

Insect Management for Okra¹

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Okra (*Abelmoschus esculentum*) is a warm-weather crop grown in the summer throughout Florida. Most commercial production is concentrated in south Florida, where it can be grown most of the year. It is often grown as a second crop after more valuable vegetables. Historically, relatively few insecticides and miticides have been registered for use on okra, making it challenging to manage insects and mites effectively. Recently, okra has been added to the Fruiting Vegetables Crop Group (tomatoes, peppers, eggplant), and there are now many more options for pest control. Arthropod pests of okra include caterpillars (larvae of Lepidoptera), aphids, thrips, whiteflies, and mites.

Leaf-feeding caterpillar pests (lepidopteran larvae) that attack okra include beet, southern, and fall armyworm, cabbage looper, and corn earworm. Cabbage looper and corn earworm can also bore into pods. Scouting for these pests is essential because some of the pesticides available (*Bacillus thuringiensis* products, spinosad, and methoxyfenozide) are most effective for controlling young caterpillars and are less effective on later stages that can defoliate plants. Melon aphid, green peach aphid, and silverleaf whitefly can be very damaging. Imidacloprid will control these sucking insects, but a soil application's effects will wear off before the end of the growing season. Melon thrips and southern green stink bugs can also cause severe damage, and growers have very limited options for control at this time. Spinosad is effective for reducing thrips populations, but overuse could lead to the development of resistance and loss of control. There

are now six products available for mite control. Products containing neem or azadirachtin can be used for all pests of okra but are generally only moderately effective.

Because of limited options for chemical control of insects, conservation of natural enemies is important and possible. As with all crops, destruction of the crop after harvest can help reduce pest populations. The practice of prolonging production by topping plants may contribute to pest problems, even though it reduces the cost of production.

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Table 1. Insecticides approved for managing insect pests of okra crops.

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
Labels change frequently. Be sure to read a current product label before applying any chemical. Also refer to Table 18.2 for biopesticide and other alternative products labeled for disease management.						
Aphids	1B	Malathion 5EC Malathion 8 (malathion)	1.2 pt	1	12	Maximum of 5 applications per year.
	3A	*Brigade 2EC (bifenthrin)	2.1–6.4 fl oz	7	12	Do not apply more than 0.2 lb ai/acre per season.
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	Treat when insects first appear. Harmful to bees. OMRI-listed ² .
	4A	Admire Pro (imidacloprid) (see appropriate labels for other brands)	soil: 7–14 fl oz foliar: 1.3–2.2 fl oz	soil: 21 foliar: 0	12	No more than 14 oz per acre per crop for soil application or 6.7 fl oz if used as a foliar spray.
	4A	Assail 30SG (acetamiprid)	2.0–4.0 oz	7	12	Do not make more than 4 applications per season.
	4D	Sivanto 200SL (flupyradifurone)	foliar: 7–14 fl oz soil: 21–28 fl oz	foliar: 1 soil: 45	4	Foliar: Maximum allowed per acre per year: 28 fl oz. Soil: Maximum allowed: 28 fl oz per season with no more than 3 crop seasons per year.
	9C	Beleaf 50SG (flonicamid)	2.0–2.8 oz	0	12	Do not apply more than 8.4 oz/acre per season.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	12	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
	23	Movento (spirotetramat)	4–5 fl oz	1	24	Do not apply more than 10 fl oz per acre per season.
	28	Exirel (cyantraniliprole)	7.0–20.5 fl oz	1	12	Do not apply more than a total of 0.4 lb ai per crop of cyazypyr or cyantraniliprole-containing products.
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed ² .
	un	Azatin XL (azadirachtin)	5–21 fl oz	0	4	Antifeedant, repellent, insect growth regulator. Rate depends on pest-see label.
	un	Grandevo (Chromobacterium subtsugae strain PRAA4-1)	1.0–3.0 lb	0	4	Can be used in organic production. OMRI-listed ² .
	un	Neemix 4.5 (azadirachtin)	4–16 fl oz	0	12	IGR and feeding repellent. OMRI-listed ² .
	un	Requiem EC (extract of <i>Chenopodium ambrosioides</i>)	2–4 qt	0	4	Apply before pests reach damaging levels.
	--	BotaniGard 22WP, ES (<i>Beauveria bassiana</i>)	WP: 0.5–2 ES: 0.5–2 qt/100 gal	0	4	May be used in greenhouses. Contact dealer for recommendations if an adjuvant must be used. Not compatible in tank mix with fungicides.
	--	SunSpray 98.8%; Ultra-Fine; JMS Stylet Oil, Saf-T-Side, Others (oil, insecticidal)	1–2 gal/100 gal JMS: 3–6 qt/100 gal (JMS)	0	4	See label for tank mix cautions. Organic Stylet-Oil is OMRI-listed ² .

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
Beetles (including cucumber beetles, flea beetles)	1A	Sevin 80S, 4F (carbaryl)	80S: 1.25–1.88lb 4F, XLR: 1–1.5 qt	3	12	Do not apply more than a total of 6 qt or 7.5 lb per acre per season.
	1B	Malathion 5EC, 8 (malathion)	1.2 pt	1	12	Maximum of 5 applications per year.
	3A	*Capture LFR (bifenthrin)	3.4–8.5 fl oz, at planting	N/A—applied at planting	12	For mixing with liquid fertilizer to apply to soil at planting.
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	OMRI-listed. ²
	3S	*Mustang (zeta-cypermethrin)	2.4–4.3 oz	1	12	Do not make applications less than 7 days apart. Do not apply more than 0.3 lb ai/acre (25.8 fl oz of product) per season.
	4A	Admire Pro (imidacloprid)	soil: 7–14 fl oz, foliar: 1.3–2.2 fl oz	soil: 21 foliar: 0	12	No more than 14 oz per acre per crop for soil application or 6.7 fl oz if used as a foliar spray.
	4A	Assail 30SG (acetamiprid)	2.0–4.0 oz	7	12	Do not make more than 4 applications per season.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	12	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed ² .
Caterpillars (including armyworms, loopers, tomato fruitworm—also known as corn earworm, caterpillars, cutworms)	1A	Sevin 80S, 4F, XLR (carbaryl)	80S: 1.25–1.88lb 4F, XLR: 1–1.5 qt	3	12	Do not apply more than a total of 6 qt or 7.5 lb per acre per season.
	3A	*Asana XL (0.66EC) (esfenvalerate)	5.8–9.6 fl oz	1	12	Florida only.
	3A	*Brigade 2EC (bifenthrin)	2.1–6.4 fl oz	7	12	Do not apply more than 0.2 lb ai/acre per season.
	3A	*Capture LFR (bifenthrin)	3.4–6.8 fl oz	N/A—applied at planting	12	For mixing with liquid fertilizer to apply to soil at planting.
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	OMRI-listed. ²
	3S	*Mustang (zeta-cypermethrin)	2.4–4.3 oz	1	4	Do not apply more than 29 oz per acre per crop. OMRI-listed ² .
	5	Entrust SC (spinosad)	1.5–10 fl oz	1	4	Control of leafminers and thrips may be improved with an adjuvant.
	5	Radiant SC (spinetoram)	5–10 fl oz	0	4	Use high rate for armyworms. Treat when larvae are young.
	11A	Crymax WDG (<i>Bacillus thuringiensis</i> subspecies kurstaki)	0.5–2.0 lb	0	4	Use higher rates for armyworms. OMRI-listed ² .
	11A	Deliver (<i>Bacillus thuringiensis</i> subspecies kurstaki)	0.25–1.5 lb	0	4	Use higher rates for armyworms. OMRI-listed ² .

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
	11A	DiPel DF (<i>Bacillus thuringiensis</i> subspecies kurstaki)	0.5–2.0 lb	0	4	Can be used in organic production.
	11A	Javelin WG (<i>Bacillus thuringiensis</i> subspecies kurstaki)	0.12–1.50 lb	1	4	Treat when larvae are young. Thorough coverage is essential. OMRI-listed ² .
	11A	Xentari DF (<i>Bacillus thuringiensis</i> subspecies aizawai)	0.5–2.0 lb	0	4	Can be used in organic production.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	12	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
	18	Intrepid 2F (methoxyfenozide)	4–16 fl oz	1	4	Do not apply more than 64 fl oz per acre per season.
	22	Avaunt (indoxacarb)	2.5–3.5 oz	3	12	Maximum = 14 oz/acre per crop
	28	Belt SC (flubendiamide)	1.5 fl oz	1	12	Do not apply more than 4.5 fl oz/acre per season.
	28	Coragen (chlorantraniliprole)	3.5–7.5 fl oz	1	4	Can be applied by drip chemigation or as a soil application at planting as well as a foliar spray. See label. For hornworms, can use as little as 2.0 fl oz/acre when applied as a foliar spray. Make no more than 4 applications per crop.
	28	Exirel (cyantraniliprole)	7.0–20.5 fl oz	1	12	Do not apply more than a total of 0.4 lb ai per crop of cyazypyr or cyantraniliprole-containing products.
	28, 16	Vetica (flubendiamide and buprofezin)	12.0–17.0 fl oz	1	12	Do not apply more than 3 times per season or apply more than 38 fl oz per acre per season. Use high rate for whiteflies and leafhoppers.
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed ² .
	un	Azatin XL (azadirachtin)	5–21 fl oz	0	4	Antifeedant, repellent, insect growth regulator.
	un	Grandevo (<i>Chromobacterium subtsugae</i> strain PRAA4-1)	1.0–3.0 lb	0	4	Can be used in organic production. OMRI-listed ² .
	un	Neemix 4.5 (azadirachtin)	4.5–18 fl oz	0	12	IGR and feeding repellent. OMRI-listed ² .
	--	BotaniGard 22WP, ES (<i>Beauveria bassiana</i>)	WP: 0.5–2 ES: 0.5–2 qt/100 gal	0	4	May be used in greenhouses. Contact dealer for recommendations if an adjuvant must be used. Not compatible in tank mix with fungicides.
Fire ants	7A	Extinguish ((S)-methoprene)	1.0–1.5 lb	0	4	Slow-acting IGR (insect growth regulator). Best applied early spring and fall where crop will be grown. Colonies will be reduced after three weeks and eliminated after 8 to 10 weeks. May be applied by ground equipment or aerially.
	7C	Esteem Ant Bait (pyriproxyfen)	1.5–2.0 lb	1	12	Apply when ants are actively foraging.
	3A	*Brigade 2EC (bifenthrin)	2.1–6.4 fl oz	7	12	Do not apply more than 0.2 lb ai/acre per season.
	5	Entrust SC (spinosad)	1.5–10 fl oz	1	4	Do not apply more than 29 oz per acre per crop. OMRI-listed.

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
	5	Radiant SC (spinetoram)	5–10 fl oz	1	4	Control of leafminers and thrips may be improved with an adjuvant.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	12	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
	28	Exirel (cyantraniliprole)	7.0–20.5 fl oz	1	12	Do not apply more than a total of 0.4 lb ai per crop of cyazypyr or cyantraniliprole-containing products.
	28	Verimark (cyantraniliprole)	5–10 fl oz	1	4	Apply at planting or through drip chemigation, but do not make more than 1 drip chemigation application per crop if an at planting application was made. Do not apply more than a total of 0.4 lb ai per crop of cyazypyr or cyantraniliprole-containing products (such as Exirel).
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellant, insect growth regulator. OMRI-listed ² .
	un	Azatin XL (azadirachtin)	5–21 fl oz	0	4	Antifeedant, repellant, insect growth regulator. Rate depends on pest-see label.
	un	Neemix 4.5 (azadirachtin)	4.5–18 fl oz	0	12	IGR and feeding repellant. OMRI-listed ² .
	--	SunSpray 98.8%; Ultra-Fine; JMS Stylet Oil, Saf-T-Side, Others (oil, insecticidal)	1–2 gal/100 gal JMS: 3–6 qt/100 gal (JMS)	0	4	See label for tank mix cautions. Organic Stylet-Oil is OMRI-listed ² .
Mites	1B	Malathion 5EC Malathion 8 (malathion)	1.2 pt	1	12	Maximum of 5 applications per year.
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	OMRI-listed. ²
	10B	Zeal (etoxazole)	2.0–3.0 oz	7	12	Do not make more than one application per season. Do not use with an adjuvant or surfactant.
	20B	Kanemite 15 SC (acequinocyl)	31 fl oz	7	12	Two applications per year, at least 21 days apart.
	21A	Portal (fenpyroximate)	2.0 pt	1	12	Do not make more than two applications per season.
	23	Movento (spirotetramat)	4–5 fl oz	1	24	Do not apply more than 10 fl oz per acre per season.
	un	Acramite-50WS (bifenazate)	0.75–1.0 lb	3	12	One application per season.
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellant, insect growth regulator. OMRI-listed ² .
	un	Trilogy (extract of neem oil)	1.0–2.0% V/V	0	4	Apply morning or evening to reduce potential for leaf burn. Toxic to bees exposed to direct treatment. OMRI-listed ² .
	--	SunSpray 98.8%; Ultra-Fine; JMS Stylet Oil, Saf-T-Side, Others (oil, insecticidal)	1–2 gal/100 gal JMS: 3–6 qt/100 gal (JMS)	0	4	See label for tank mix cautions. Organic Stylet-Oil is OMRI-listed ² .

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
Stink Bugs	1A	Sevin 80S, 4F, XLR (carbaryl)	80S: 1.25–1.88lb 4F, XLR: 1–1.5 qt	3	12	Do not apply more than a total of 6 qt or 7.5 lb per acre per season.
	3A	*Brigade 2EC (bifenthrin)	2.1–6.4 fl oz	7	12	Do not apply more than 0.2 lb ai/acre per season.
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	OMRI-listed. ²
	3S	*Mustang (zeta-cypermethrin)	2.4–4.3 oz	1	12	Do not make applications less than 7 days apart. Do not apply more than 0.3 lb ai/acre (25.8 fl oz of product) per season.
	4D	Sivanto 200SL (flupyradifurone)	foliar: 7–14 fl oz soil: 21–28 fl oz	foliar: 1 soil: 45	4	Foliar: Maximum allowed per acre per year: 28 fl oz. Soil: Maximum allowed: 28 fl oz per season with no more than 3 crop seasons per year.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	2	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
Thrips (check label for species controlled)	1B	Malathion 5EC Malathion 8 (malathion)	1.2 pt	1	12	Maximum of 5 applications per year.
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	OMRI-listed. ²
	4A	Admire Pro (imidacloprid)	soil: 7–14 fl oz foliar: 1.3–2.2 fl oz	soil: 21 foliar: 0	12	No more than 14 oz per acre per crop for soil application or 6.7 fl oz if used as a foliar spray.
	5	Entrust SC (spinosad)	1.5–10 fl oz	1	4	Do not apply more than 29 oz per acre per crop. OMRI-listed.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	12	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed ² .
	un	Grandevo (Chromobacterium subtsugae strain PRAA4-1)	1.0–3.0 lb	0	4	Can be used in organic production. OMRI-listed ² .
	un	Requiem EC (extract of <i>Chenopodium ambrosioides</i>)	2–4 qt	0	4	Apply before pests reach damaging levels.
	--	BotaniGard 22WP, ES (<i>Beauveria bassiana</i>)	WP: 0.5–2 ES: 0.5–2 qt/100 gal	0	4	May be used in greenhouses. Contact dealer for recommendations if an adjuvant must be used. Not compatible in tank mix with fungicides.
	--	SunSpray 98.8%; 1-2 gal/100 gal Ultra-Fine; JMS Stylet Oil, Saf-T-Side, Others (oil, insecticidal)	1–2 gal/100 gal JMS: 3–6 qt/100 gal (JMS)	0	4	See label for tank mix cautions. Organic Stylet-Oil is OMRI-listed ² .
Whitefly	1B	Malathion 5EC Malathion 8 (malathion)	1.2 pt	1	12	Maximum of 5 applications per year. Must be tankmixed with a pyrethroid for effective control.
	3A	*Brigade 2EC (bifenthrin)	2.1–6.4 fl oz	7	12	Do not apply more than 0.2 lb ai/acre per season. Best results if tank mixed with malathion

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
	3A	Pyganic 5.0 (pyrethrins)	4.5–18 oz	0	12	OMRI-listed. ²
	4A	Admire Pro (imidacloprid)	soil: 7–14 fl oz foliar: 1.3–2.2 fl oz		12	No more than 14 oz per acre per crop for soil application or 6.7 fl oz if used as a foliar spray.
	4A	Assail 30SG (acetamiprid)	2.0–4.0 oz	7	12	Do not make more than 4 applications per season.
	4D	Sivanto 200SL (flupyradifurone)	foliar: 7–14 fl oz soil: 21–28 fl oz		4	Foliar: Maximum allowed per acre per year: 28 fl oz. Soil: Maximum allowed: 28 fl oz per season with no more than 3 crop seasons per year.
	7C	Knack IGR (pyriproxyfen)	8–10 fl oz	7	12	Immatures only. Apply when nymphs first appear. Do not apply more than twice per growing season.
	15	Rimon 0.83EC (novaluron)	9–12 fl oz	1	12	Do not apply more than 36 fl oz per acre per season. Do not apply more than twice for whiteflies and thrips.
	16	Courier 40SC (buprofezin)	9.0–13.6 fl oz	1	12	Immatures only. Make no more than 2 applications per crop cycle.
	23	Movento (spirotetramat)	4–5 fl oz	1	24	Do not apply more than 10 fl oz per acre per season.
	28	Exirel (cyantraniliprole)	7.0–20.5 fl oz	1	12	Do not apply a total of more than 0.4 lb ai per acre of cyazypyr or cyantraniliprole-containing products per crop, either as foliar or soil applications.
	28	Verimark (cyantraniliprole)	5–10 fl oz	1	4	Apply at planting or through drip chemigation, but do not make more than 1 drip chemigation application per crop if an at planting application was made. Do not apply more than a total of 0.4 lb ai per crop of cyazypyr or cyantraniliprole-containing products (such as Exirel).
	28, 16	Vetica (flubendiamide and buprofezin)	12.0–17.0 fl oz	1	12	Do not apply more than 3 times per season or apply more than 38 fl oz per acre per season. Use high rate for whiteflies and leafhoppers.
	un	Aza-Direct (azadirachtin)	1–2 pts, up to 3.5 pts, if needed	0	4	Antifeedant, repellent, insect growth regulator. OMRI-listed ² .
	un	Azatin XL (azadirachtin)	5–21 fl oz	0	4	Antifeedant, repellent, insect growth regulator. Rate depends on pest-see label.
	un	Grandevo (Chromobacterium subtsugae strain PRAA4-1)	1.0–3.0 lb	0	4	OMRI-listed ² .
	un	Neemix 4.5 (azadirachtin)	4–16 fl oz	0	12	IGR and feeding repellent. OMRI-listed ² .
	un	Requiem EC (extract of <i>Chenopodium ambrosioides</i>)	2–4 qt	0	4	Apply before pests reach damaging levels.
	--	BotaniGard 22WP, ES (<i>Beauveria bassiana</i>)	WP: 0.5–2 ES: 0.5–2 qt/100 gal	0	4	May be used in greenhouses. Contact dealer for recommendations if an adjuvant must be used. Not compatible in tank mix with fungicides.

Insect or mite pest	MOA Code ¹	Trade Name (Active Ingredient) *Restricted	Rate (Product/acre)	Days to Harvest	REI (hours)	Remarks ²
	--	SunSpray 98.8%; Ultra-Fine; JMS Stylet Oil, Saf-T-Side, Others (oil, insecticidal)	1–2 gal/100 gal JMS: 3–6 qt/100 gal (JMS)	0	4	See label for tank mix cautions. Organic Stylet-Oil is OMRI- listed ² .
Wireworm	3A	*Capture LFR (bifenthrin)	3.4–6.8 fl oz	N/A- applied at planting	12	For mixing with liquid fertilizer to apply to soil at planting.
¹ Mode of Action (MOA) codes for plant pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v. 9.4, February 2020. Number codes (1 through 28) are used to distinguish the main insecticide mode of action groups, with additional letters for certain sub-groups within each main group. All insecticides within the same group (with same number) indicate same active ingredient or similar mode of action. This information must be considered for the insecticide resistance management decisions. un = unknown, or a mode of action that has not been classified yet. ² Information provided in this table applies only to Florida. Be sure to read a current product label before applying any product. The use of brand names and any mention or listing of commercial products or services in the publication does not imply endorsement by the University of Florida Cooperative Extension Service nor discrimination against similar products or services not mentioned. OMRI listed: Listed by the Organic Materials Review Institute for use in organic production.						
* Restricted use insecticide.						