl oz	2	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11 + M5	<b>Quadris Opti</b> (azoxystrobin + chlorothalonil)	3.7 pt	22.2 pt	7	0.5	Do not exceed 2 sequential and 6 total applications of Quadris Opti. or rotate with non-Qol fungicides.
	11 + 3	<b>Quilt</b> (azoxystrobin + propiconazole)	14 fl oz	56 fl oz	14	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11 + 3	<b>Quilt XCEL</b> (azoxystrobin + propiconazole)	14 fl oz	56 fl oz	14	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
<b>Botrytis</b>	12	<b>Cannonball</b> (fludioxonil)	7 oz	28 oz	0	0.5	Alternate with fungicides of dissimilar modes of action.
	27 + 11	<b>Tanos</b> (cymoxanil + famoxadone)	8 oz	72 oz	3	0.5	Do not alternate or tank-mix with another FRAC group 11 fungicide.
	7	<b>Endura</b> (boscalid)	9 oz	18 oz	0	0.5	Alternate with non-FRAC code 7 fungicide.
	9 + 12	<b>Switch</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Rotate with fungicides of dissimilar mode of action.
	40	<b>Forum</b> (dimethomorph)	6 fl oz	18 fl oz	0	0.5	Rotate with fungicides of dissimilar mode of action.
	40	<b>Revus</b> (mandipropamid)	8 fl oz	32 fl oz	1	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	40	<b>Downy mildew</b>					

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	40 + 45	<b>Zampro</b> (dimethomorph + ametoctradin)	14 fl oz	52 fl oz	0	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	43	<b>Presidio</b> (fluopicolide)	4 fl oz	12 fl oz	2	0.5	Must be tank-mixed with another fungicide active against the pathogen but of dissimilar mode of action.
<b>Pink rot (Sclerotinia)</b>	14	<b>Botran 75W</b> (dichloran)	2 lb	5.33 lb	7	0.5	Direct spray to base of plant.
<b>Powdery mildew</b>	M2	(sulfur) <b>Many labels available:</b> Cosavet, Dusting Sulfur – IAP, Kumulus DF, Micro Sulf, Microfine Sulfur, Microthiol Disperss, Sulfur 90W, Super-Six, Top Cop w/Sulfur	<b>SEE INDIVIDUAL LABELS</b>		1	1	Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray.
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	0	0.5	See label for restrictions.
	9 + 12	<b>Switch</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	Rotate with fungicides of dissimilar mode of action.
<b>Pythium</b>	33	<b>Aliette WDG</b> <b>Legion 80WDG</b> <b>Linebacker WDG</b> (fosetyl-AI)	5 lb	20 lb		0.5	
<b>Pythium seedling blight</b>	4	<b>Apron XL</b> (mefenoxam)	0.64 fl oz/100 lb seed			2	Seed treatment only.
	4	<b>Metastar 2E</b> (metalaxyl)	8 pt			2	Apply as a broadcast soil application and incorporate into top 2 inches. See label for directions.
<b>Pythium seedling diseases</b>	4	<b>Ridomil Gold GR</b> (mefenoxam)	40 lb			2	See label for specifics regarding preplant incorporated applications and surface applications at the time of planting.
	4	<b>Ridomil Gold SL</b> (mefenoxam)	2 pt			2	Apply at seeding in a 7"–12" band on soil over seed furrow.
	4	<b>Ultra Flourish</b> (mefenoxam)	4 pt			2	See label for specifics regarding preplant incorporated applications and surface applications at the time of planting.
<b>Sclerotinia</b>	4 + 11	<b>Uniform</b> (mefenoxam + azoxystrobin)	0.34 fl oz/1000 ft of row	1 appl.		2	Soil incorporated.
	7	<b>Endura</b> (boscalid)	9 oz	18 oz	0	0.5	Alternate with non-FRAC code 7 fungicide.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Stalk rot (Rhizoctonia)	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	3	0.5	Alternate with non-FRAC code 7 fungicide.
	M5	(chlorothalonil) <b>Many labels available:</b> Bravo Ultrex, Bravo Weather Stik, Bravo ZN, Chloronil 720, Chlorothalonil 720 SC, Echo 720, Echo 90DF, Echo ZN, Equus 500 ZN, Equus 720SST, Equus DF, Initiate 720, Initiate ZN, Praiz	<b>SEE INDIVIDUAL LABELS</b>		7	0.5	
	3	(propiconazole) <b>Many labels available:</b> Amide Propiconazole, Bumper 41.8EC, Propimax EC, Propi-Star EC, Shar-Shield PPZ, Tilt 3.6E	4 fl oz	16 fl oz	14	0.5	Do not exceed 4 total applications.
	7 + 11	<b>Merivon SC</b> (pyraclostrobin + fluxapyroxad)	11.0 fl oz	33 fl oz	1	0.5	Alternate with fungicides of dissimilar modes of action.
	11	<b>Aftershock</b> (fluoxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Evito 480SC</b> (fluoxastrobin)	5.7 fl oz	22.8 fl oz	3	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Flint Extra</b> (trifloxystrobin)	2.9 oz	11.6oz	7	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11	<b>Gem 500SC</b> (trifloxystrobin)	2.9 fl oz	11.6 fl oz	7	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
	11 + M5	<b>Quadris Opti</b> (azoxystrobin + chlorothalonil)	3.7 pt	22.2 pt	7	0.5	Do not exceed 2 sequential and 6 total applications of Quadris Opti or rotate with non-Qol fungicides.
	Various	7 + 11	<b>Merivon SC</b> (pyraclostrobin + fluxapyroxad)	11.0 fl oz	33 fl oz	1	0.5
11		(azoxystrobin) <b>Many brands available:</b> Azoxystrobin, Azteroid SC, Equaton SC, Quadris SC, Satori, Willowood Azoxy	15.4 fl oz or 0.8 fl oz/1000 row ft	96 fl oz	0	0.5	Do not exceed 1 sequential application of Qol fungicides. See label for soil application.
11		<b>Cabrio EG</b> (pyraclostrobin)	16 oz	64 oz	0	0.5	Do not exceed 1 sequential application of Qol fungicides. See label for soil application.
	19	<b>OSO 5%SC</b> (polyoxin D zinc salt)	13 fl oz	84 fl oz	0	4 hr	See label for details.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredient)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	33	(mono- and dipotassium salts of phosphorous acid) <b>Many brands available:</b> Alude, Confine Extra, Fosiphite, Fungiphite, K-Phite, Oxiphos, Phiticide, Phostrol, Prophyt, Rampart, Reveille	3 qt		0	4 hr	See label for details.
<b>Various seedling diseases</b>	4 + 11	<b>Uniform</b> (mefenoxam + azoxystrobin)	0.34 fl oz/1000 ft of row	1 appl.		0	Soil incorporated.
	12	<b>Maxim 4FS</b> (fludioxonil)	0.16 fl oz/100 lb seed			0.5	Seed treatment only.

<sup>1</sup>FRAC code (fungicide group): Number (1 through 46) and letters (U and P) are used to distinguish the fungicide mode of action groups. All fungicides within the same group (with the same number or letter) indicate the same active ingredient or a 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 2021; <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 UF/IFAS Extension nor discrimination against similar products or services not mentioned.



Table 10. Okra fungicides ordered by disease and then FRAC group according to their mode of action.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Anthracnose	M1	<b>AmeriCop 40 DF</b> (copper hydroxide)	1.5 lb	13.1 lb	0	<b>Field: 2</b> <b>GH: 1</b>	OMRI product
	M1	<b>Champion++</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Cueva</b> (copper octanoate)	2 gal	6.7 gal	0	4 hr	
	M1	<b>Cuproxat FL</b> (basic copper sulfate)	3.0 pt	26.25 pt	0	2	
	M1	<b>Kentan DF</b> (copper hydroxide)	1.5 lb	5.25 lb	0	2	
	M1	<b>Kocide 2000</b> (copper hydroxide)	3 lb	15 lb	0	2	
	M1	<b>Kocide 3000</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Kop-5</b> (copper sulfate pentahydrate)	32 fl oz	10.6 gal		<b>Field: 2</b> <b>GH: 1</b>	
	M1	<b>Mastercop</b> (copper sulfate pentahydrate)	1.5 pt	9 pt	0	2	
	M1	<b>Nu-Cop 50 DF</b> (copper hydroxide)	2.1 lb	10.5 lb	1	2	
	M1	<b>Previsto</b> (copper hydroxide)	3 qt	69 qt		2	
	M1 + M1	<b>Badge SC</b> <b>Badge X2</b> (copper hydroxide + copper oxychloride)	1.8 pt	18.8 pt	0	<b>Field: 2</b> <b>GH: 1</b>	OMRI product
	M5	<b>Bravo Ultrex</b> (chlorothalonil)	1.4 lb	10.9 lb	3	0.5	
	M5	<b>Bravo Weather Stik</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5	<b>Chlorothalonil 720</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
M5	<b>Echo 720</b> (chlorothalonil)	1.5 pt	9.0 lb a.i. pt	3	0.5		

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to Harvest	Min. Days to Reentry	Remarks <sup>2</sup>
			Appl.	Season			
	M5	<b>Equus 720 SST</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	Do not apply at <7-day intervals.
	M5	<b>Equus DF</b> (chlorothalonil)	1.4 lb	10.9 lb	3	0.5	
	M5	<b>Initiate 720</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5	<b>Oranil 6L</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5 + 27	<b>Ariston</b> (chlorothalonil + cymoxanil)	2.44 pt	17.5 pt	3	0.5	
	M5 + 27	<b>Cymbol Advance</b> (chlorothalonil + cymoxanil)	2.44 pt	17.5 pt	3	0.5	
	3	<b>Mettle 125ME</b> (tetraconazole)	8 fl oz	16 fl oz	0	0.5	
	3	<b>Rhyme Fungicide</b> (flutriafol)	7 fl oz	28 fl oz	7	0.5	
	3	<b>Topguard</b> (flutriafol)	14 fl oz	56 fl oz	0	0.5	
	3 + 9	<b>Inspire Super</b> (difenoconazole + cyprodinil)	20 fl oz	80 fl oz	7	0.5	Do not apply more than 2 sequential applications.
	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	0	0.5	Only suppression; make no more than 2 sequential applications.
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	Do not make more than 2 sequential applications.
	7 + 11	<b>Luna Sensation</b> (fluopyram+ trifloxystrobin)	7.6 fl oz	27.1 fl oz	3	0.5	Do not make more than 2 sequential applications of Luna Sensation or any Group 7 or Group 11 containing fungicide before rotating with a fungicide of a different Group.
	11	<b>Acadia 25C</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Aframe</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Azoxystar</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Azoxyzone</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	11	<b>AZteroid FC</b> (azoxystrobin)	19.5 fl oz	77.5 fl oz	0	4 hr	
	11	<b>Mazolin</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Quadris</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Satori Fungicide</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	Do not apply more than 1 application.
	11	<b>Tetranban</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Trevo</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Willowood Azoxy 25C</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Make no more than 2 consecutive applications.
<b>Bacterial leaf spot</b>	M1	<b>AmeriCop 40 DF</b> (copper hydroxide)	1.5 lb	13.1 lb	0	<b>Field:</b> 2 <b>GH:</b> 1	OMRI product
	M1	<b>Champion++</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Cueva</b> (copper octanoate)	2 gal	6.7 gal	0	4 hr	
	M1	<b>Cuproxat FL</b> (basic copper sulfate)	3.0 pt	26.25 pt	0	2	
	M1	<b>Kentan DF</b> (copper hydroxide)	1.5 lb		0	2	
	M1	<b>Kocide 2000</b> (copper hydroxide)	3 lb	15 lb	0	2	
	M1	<b>Kocide 3000</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Kop-5</b> (copper sulfate pentahydrate)	32 fl oz	10.6 gal		<b>Field:</b> 2 <b>GH:</b> 1	
	M1	<b>Mastercop</b> (copper sulfate pentahydrate)	1.5 pt	9 pt	0	2	
	M1	<b>Nu-Cop 30 HB</b> (copper hydroxide)	1.75 lb	17.5 lb	1	2	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
<b>Cercospora leaf spot</b>	M1	<b>Nu-Cop 50 DF</b> (copper hydroxide)	2.1 lb	10.5 lb	1	2	
	M1	<b>Previsto</b> (copper hydroxide)	3 qt	69 qt		2	
	M1 + M1	<b>Badge SC</b> <b>Badge X2</b> (copper hydroxide + copper oxychloride)	1.8 pt	18.8 pt	0	<b>Field: 2</b> <b>GH: 1</b>	OMRI product
	M2 + 3	<b>Unicorn DF</b> (sulfur + tebuconazole)	3.75 lb	15 lb	14	0.5	Do not mix with other DMI fungicides (Group 3).
	M5	<b>Bravo Ultrex</b> (chlorothalonil)	1.4 lb	10.9 lb	3	0.5	
	M5	<b>Bravo Weather Stik</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5	<b>Chloronil 720</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5	<b>Echo 720</b> (chlorothalonil)	1.5 pt	9.0 lb a.i. pt	3	0.5	
	M5	<b>Equus 720 SST</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	Do not apply at <7-day intervals.
	M5	<b>Equus DF</b> (chlorothalonil)	1.4 lb	10.9 lb	3	0.5	
	M5	<b>Initiate 720</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5	<b>Oranis 6L</b> (chlorothalonil)	1.5 pt	12 pt	3	0.5	
	M5 + 27	<b>Ariston</b> (chlorothalonil + cymoxanil)	2.44 pt	18.1 pt	3	0.5	
	3	<b>Monsoon</b> (tebuconazole)	6 fl oz	24 fl oz	3	2	Group 3 = DMI fungicide
	3	<b>Onset 3.6L</b> (tebuconazole)	6 fl oz	24 fl oz	7	0.5	
3	<b>Orius 3.6F</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5		
3	<b>Rhyme Fungicide</b> (flutriafol)	7 fl oz	28 fl oz	0	0.5		
3	<b>TebuCon 3.6F</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5		

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	3	<b>Tebu-Crop 3.6F</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5	
	3	<b>TebuStar 3.6L</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5	
	3	<b>TebuZol 3.6F</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5	
	3	<b>Toledo</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5	
	3	<b>Topguard</b> (flutriafol)	14 fl oz	56 fl oz	0	0.5	
	3	<b>Willowood Teb 3.6SC</b> (tebuconazole)	6 fl oz	24 fl oz	3	0.5	
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	Do not make more than 2 sequential applications.
	7 + 3	<b>Luna Experience</b> (fluopyram + tebuconazole)	12.8 fl oz	34 fl oz	3	0.5	Do not apply more than 2 sequential applications of Luna or any fungicide containing Group 7 or Group 3 before rotation with a fungicide of a different Group.
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Do not make 2 sequential applications.
Phytophthora	4	<b>Acquire</b> (mefenoxam)	0.75 fl oz/100 lb seed			1	
	4	<b>Allegiance FL</b> (mefenoxam)	0.75 fl oz/100 lb seed			1	Seed treatment; do not use with other seed treatment products without previous experience.
	4	<b>Apron XL</b> (mefenoxam)	0.64 fl oz/100 lb seed			2	Seed treatment only.
	4	<b>Metalaxy/ 4.0 ST</b> (mefenoxam)	0.5 fl oz/100 lb seed			1	Seed treatment
	4 + 12	<b>Spirato M 185 FS</b> (metalaxy/ + fludioxonil)	1.5 fl oz/100 lb seed			1	
	7 + 11	<b>Pageant Intrinsic</b> (pyraclostrobin + boscalid)	23 oz; 18 oz/100 gal			0.5	
	11	<b>Reason 500 SC</b> (fenamidone)	8.2 fl oz	24.6 fl oz	14	0.5	Ground application only.
	21	<b>Ranman 400 SC</b> (cyazofamid)	2.75 fl oz	16.75 fl oz	7	0.5	Do not exceed 6 applications per season. Rotate with dissimilar modes of action.

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	22	<b>Elumin</b> (ethaboxam)	8 fl oz	16 fl oz	2	0.5	Do not apply at intervals of less than 14 days.
	29	<b>Lektivar 40SC</b> (fluzinam)	24 fl oz	144 fl oz	30	0.5	
	29	<b>Orbus 4F</b> (fluzinam)	24 fl oz	144 fl oz	30	0.5	
	40	<b>Micora</b> (mandipropamid)	8 fl oz	16 fl oz	1	4 hr	For suppression
	49 + M5	<b>Orondis Opti</b> (oxathiapiprolin + chlorothalonil)	2.5 pt	10 pt	3	0.5	Do not exceed 2 sequential applications without alternating to a different MOA. Do not exceed 4 total applications. Do not exceed 33% of all applications with oxathiapiprolin.
	49 + 40	<b>Orondis Ultra</b> (oxathiapiprolin + mandipropamid)	8 fl oz	32 fl oz	1	0.5	Do not exceed 2 sequential applications without alternating to a different MOA. Do not exceed 4 total applications. Do not exceed 33% of all applications with oxathiapiprolin.
<b>Pod spot</b>	M1	<b>AmeriCop 40 DF</b> (copper hydroxide)	1.5 lb	13.1 lb	0	<b>Field: 2</b> <b>GH: 1</b>	Minimum retreatment interval is 5 days
	M1	<b>Champion++</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Cueva</b> (copper octanoate)	2 gal	6.7 gal	0	4 hr	
	M1	<b>Cuproxat FL</b> (basic copper sulfate)	3.0 pt	26.25 pt	0	2	
	M1	<b>Kentan DF</b> (copper hydroxide)	1.5 lb		0	2	
	M1	<b>Kocide 2000</b> (copper hydroxide)	3 lb	15 lb	0	2	
	M1	<b>Kocide 3000</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Kop-5</b> (copper sulfate pentahydrate)	32 fl oz	10.6 gal		<b>Field: 2</b> <b>GH: 1</b>	
	M1	<b>Mastercop</b> (copper sulfate pentahydrate)	1.5 pt	9 pt	0	2	
	M1	<b>Nu-Cop 30 HB</b> (copper hydroxide)	1.75 lb	1.75 lb	1	2	
	M1	<b>Nu-Cop 50 DF</b> (copper hydroxide)	2.1 lb	10.5 lb	1	2	OMRI product

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Powdery mildew	M1	<b>Previsto</b> (copper hydroxide)	3 qt	69 qt		2	
	M1 + M1	<b>Badge SC</b> <b>Badge X2</b> (copper hydroxide + copper oxchloride)	1.8 pt	18.8 pt	0	<b>Field: 2</b> <b>GH: 1</b>	OMRI product
	M1	<b>AmeriCop 40 DF</b> (copper hydroxide)	1.5 lb	13.1 lb	0	<b>Field: 2</b> <b>GH: 1</b>	OMRI product
	M1	<b>Champion++</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Cueva</b> (copper octanoate)	2 gal	6.7 gal	0	4 hr	
	M1	<b>Cuproxat FL</b> (basic copper sulfate)	3.0 pt	26.25 pt	0	2	
	M1	<b>Kentan DF</b> (copper hydroxide)	1.5 lb		0	2	
	M1	<b>Kocide 2000</b> (copper hydroxide)	3 lb	15 lb	0	2	
	M1	<b>Kocide 3000</b> (copper hydroxide)	1.75 lb	17.5 lb	0	2	
	M1	<b>Kop-5</b> (copper sulfate pentahydrate)	32 fl oz	10.6 gal		<b>Field: 2</b> <b>GH: 1</b>	
	M1	<b>Mastercop</b> (copper sulfate pentahydrate)	1.5 pt	9 pt	0	2	
	M1	<b>Nu-Cop 30 HB</b> (copper hydroxide)	1.75 lb	17.5 lb	1	2	
	M1	<b>Nu-Cop 50 DF</b> (copper hydroxide)	2.1 lb	10.5 lb	1	2	
	M1	<b>Previsto</b> (copper hydroxide)	3 qt	69 qt		2	
	M1 + M1	<b>Badge SC</b> <b>Badge X2</b> (copper hydroxide + copper oxchloride)	1.8 pt	18.8 pt	0	<b>Field: 2</b> <b>GH: 1</b>	OMRI product
	M2	<b>Cosavet DF</b> (sulfur)	10 lb	-	-	1	May cause leaf burn if applied during high temperatures.
	M2	<b>Micro Sulf</b> (sulfur)	10 lb	-	-	1	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Season	Min. Days to		Remarks <sup>2</sup>
			Appl.			Harvest	Reentry	
	M2	<b>Microthiol-Disperss</b> (sulfur)	10 lb		-	-	1	
	M2	<b>Suffa</b> (sulfur)	0.5 gal		-	-	1	
	M2	<b>Sulfur 90W</b> (sulfur)	20 lb		-	-	1	
	M2	<b>Thiolux</b> (sulfur)	10 lb		-	-	1	
	M5	<b>Bravo Ultrex</b> (chlorothalonil)	1.4 lb		10.9 lb	3	0.5	
	M5	<b>Bravo Weather Stik</b> (chlorothalonil)	1.5 pt		12 pt	3	0.5	
	M5	<b>Chlorothalonil 720</b> (chlorothalonil)	1.5 pt		12 pt	3	0.5	
	M5	<b>Echo 720</b> (chlorothalonil)	1.5 pt		9.0 lb ai.	3	0.5	
	M5	<b>Equus 720 SST</b> (chlorothalonil)	1.5 pt		12 pt	3	0.5	Do not apply at <7-day intervals.
	M5	<b>Oranil 6L</b> (chlorothalonil)	1.5 pt		12 pt	3	0.5	
	M5 + 27	<b>Ariston</b> (chlorothalonil + cymoxanil)	2.44 pt		17.5 pt	3	0.5	
	M5 + 27	<b>Symbol Advance</b> (chlorothalonil + cymoxanil)	2.44 pt		17.5 pt	3	0.5	
	U6	<b>Torino</b> (cyflufenamid)	3.4 oz		10.2 oz	0	4 hr	
	3	<b>Mettle 125ME</b> (tetraconazole)	8 fl oz		16 fl oz	0	0.5	
	3	<b>Rally</b> (myclobutanil)	5 oz		1.25 lb	0	1	Do not exceed 4 applications per season.
	3	<b>Rhyme Fungicide</b> (flutriafol)	7 fl oz		28 fl oz	0	0.5	
	3	<b>Topguard</b> (flutriafol)	14 fl oz		56 fl oz	0	0.5	
	3 + 9	<b>Inspire Super</b> (difenoconazole + cyprodinil)	20 fl oz		80 fl oz	7	0.5	Do not apply more than 2 sequential applications.



Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	7	<b>Fontelis</b> (penthioopyrad)	24 fl oz	72 fl oz	0	0.5	
	7	<b>Velum Prime</b> (fluopyram)	6.84 fl oz	13.7 fl oz	0	0.5	
	7 + 3	<b>Aprovia Top</b> (benzovindiflupyr + difenoconazole)	13.5 fl oz	53.6 fl oz	0	0.5	Do not apply more than 2 sequential applications.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	27.1 fl oz	3	0.5	
	7 + 11	<b>Pageant Intrinsic</b> (pyraclostrobin + boscalid)	23 oz; 18 oz/100 gal			0.5	
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	11.4 fl oz	22.8 fl oz	0	0.5	Do not apply more than 2 sequential applications.
	9	<b>Wango WG</b> (cyprodinil)	7 oz	28 oz	0	0.5	
	9 + 12	<b>Alterity 62.5WG</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	After 2 application, alternate with another fungicide with a different mode of action for 2 applications.
	9 + 12	<b>Switch 62.5WG</b> (cyprodinil + fludioxonil)	14 oz	56 oz	0	0.5	After 2 applications, alternate with anotherfungicide with a different mode of action for 2 applications.
	11	<b>Acadia 25C</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Aframe</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Azoxystar</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	Do not apply more than 1 application of Azoxystar or other Group 11 fungicides before alternation with a non-Group 11 fungicide.
	11	<b>Azoxyzone</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>AZteroid FC</b> (azoxystrobin)	19.5 fl oz	77.5 fl oz	0	4 hr	
	11	<b>Mazolin</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Quadris</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	

Pertinent Diseases or Pathogens	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	11	<b>Satori Fungicide</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	Do not apply more than 1 application.
	11	<b>Tetraban</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Trevo</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11	<b>Willowood Azoxy 25C</b> (azoxystrobin)	15.5 fl oz	61.5 fl oz	0	4 hr	
	11 + 3	<b>Quadris Top</b> (azoxystrobin + difenoconazole)	14 fl oz	55.3 fl oz	0	0.5	Do not make 2 consecutive applications.
	12	<b>Emblem Spirato GHN</b> (fludioxonil)	7 fl oz	28 fl oz	0	0.5	
	50	<b>Provilo 300SC</b> (pyriofenone)	5 fl oz	16 fl oz	0	4 hr	
	50	<b>Vivando</b> (metrafenone)	15.4 fl oz	46.2 fl oz	0	0.5	
<b>Pythium damping-off</b>	4	<b>Acquire</b> (mefenoxam)	0.75 fl oz/100 lb seed			1	
	4	<b>Allegiance FL</b> (mefenoxam)	0.75 fl oz/100 lb seed			1	Seed treatment; do not use with other seed treatment products without previous experience.
	4	<b>Apron XL</b> (mefenoxam)	0.64 fl oz/100 lb seed			2	Seed treatment only.
	4	<b>Metalaxy  4.0 ST</b> (mefenoxam)	0.5 fl oz/100 lb seed			1	Seed treatment.
	4 + 12	<b>Spirato M 185 FS</b> (metalaxy  + fludioxonil)	1.5 fl oz/100 lb seed			1	

<sup>1</sup> FRAC code (fungicide group): Number (1 through 46) and letters (U and P) are used to distinguish the fungicide mode of action groups. All fungicides within the same group (with the same number or letter) indicate the same active ingredient or a 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 2021; <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 UF/IFAS Extension nor discrimination against similar products or services not mentioned.

Table 11. Parsley fungicides ordered by disease and then FRAC group according to their mode of action.

Pertinent Diseases or Fungicides	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>	
			Appl.	Season	Harvest	Reentry		
Alternaria	3	<b>Procare 480SC</b> (triflumizole)	8 fl oz	18 fl oz	0	0.5	Repeat applications at 14 day intervals.	
	3	(propiconazole) <b>Many brands</b>	4 fl oz	16 fl oz	14	0.5	Do not apply more than 2 sequential and 4 total applications.	
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	7	0.5	Do not apply more than 4 applications per year.	
	3 + 11	<b>Topguard EQ</b> (flutriafol + azoxystrobin)	8 fl oz	32 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.	
	7	<b>Endura</b> (boscalid)	9 oz	18 oz	14	0.5	Do not make more than 2 applications without rotating to a fungicide of dissimilar mode of action.	
	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	3	0.5		
	7 + 11	<b>Merivon</b> (pyraclostrobin + fluxapyroxad)	11 fl oz	33 fl oz	1	0.5	Alternate with fungicides with dissimilar modes of action.	
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	0	0.5	No more than 2 sequential applications without moving to dissimilar mode of action.	
	9 + 12	<b>Switch 62.5WDG</b> (cyprodinil + fludioxonil)	14 oz	56 oz	7	0.5		
	Bacterial blight	M1	(copper compounds) <b>Many brands available:</b> Badge SC, Badge X2, Basic Copper 53, Champ DP, Champ Formula 2, Champ WG, Champ WP, COC DF, C-O-C-S WDG, COC WP, Copper Count N, Cueva, Cuprofix Ultra, Cuproxat, Kentan DF, Kocide DF, Kocide 2000, Kocide 3000, Kocide 4.5 LF, Kop-hydroxide, Nordox 75 WG, NuCop 3L, NuCop 50WP, NuCop DF, NuCop HB, Stretch	<b>SEE INDIVIDUAL LABEL</b>		1	Varies by product from 4 hr to 2 days	
		12	<b>Cannonball WP</b> (fludioxonil)	7 oz	28 oz	0	0.5	
Cercospora	3	<b>Bumper 41.8EC</b> (propiconazole)	4 fl oz	16 fl oz	14	0.5	Do not apply more than 2 sequential applications without alternating to different mode of action.	
	7 + 11	<b>Merivon</b> (pyraclostrobin + fluxapyroxad)	11 fl oz	33 fl oz	1	0.5	Alternate with fungicides with dissimilar modes of action.	

Pertinent Diseases or Fungicides	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Damping-off	33	<b>Alliette WDG</b> <b>Legion 80WDG</b> <b>Linebacker WDG</b> (fosetyl-AI)	5 lb	35 lb		0.5	
	11 + 27	<b>Tanos</b> (cymoxanil + famoxadone)	10 oz	48 oz	1	0.5	Must be tank-mixed with appropriate contact fungicide with different mode of action. Do not make more than 1 application without rotating to a fungicide of dissimilar mode of action.
	21	<b>Ranman</b> (cyazofamid)	2.75 fl oz	16.5 fl oz	0	0.5	Alternate with fungicides with dissimilar modes of action.
	33	(mono- and dipotassium salts of phosphorous acid) <b>Many brands available:</b> Alude, Fosphite, Fungi-phite, K-phite, Phiticide, Phostrol, Rampart, Reveille	<b>SEE INDIVIDUAL LABELS</b>		0	0.5	See label for details.
	40	<b>Forum</b> (dimethomorph)	6 fl oz	18 fl oz	0	0.5	See label for details.
	40	<b>Revus</b> (mandipropamid)	8 fl oz	32 fl oz	1	4 hr	Do not exceed 2 sequential applications. See label for soil applications.
	40 + 45	<b>Zampro</b> (dimethomorph + ametoctradin)	14 fl oz	42 fl oz	1	4 hr	Do not exceed 2 sequential applications.
	43	<b>Presidio</b> (fluopicolide)	3–4 fl oz	12 fl oz	2	0.5	Must be tank-mixed with a fungicide of different mode of action. Do not exceed two sequential applications. See label for soil applications.
	49 + 4	<b>Orondis Gold</b> (oxathiapiprolin + mefenoxam)	9.6 fl oz	19.2 fl oz	0	4 hr	Soil application only.
	49 + 40	<b>Orondis Ultra</b> (oxathiapiprolin + mandipropamid)	4.8 fl oz	19.2 fl oz	0	4 hr	Do not make foliar applications with Orondis Ultra if Orondis Gold was applied using soil applications. Do not make more than 2 sequential applications, and do not exceed more than 33% of all fungicide applications with Orondis.
Powdery mildew	M2	(sulfur) <b>Many brands available:</b> Sulfur 90W, Super Six, Top Cop w/Sulfur	<b>SEE INDIVIDUAL LABEL</b>		1	1	Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray.
	3	<b>Bumper 41.8EC</b> (propiconazole)	4 fl oz	16 fl oz	14	0.5	Do not apply more than 2 sequential applications without alternating to different mode of action.

Pertinent Diseases or Fungicides	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
Pythium damping-off; Pythium seedling blight; Pythium seedling diseases	3	<b>Procore 480SC</b> (triflumizole)	8 fl oz	18 fl oz	0	0.5	Repeat applications at 14 day intervals.
	3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	7	0.5	Do not apply more than 4 applications per year.
	3	<b>Tilt</b> (propiconazole)	4 fl oz	16 fl oz	14	0.5	Do not exceed 2 sequential and 4 total applications.
	3	<b>Trionic</b> (triflumizole)	8 fl oz	16 fl oz	0	0.5	No more than 2 applications, spaced by at least 14 days.
	3 + 11	<b>Topguard EQ</b> (flutriafol + azoxystrobin)	8 fl oz	32 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7	<b>Endura</b> (boscalid)	9 oz	18 oz	14	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	15.3 fl oz	0	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7 + 11	Merivon (pyraclostrobin + fluxapyroxad)	11 fl oz	33 fl oz	1	0.5	Alternate with fungicides with dissimilar modes of action.
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	0	0.5	No more than 2 sequential applications without moving to dissimilar mode of action.
	9 + 12	<b>Switch 62.5WDG</b> (cyprodinil + fludioxonil)	14 oz	56 oz	7	0.5	
	4	<b>Apron XL</b> (mefenoxam)	0.64 fl oz/100 lb seed			2	Seed treatment only.
	4	(metalaxyl) <b>Various brands available:</b> Acquire, Allegiance, Sebring 2.65ST	0.75 fl oz/100 lb seed			2	Seed treatment only.
4	<b>Ridomil Gold EC</b> (mefenoxam)	2 pt			2	Apply at seeding in a 7"–12" band on soil over seed furrow.	
4	<b>Ridomil Gold GR</b> (mefenoxam)	40 lb			2	See label for specifics regarding preplant incorporated applications and surface applications at the time of planting.	
4	<b>Ultra Flourish</b> (mefenoxam)	4 pt			2	See label for specifics regarding preplant incorporated applications and surface applications at the time of planting.	
3	<b>Rhyme</b> (flutriafol)	7 fl oz	28 fl oz	7	0.5	Do not apply more than 4 applications per year.	
3	<b>Tilt</b> (propiconazole)	4 fl oz	16 fl oz	14	0.5	Do not exceed 2 sequential and 4 total applications.	

Pertinent Diseases or Fungicides	Fungicide Group <sup>1</sup>	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks <sup>2</sup>
			Appl.	Season	Harvest	Reentry	
	3 + 11	<b>Topguard EQ</b> (flutriafol + azoxystrobin)	8 fl oz	32 fl oz	7	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7	<b>Fontelis</b> (penthiopyrad)	24 fl oz	72 fl oz	3	0.5	
	7 + 11	<b>Luna Sensation</b> (fluopyram + trifloxystrobin)	7.6 fl oz	15.3 fl oz	0	0.5	Do not make more than 2 sequential applications without rotating to a fungicide of dissimilar mode of action.
	7 + 11	<b>Merivon</b> (pyraclostrobin + fluxapyroxad)	5.5 fl oz	16.5 fl oz	7		Limit is 3 applications per season, and no more than 2 sequential applications without alternating to a different mode of action.
	7 + 12	<b>Miravis Prime</b> (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	0	0.5	No more than 2 sequential applications without moving to dissimilar mode of action.
	11	(azoxystrobin) <b>Various brands available:</b> Azoxystrobin, Equaton, Quadris, Satori, Willowood	15.4 fl oz or 0.8 fl oz/1000 row ft	92.3 fl oz	0	4 hr	Do not exceed 1 sequential and 4 total applications of QoI fungicides. See label for soil applications.
	11	<b>Cabrio EG</b> (pyraclostrobin)	16 oz	64 oz	0	0.5	Do not exceed 1 sequential and 4 total applications of QoI fungicides.
	11	<b>Reason</b> (fenamidone)	8.2 fl oz	24.6 fl oz	2	0.5	Alternate every other application with a fungicide of dissimilar mode of action.
<b>Various seedling diseases</b>	4 + 11	<b>Uniform</b> (mefenoxam + azoxystrobin)	0.34 fl oz/1000 row ft	1 appl.		0	Soil incorporated.
	12	<b>Maxim 4FS</b> (fludioxonil)	0.16 fl oz/100 lb of seed			0.5	Seed treatment only.

<sup>1</sup>FRAC code (fungicide group); Number (1 through 46) and letters (U and P) are used to distinguish the fungicide mode of action groups. All fungicides within the same group (with the same number or letter) indicate the same active ingredient or a 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 2021; <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 UF/IFAS Extension nor discrimination against similar products or services not mentioned.

Table 12. Nonfumigant nematicides for celery crops in Florida.

Product	Application Directions
Nimitz (a.i. fluensulfone)	All applications must be incorporated either physically or via drip or overhead irrigation. Make preplant applications at a rate of 3.5 to 7 pints, (56.0 to 80.0 fl oz) per acre a minimum of seven days before planting. Do not plant any unlisted crops into treated land for 365 days after application of the product. Do not apply more than one application per crop, and no more than 112 fl oz of product per acre, per year (365 days). Provides control only for nematodes. Growers applying Nimitz must consult the product label to observe the plant-back (re-cropping) intervals for a variety of leafy vegetables and brassica crops, onions, bananas, sugarcane, and other crops.
Vydate L (a.i. oxamyl)	Apply ½ to 2 gal/acre at planting, preferably via drip application or soil spray. Make additional applications on a 10-to-14-day interval. Do not apply more than 3 gal per acre per season. Minimum retreatment interval is 5 days unless a longer interval is stated. Last application at least 21 days to harvest. Consult label for more details on application.

Table 13. Nonfumigant nematicides for okra in Florida.

Product	Application Directions
Velum (a.i. fluopyram)	Apply 6.5-6.8 fl oz/acre by chemigation into root-zone through low-pressure drip, trickle, microsprinkler, or equivalent equipment. Minimum 7-day interval between soil applications. Do not apply more than 13.7 fl oz of Velum (0.446 lb fluopyram) per acre per year, regardless of formulation or method of application (soil or foliar).
Vydate L (a.i. oxamyl)	Apply ½ to 1 gal/acre at planting, preferably via drip application. Make additional applications on a 10-to-14-day interval. Do not apply more than 2 gal per acre per season. Minimum retreatment interval is 7 days unless a longer interval is stated. If an at plant application of more than ½ gal/acre is made, do not make more than 2 additional applications.

Table 14. Nonfumigant nematicides for celery crops in Florida.

Nematicide	Broadcast Application <sup>1</sup>		In-the-Row Applications
	Gallons or lb per Acre	fl oz/1000 ft/ chisel-spaced 12" apart	
Telone II <sup>2,3</sup>	9 to 12 gal	26 to 35	For any row spacing, application rates given may be concentrated in the row but shall never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone C-17 <sup>2,3</sup>	10.8 to 17.1 gal	31.8 to 50.2	For any row spacing, application rates given may be concentrated in the row but shall never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone C-35 <sup>2,3</sup>	13 to 20.5 gal	38 to 60	For any row spacing, application rates given may be concentrated in the row but shall never exceed labeled maximum for broadcast applications. Consult the product label for additional detail.
Pic-Clor 60	19 to 31.5 gal	57 to 90	For any row spacing, application rates should never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Vapam HL	75 gal	-	For drip or in-row chisel fumigation, 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 chisel fumigation, consult product label for proportionately reduced overall rates, drip concentration, and flow-modifying directions.
Allyl Isothiocyanate (AITC) Dominus	40 gal	-	For drip or in-row fumigation and crop termination, consult product label for overall rates, drip concentration, and other flow-modifying directions.

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

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

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

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