VEGETABLES

HOME VEGETABLE INSECT CONTROL

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NOTE: Insecticide registrations can change rapidly and can vary with the specific product or formulation of the product used (i.e. not all products containing malathion are labeled for use on the same crops; not all formulations of Sevin have the same use patterns). Always carefully read and follow the label instructions for the specific product being applied. If using transplants, make sure plants are free of pests before purchasing.

NOTE: This guide includes only those products normally available at big box stores and similar locations. Many "commercial" insecticides are general use and can be purchased and used without a pesticide license. However, these are generally sold in larger quantities than are needed for most gardens and therefore are more expensive. See the Commercial Edition of the Pest Management Handbook for recommendation for these products.

VEGETABLE	INSECT	*COMMON NAME* TRADE NAME	AMOUNT OF FORMULATION PER GALLON OF SPRAY	PHI (DAYS)	REMARKS AND PRECAUTIONS
All crops	Multiple pests	*pyrethrins* *pyrethrins* + PBO	RTU	0	Provides rapid knockdown and suppression of most pests directly contacted. Short residual activity.
		Neem oil 70%	2 Tbsp or RTU	0	Best when used preventively.
		sulfur + *pyrethrins*	RTU	0	Not registered for all vegetables. See label for registered crops.
	Soil pests	*bifenthrin* 0.115% granular	1 lb/500 sq ft		Apply prior to planting and work into top 4–6" of soil. (May also be applied to *bifenthrin*-labeled crops with PHI same as foliar applications). Labeled crops vary with product used.
	Slugs and Snails	*sulfur*	See label		Do not contact plants with material.
		sodium ferric EDTA	See label		Do not contact plants with material.
		iron phosphate	See label		Do not contact plants with material.
	Fire Ants	Esteem Ant Bait is registered for use in many vegetable crops (see label). Other ant baits may be used around the perimeter of the garden, which for small gardens is frequently adequate.			
	Leafminers	No general-use insecticides provide control of leafminer larvae inside leaves. *Spinosad* products may provide some suppression on registered crops. Leafminer problems are frequently caused by overuse of insecticides. Hand-pick mined leaves.			
Asparagus	asparagus beetle, cutworms	*carbaryl* Sevin 22.5%	1.5 oz	1	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	7	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	1.5 oz Dust plants lightly	1	
		spinosad 0.5%	2 oz	60	Post-harvest treatment only. Also available as a ready-to-use product.
Beans, Peas	aphids	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		bifenthrin 0.3%	1.5 oz	3	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions.	0	No residual activity. Thorough coverage is essential.
		malathion 50%	2 tsp	Beans 1 Peas 3	Use and registration varies with specific product.

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Beans, Peas (*continued*)	bean beetles (Mexican bean beetle, bean leaf beetle), caterpillars (corn earworm), cowpea curculio, stink bugs	*bifenthrin* 0.3%	1.5 oz	3	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	Fresh 3 Dry 21	Also available as a ready-to-use product. Not for stink bugs or caterpillars.
		gamma-cyhalothrin 0.08%	3 Tbsp	7	Also available as a ready-to-use product.
		spinosad 0.5%	2 oz	Green 3 Dry 28	For caterpillar pests only. Will also suppress thrips and leafminers. Also available as a ready-to-use product.
		NOTE: For cowpea curculio, insecticide resistance has resulted in poor control of this pest with all registered insecticides. Performance of pyrethroids used for corn earworm management may vary due to insecticide resistance.			
	spider mites	*malathion* 50%	1 Tbsp	Beans 1 Peas 3	Marginal control of this pest. Use and registration varies with specific product.
		sulfur 90%	2 Tbsp	0	Do not use if temperature is above 95°F. Do not use within 3 weeks of oil spray.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	whitefly	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
Beets	flea beetles. caterpillar pests	*carbaryl* 22.5% 5% dust	1.5 oz Dust plants lightly	7	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting. For flea beetles only.
		malathion 50%	1 Tbsp	7	Use and registration varies with specific product.
		spinosad 0.5%	2 oz	7	Also available as a ready-to-use product.
Broccoli, Brussels Sprouts, Cabbage, Cauliflower	aphids, whiteflies	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	aphid	*bifenthrin* 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	1	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	1	Also available as a ready-to-use product.
		malathion 50%	1.5–2 tsp	Cabbage 7 Others 2	Use and registration varies with specific product.
		permethrin 2.5% 0.25% dust	1 oz Dust plants lightly	1	

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Broccoli, Brussels Sprouts, Cabbage, Cauliflower (*continued*)	caterpillars on foliage, cutworms	*Bacillus thuringiensis* Dipel, Thuricide and other formulations	Follow label directions	0	Not for cutworms. Treat as soon as damage is found; repeat as needed. Susceptible larvae will stop feeding soon after eating treated foliage but may not die for several days.
		bifenthrin 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	1	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	1	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	1 oz Dust plants lightly	1	Not registered for cutworms.
		spinosad 0.5%	2 oz	1	Not registered for cutworms. Also available as a ready-to-use product.
	flea beetles, stink bugs, harlequin bug	*bifenthrin* 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	1	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	1	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	1 oz Dust plants lightly	1	
Cantaloupe, Cucumber, Pumpkin, Squash, Watermelon. Apply sprays late in the day to reduce kill of pollinating insects.	aphid	*acetamiprid* 0.5%	1.5 oz	0	Also available as a ready-to-use product.
		bifenthrin 0.3%	1.5 oz	3	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		malathion 50%	2 tsp	Pumpkin 3 Others 1	Use and registration varies with specific product. Do not apply unless leaves are dry.
		permethrin 0.25% dust	Dust plants lightly	0	
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	cucumber beetle adults, squash bug, pickleworm, melon-worm, rindworms	*bifenthrin* 0.3%	1.5 oz	3	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		permethrin 0.25% dust	Dust plants lightly	0	
		spinosad 0.5%	2 oz	Cucumber 1 Others 3	For caterpillar control only. Also available as a ready-to-use product.
		NOTE: Crops planted after mid-June can be heavily attacked by pickleworm and melonworm. Begin treatments at first bloom and repeat weekly as needed.			
	Squash vine borer	*bifenthrin* 0.3%	1.5 oz	3	Also available as a ready-to-use product. Direct sprays at base of plants.

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Cantaloupe, Cucumber, Pumpkin, Squash, Watermelon. Apply sprays late in the day to reduce kill of pollinating insects. (*continued*)	Spider mites	insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
		malathion 50%	1 Tbsp	Pumpkin 3 Others 1	Use and registration varies with specific product. Marginal control of this pest. Do not apply unless leaves are dry.
	whitefly	*acetamiprid* 0.5%	1.5 oz	0	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
Collards	aphids, whiteflies	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	aphid	*malathion* 50%	2 tsp	7	Use and registration varies with specific product.
	caterpillars on foliage	*Bacillus thuringiensis* Dipel, Thuricide, other formulations	Follow label directions	0	Treat as soon as damage is found and repeat as needed. Susceptible larvae will stop feeding soon after eating treated foliage but may not die for several days.
		carbaryl 22.5% 5% dust	1.5 ozs Dust plants lightly	14	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
	flea beetles, harlequin bug, stink bugs	*carbaryl* 22.5% 5% dust	1.5 ozs Dust plants lightly	14	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
Corn, Sweet	corn earworm, fall armyworm, European corn borer flea beetle, cucumber beetle, stink bug	*bifenthrin* 0.3%	1.5 oz	3	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	2	Not for stink bug control. Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	21	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbs	21	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	1.5 oz Dust plants lightly	1	
		spinosad 0.5%	2 oz	1	For control of caterpillar pests only. Also available as a ready-to-use product.
		NOTE: For caterpillar pests of ears, if damage free ears are desired, begin treatment when silks appear. Repeat at 2-day intervals with sprays directed at ears. Daily applications may be required in the fall and damage may still occur. NOTE: Performance of pyrethroids used for corn earworm management may vary due to insecticide resistance.			

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Eggplant	aphid	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		bifenthrin 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		malathion 50%	2 tsp	3	Use and registration varies with specific product.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	Caterpillars on foliage, Colorado potato beetle, flea beetle	*bifenthrin* 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	7	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	3 oz Dust plants lightly	3	
		spinosad 0.5%	2 oz	1	Not for use against flea beetles. Also available as a ready-to-use product.
	lacebug	*bifenthrin* 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
	spider mite	insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
		malathion 50%	1 Tbsp	3	Use and registration varies with specific product. Marginal control of this pest.
	whitefly	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions.	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions.	0	No residual activity. Thorough coverage is essential.
Lettuce, Spinach	aphids, whiteflies	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions.	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.

VEGETABLE	INSECT	*COMMON NAME* TRADE NAME	AMOUNT OF FORMULATION PER GALLON OF SPRAY	PHI (DAYS)	REMARKS AND PRECAUTIONS
Lettuce, Spinach (*continued*)	aphid	*bifenthrin* 0.3%	1.5 oz	7	For use on head lettuce only. Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	1	For use on lettuce only. Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	1	For use on lettuce only. Also available as a ready-to-use product.
		malathion 50%	2 tsp	Lettuce 14 Spinach 7	Use and registration varies with specific product.
	caterpillars on foliage, flea beetles, harlequin bug, and stink bug	*Bacillus thuringiensis* Dipel, Thuricide, Other Formulations	Follow label directions	0	For control of caterpillar pests only. Treat as soon as damage is found and repeat as needed. Susceptible larvae will stop feeding soon after eating treated foliage but may not die for several days.
		bifenthrin 0.3%	1.5 oz	7	For use on head lettuce only. Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	14	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	1	For use on lettuce only. Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	1	For use on lettuce only. Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	2 oz Dust plants lightly	1	
		spinosad 0.5%	2 oz	1	For control of caterpillar pests only. Also available as a ready-to-use product.
Mustard greens	aphids, whiteflies	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions.	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions.	0	No residual activity. Thorough coverage is essential.
	aphid	*malathion* 50%	2 tsp	7	Use and registration varies with specific product.
	caterpillars on foliage	*Bacillus thuringiensis* Dipel, Thuricide, Other Formulations	Follow label directions.	0	Treat as soon as damage is found and repeat as needed. Susceptible larvae will stop feeding soon after eating treated foliage but may not die for several days.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	14	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
	flea beetles	*carbaryl* 22.5% 5% dust	1.5 oz Dust plants lightly	14	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.

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Okra	aphids, whiteflies	*imidacloprid* 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	aphid	*malathion* 50%	2 tsp	1	Use and registration varies with specific product.
	caterpillar pests	*carbaryl* 22.5%	1.5 oz	3	
		spinosad 0.5%	2 oz	1	Also available as a ready-to-use product.
Onions	thrips	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	14	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	14	Also available as a ready-to-use product.
		malathion 50%	1 Tbsp	3	Use and registration varies with specific product.
		spinosad 0.5%	2 oz	1	Also available in ready-to-use product. Labeled for suppression of thrips.
Peppers	aphids, whiteflies	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	aphid	*bifenthrin* 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		malathion 50%	2 tsp	3	Use and registration varies with specific product.
	caterpillar pests, flea beetle	*bifenthrin* 0.3%	1.5 oz	7	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	7	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	2 oz Dust plants lightly	3	
		spinosad 0.5%	2 oz	1	For control of caterpillar pests only. Also available as a ready-to-use product.
	spider mites	insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
		malathion 50%	1 Tbsp	3	Use and registration varies with specific product. Marginal control of this pest.

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Potatoes, Irish	aphid	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		malathion 50%	2 tsp	0	
		permethrin 2.5% 0.25% dust	1.5 oz Dust plants lightly	14	
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	Colorado potato beetle, flea beetles, potato tuberworm	*carbaryl* 22.5% 5% dust	1.5 oz Dust plants lightly	7	Not for control of potato tuberworm. Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	1.5 oz Dust plants lightly	14	
		spinosad 0.5%	2 oz	7	Also available as a ready-to-use product.
		NOTE: For potato tuberworm, treat when foliage or tuber damage is noticed. Store tubers promptly after digging to avoid tuberworm infestation in storage.			
Potatoes, sweet	Flea beetles, cucumber beetles	*carbaryl* 22.5%	1.5 oz	7	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		malathion 50%	1 Tbsp	3	Use and registration varies with specific product.
	Caterpillars on foliage	*Bacillus thuringiensis* Dipel, Thuricide, Other Formulations	Follow label directions	0	Treat as soon as damage is found and repeat as needed. Susceptible larvae will stop feeding soon after eating treated foliage but may not die for several days.
		carbaryl 22.5%	1.5 oz	7	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		spinosad 0.5%	2 oz	7	Also available as a ready-to-use product.
	sweet potato weevil	*carbaryl* 22.5%	1.5 oz	7	Also labeled as a pre-plant dip (follow label). Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
Radishes	aphids, whiteflies	*imidacloprid* 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	aphid	*malathion* 50%	2 tsp	7	
	flea beetle	*carbaryl* 22.5% 5% dust	1.5 oz Dust plants lightly	7	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
Tomato	aphid	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		bifenthrin 0.3%	1.5 oz	1	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		lambda-cyhalothrin 0.5%	1 Tbsp	5	Also available as a ready-to-use product.
		malathion 50%	2 tsp	1	PHI varies with specific product.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.

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Tomato (*continued*)	flea beetles, Colorado potato beetle, fruitworm, hornworm, tomato pinworm	*bifenthrin* 0.3%	1.5 oz	1	Also available as a ready-to-use product.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	3	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	5	Also available as a ready-to-use product.
		permethrin 2.5% 0.25% dust	1.5 oz Dust plants lightly	0	Not registered for cutworms.
		spinosad 0.5%	2 oz	1	Not registered for flea beetles or cutworms. Also available as a ready-to-use product.
		NOTE: Performance of pyrethroids used for fruitworm management may vary due to insecticide resistance.			
	spider mites	*sulfur* 90%	2 Tbsp	0	Do not use if temperature is above 95 degrees Fahrenheit. Do not use within 3 weeks of oil spray.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	stink bug, leaffooted bug	*bifenthrin* 0.3%	1.5 oz	1	
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		gamma-cyhalothrin 0.08%	3 Tbsp	5	Also available as a ready-to-use product.
		lambda-cyhalothrin 0.5%	1 Tbsp	5	Also available as a ready-to-use product.
	whitefly	*acetamiprid* 0.5%	1.5 oz	7	Also available as a ready-to-use product.
		imidacloprid 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
Turnips	aphids, whiteflies	*imidacloprid* 0.235%	Follow label directions	21	Apply at or shortly after plant emergence or transplanting.
		insecticidal soap	Follow label directions	0	No residual activity. Thorough coverage is essential.
	aphid	*malathion* 50%	2 tsp.	7	Use and registration varies with specific products.
	caterpillars on foliage	*Bacillus thuringiensis* Dipel, Thuricide, Other Formulations	Follow label directions	0	Treat as soon as damage is found and repeat as needed. Susceptible larvae will stop feeding soon after eating treated foliage but may not die for several days.
		carbaryl 22.5% 5% dust	1.5 oz Dust plants lightly	Tops 14 Roots 7	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.
		spinosad 0.5%	2 oz	1	Also available as a ready-to-use product.
	flea beetles, harlequin bug	*carbaryl* 22.5% 5% dust	1.5 oz. Dust plants lightly	Tops 14 Root 7	Also available as a ready-to-use product.
		cyfluthrin 0.75%	1 Tbsp	0	Also available as a ready-to-use product.

HOME VEGETABLE DISEASE CONTROL

Bhabesh Dutta, Extension Vegetable Disease Specialist

Use good growing practices to prevent disease and other problems, and to reduce the need for pesticide applications. Pesticides are not essential in the home garden. Fungicides can only prevent infections. Once outbreaks occur, fungicides have limited effectiveness. Use pesticides based on history of problems in previous years, and on an accurate diagnosis and recommendation. Most diseases listed here are rarely serious. **Please note: This is a list of commonly used products available at local retail locations and is not all inclusive. Remember to ALWAYS read the label carefully and follow ALL directions, restrictions, and precautions listed in the manufacturer's label!

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
ASPARAGUS			
Cercospora Leaf spot	*mancozeb* Bonide Mancozeb Flowable	180	Apply only after harvest period.
Crown Rot and Root Rot (Phytophthora)	*phosphorous acid* Agrifos		The best management for root and crown rot is to plant in a well-drained improved soil. Difficult to manage in wet soils.
Rust	*chlorothalonil* Ortho Garden Disease Control	7	See label.
	Sulfur (spray or dust)		Begin application during early bloom stage if history of problem.
	mancozeb Bonide Mancozeb Flowable	180	See label. Apply after harvest period.
BEANS (LIMA AND SNAP)			
Anthracnose	*chlorothalonil* Ortho Garden Disease Control	7	See label.
Anthracnose	*myclobutanil* Spectracide Immunox Multi-Purpose Fungicide		See label. (Spectracide Immunox Multi-Purpose Fungicide)
Bacterial Blight	*copper* Bonide Copper Spray, or Liquid Copper	0	Disease is activated during continual wet weather. Begin applying when first symptoms appear.
Root Rot and Seedling Disease (Rhizoctonia)	*PCNB* Terraclor 75%WP	Apply only at planting time	Apply as directed at planting time based on history of problems. Some bean seed is pre-treated against seedling diseases. Avoid heavy, wet soils. Wait until soils warm in spring before planting.
Rust	*sulfur*		Begin during early bloom or when disease first threatens.
	chlorothalonil Ortho Garden Disease Control	0	
BEETS			
Downy Mildew, Leaf Spots, and Blights	*copper sulfate* Dupont Copper Kocide 3000	0	Begin when disease appears and repeat every 7–10 days. May not be a problem most years.
	copper Bonide Copper Spray, or Liquid Copper	0	
BROCCOLI, BRUSSELS SPROUTS, CABBAGE			
Wire Stem			Start seed in sterile soil. Transplant healthy seedlings into well drained soils. Avoid keeping soils saturated.
Alternaria Leaf Spot & Downy Mildew	*chlorothalonil* Ortho Garden Disease Control	0	Reducing moisture on leaves and humidity in greenhouses is best preventative.
	copper *Bonide* Copper Spray, or Liquid Copper	0	
	copper sulfate Dupont Copper Kocide 3000	0	

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
		CABBAGE	
Alternaria Leaf Spot	*chlorothalonil* Ortho Garden Disease Control	0	See label.
Club Root	*PCNB* Terraclor 75%WP + hydrated lime		Broadcast and disc lime into soil 0–3 days before planting.
Damping-Off of Seedlings			Use sterile soil to start seeds. Provide good air circulation and do not keep soil constantly saturated.
Downy Mildew	*chlorothalonil* Ortho Garden Disease Control	0	Keep leaves as dry as possible. Promote good air circulation to reduce humidity when starting seeds.
	phosphorous acid Agri-fos		
	copper Bonide Copper Spray, or Liquid Copper	None	
		CANTALOUPE	
Alternaria Leafspot, Anthracnose, Gummy Stem Blight	*chlorothalonil* Ortho Garden Disease Control	0	These diseases may become a problem in some wet years. Apply every 7–14 days as needed. Disease can often be avoided in the home garden with good growing practices.
	copper sulfate Dupont Copper Kocide 3000	0	
	copper Bonide Liquid Copper Fungicide	up to day of harvest	
	mancozeb Bonide Mancozeb Flowable	5	
Downy mildew	*chlorothalonil* Ortho Garden Disease Control	0	See label. Start when first symptoms appear. Disease is more damaging in wet years. Keep leaves dry when possible.
	copper Bonide Copper Sulfate	0	
	phosphorous acid Agri-fos		
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Copper Spray or Dust	0	
Powdery Mildew	*copper sulfate* Dupont Copper Kocide 3000	0	
	sulfur Safer Garden Fungicide		See label.
	copper Bonide Liquid Copper Fungicide	up to day of harvest	
	copper Bonide Copper Spray or Dust	0	
	chlorothalonil Ortho Garden Disease Control	0	

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
		CARROT	
Alternaria Blight	*chlorothalonil* Ortho Garden Disease Control	7	Apply every 7–14 days as needed based on past problems. Some varieties have resistance.
	copper Bonide Copper Spray, or Liquid Copper	Until day of harvest	
Cercospora Leaf Blight	*copper* Bonide Copper Spray, or Liquid Copper	0	
	chlorothalonil Ortho Garden Disease Control Daconil	See label.	
		COLLARDS	
Alternaria Leafspot & Downy Mildew	*copper* Bonide Copper Spray, or Liquid Copper	0	
		CORN (SWEET)	
Leaf Blights and Rust	*chlorothalonil* Ortho Garden Disease Control	7	May not be needed most years.
	mancozeb Bonide Mancozeb Flowable		
		CUCUMBER	
Anthracnose	*chlorothalonil* Ortho Garden Disease Control	0	Apply every 7–10 days as needed during wet periods. Trellising and planting early in the season can help prevent foliar problems in cucumber.
	copper sulfate Dupont Copper Kocide 3000	0	
	copper Bonide Copper Spray or Dust	0	
	mancozeb Bonide Mancozeb Flowable	5	
Alternaria Leafspot	*chlorothalonil* Ortho Garden Disease Control	0	Apply every 7–10 days as needed during wet periods.
	copper sulfate Dupont Copper Kocide 3000	0	
	copper Bonide Liquid Copper Fungicide	Until day of harvest	
Corynespora Leafspot	*chlorothalonill* Ortho Garden Disease Control	0	Wet weather disease.
	copper Bonide Liquid Copper Fungicide	Until day of harvest	

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
CUCUMBER (*continued*)			
Downy Mildew	*chlorothalonil* Ortho Garden Disease Control	0	Downy mildew arrives in Georgia in later June or July. Mainly a problem in wet years. Apply when disease threatens and every 7–10 days as needed. Plant early in the season.
	copper sulfate Dupont Copper Kocide 3000		
	copper Bonide Liquid Copper	Until day of harvest	
	phosphorous acid Agri-fos		
	mancozeb Bonide Mancozeb Fungicide	5	
Gummy Stem Blight	*chlorothalonil* Ortho Garden Disease Control	0	Often not a problem in the home garden. Use western-grown seed if possible.
	copper sulfate Dupont Copper Kocide 3000	0	
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Liquid Copper	0	
Powdery Mildew	*copper sulfate* Dupont Copper Kocide 3000	0	Apply every 7–10 days as needed.
	copper Bonide Liquid Copper Fungicide	Until day of harvest	
	chlorothalonil Ortho Garden Disease Control Daconil	0	
	Safer Garden Fungicide Add to Method column:		See label.
EGGPLANT			
Damping-Off of Seedlings			Use sterile soil to start seeds. Avoid excess water. Provide good air circulation and adequate light.
Phomopsis, Alternaria, Anthracnose, Fruit Rots & Leaf Blights	*sulfur* Sulfur products		May only be a problem in wet years. Apply at first sign of disease.
	copper Bonide Copper Spray, or Liquid Copper	0	
GARLIC (SEE ONION)			
IRISH POTATO			
Black Scurf and Stem Canker (Rhizoctonia)	*PCNB* Terraclor 10 G		Apply according to label directions. Best to rotate and improve soil organic matter. Use clean planting materials.
	PCNB Terraclor 75 WP		
Early Blight and Late Blight	*chlorothalonil* Ortho Garden Disease Control	0	See label. Potatoes are a cool season crop in Georgia and this limits diseases such as late and early blight.
	copper Bonide Copper Spray, or Liquid Copper		
	mancozeb Bonide Mancozeb Flowable	14	

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
KALE			
Alternaria Leafspot Downy Mildew	*copper* Bonide Copper Spray or Dust Bonide Liquid Copper Fungicide	0	Keep leaves as dry as possible to prevent. Reduce moisture and humidity when growing seedlings.
LETTUCE			
Downy Mildew	*copper* Bonide Copper Spray or Dust Bonide Liquid Copper Fungicide	0	Usually not a problem in the home garden. Avoid keeping leaves wet.
OKRA			
Pod blight	No foliar fungicides available	.	Blight is associated with wet conditions—provide good air circulation
ONION (DRY)			
Purple Blotch, Bacterial Leaf Blight, Botrytis Leaf Blight, and Downy Mildew	*chlorothalonil* Ortho Garden Disease Control		Onions are harvested before summer and foliar diseases are usually not a problem.
	mancozeb Bonide Mancozeb Flowable		
ONION (GREEN AND GREEN BUNCHING) – GARLIC, LEEK, SHALLOT, ONION GROWN FOR SEED)			
Botrytis Leaf Blight, Downy Mildew, Neck Rot, and Purple Blotch	*chlorothalonil* Ortho Garden Disease Control	14	See label. Most onions are grown during the winter and spring when disease pressure is low. Onions in the home garden should not need fungicide applications.
	copper Bonide Copper Spray, or Liquid Copper	Until day of harvest	
	mancozeb Bonide Mancozeb Flowable	7	
PEAS (ENGLISH)			
Powdery Mildew	*sulfur* Sulfur (spray or dust)		Start application at first sign of disease and repeat every 7–10 days. Do not apply when temperature is above 90°F or when plants are wet.
PEPPER			
Cercospora, Anthracnose, Phytophthora blight, Fruit Rots, and Bacterial Spot	*sulfur*		
	copper Bonide Copper Spray, or Liquid Copper		
Blossom End Rot	*calcium* CAB		Blossom end rot can be caused by a combination of fluctuating soil moisture, and low pH and calcium. Maintain optimal soil conditions and mulch to conserve water.
Southern Blight (Sclerotium)	*PCNB* Terraclor 75WP		Plant in a well-drained site. Avoid areas with a history of Southern Blight. Use ½ pint per plant when transplanting. Rotate with corn or other grasses.

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
		PUMPKIN	
Downy Mildew	*chlorothalonil* Ortho Garden Disease Control	0	Downy mildew arrives in Georgia in later June or July. Mainly a problem in wet years. Apply when disease threatens and every 7–10 days as needed.
	copper sulfate Dupont Copper Kocide 3000		See label.
	Phosphorous acid Agri-fos	0	
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Liquid Copper Spray		
Anthracnose, Gummy Stem Blight, Alternaria leafspot	*chlorothalonil* Ortho Garden Disease Control	0	Fungicides may not be needed for these diseases most years.
	copper sulfate Dupont Copper Kocide 3000		
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Liquid Copper		
Powdery Mildew	*chlorothalonil* Ortho Garden Disease Control	0	See label.
	copper sulfate Dupont Copper Kocide 3000	0	
	sulfur Safer Garden Fungicide		
	copper Bonide Liquid Copper Fungicide	Until day of harvest	
Viruses	No chemical control available.		Use reflective mulches, plant resistant varieties, plant earlier in season, watch for insect vectors (such as aphids, whiteflies, and thrips).
		SPINACH	
Anthracnose & Cercospora Leafspot	*copper sulfate* Dupont Copper Kocide 3000	0	Begin at first sign of disease and repeat every 7 days.
Downy Mildew, White Rust	*copper* Bonide Copper Spray, or Liquid Copper	0	Keep foliage as dry as possible. See label.
	copper sulfate Dupont Copper Kocide 3000		

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
		SQUASH	
Anthracnose, Downy Mildew, Cercospora	*chlorothalonil* Ortho Garden Disease Control	0	Downy mildew arrives in Georgia in later June or July. These are mainly disease problems in wet years. Apply when disease threatens and every 7–10 days as needed.
	copper sulfate Dupont Copper Kocide 3000	0	
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Liquid Copper	0	
Powdery Mildew	*chlorothalonil* Ortho Garden Disease Control	0	
	sulfur Safer Garden Fungicide		See label.
	copper sulfate Dupont Copper Kocide 3000	0	
	copper Bonide Liquid Copper Fungicide	Until day of harvest	
Viruses	No chemical control available.		Plant earlier in the season to avoid high insect populations. Row covers provide early-season protection. Select resistant varieties.
		TOMATO	
Anthracnose, Early Blight, Gray Leaf Spot, Late Blight, and Septoria Leaf Spot	*chlorothalonil* Ortho Garden Disease Control	0	See label. Late blight is a rare problem in Georgia. Early blight (Alternaria) and Septoria leaf spot diseases can defoliate susceptible cultivars in a wet year. Start treatment when first spots appear on lower foliage and continue treating during wet and humid periods. Use cultivars with resistance.
	copper Bonide Copper Spray, or Liquid Copper		
	mancozeb Bonide Mancozeb Flowable		
Bacterial Speck (Pseudomonas) and Leaf Spot (Xanthomonas)	*copper sulfate* Dupont Copper Kocide 3000	0	May cause some defoliation in a wet year. Usually not a problem in home gardens.
	copper Bonide Copper Spray, or Liquid Copper	0	
		TURNIPS	
Cercospora, Cercosporella, Anthracnose, and Powdery Mildew	*copper* Bonide Copper Spray, or Liquid Copper	0	Do not make more than 3 applications per growing season.
	sulfur Sulfur	0	
		TURNIPS, MUSTARD & COLLARDS	
Alternaria Leafspot and Downy Mildew	*Copper* Bonide Copper Spray, or Liquid Copper	0	
	Sulfur	0	
Powdery Mildew	Wettable *Sulfur* 95%	0	Begin at first sign of disease. Apply every 7–10 days.

COMMODITY DISEASE	*ACTIVE INGREDIENT* BRAND NAME	PHI (DAYS)	METHOD, SCHEDULE REMARKS
WATERMELON			
Anthracnose, Gummy Stem Blight	*chlorothalonil* Ortho Garden Disease Control	0	See label. Usually not a problem most years. Wet conditions may bring on disease. Apply every 7–10 days as needed.
	copper sulfate Dupont Copper Kocide 3000	0	
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Liquid Copper	0	
Bacterial Fruit Blotch			Copper fungicide may not help. Rely on good quality seeds or transplants.
Downy Mildew	*chlorothalonil* Ortho Garden Disease Control	0	Downy mildew arrives in Georgia in later June or July. Mainly a problem in wet years. Apply when disease threatens and every 7–10 days as needed.
	copper sulfate Dupont Copper Kocide 3000	0	
	phosphorous acid Agri-fos	5	
	mancozeb Bonide Mancozeb Flowable	5	
	copper Bonide Liquid Copper	0	
Fusarium Wilt	No chemical control.		Grafted plants are available commercially, which are resistant to Fusarium wilt pathogen.
Powdery Mildew	*chlorothalonil* Ortho Garden Disease Control	0	
	copper Bonide Liquid Copper Fungicide	0	
	sulfur Safer Garden Fungicide		See label.

Always check label for proper rates.

WEED CONTROL IN HOME VEGETABLE GARDENS

Jenna C. Vance, Extension Weed Science
A. Stanley Culpepper, Extension Weed Scientist

CULTURAL MANAGEMENT OPTIONS		
OPTION	**CROP**	**REMARKS AND PRECAUTIONS**
Cultivation	All vegetable crops	Mechanical tillage between the crop rows can effectively remove weeds in row middles. Cultivation should occur when weeds are small (≤ 3 in) and when rain or irrigation is not expected for at least 48 hours. Plow width can be adjusted to accommodate crop sizes. Avoid throwing dirt onto the crop.
Tine Weeder	All vegetable crops	Mechanical weed control should occur when weeds are small (< 1 in). Repeated timely applications will be necessary. Tines can damage certain crops, use caution. Tines can be adjusted to avoid harming the crop.
Inversion, Deep Tillage, Moldboard Plow	All vegetable crops	Many small-seeded weeds such as pigweeds, purslane, and ryegrass can only emerge from the top few inches of the soil surface. Placing vulnerable seeds at a depth of at least 4 inches will significantly reduce emergence of those seeds. Proper care must be taken to ensure the top of the soil profile is truly inverted. Deep turning must be correlated with seed survival among species, but most data suggests deep turning once every 3-5 years for susceptible weeds.
Mulching	All vegetable crops	The use of natural and plastic mulches can effectively prevent the emergence of most weeds, with the exception being nutsedge. Holes made in the mulch for vegetable planting will allow weed emergence in those disturbed areas.

APPLICATION/ TIMING	HERBICIDE	CROPS	REMARKS AND PRECAUTIONS
Pre-plant	*glyphosate* Roundup PowerMax 3, Glystar Plus, FarmWorks 41% Glyphosate Grass and Weed Killer Concentrate, FarmWorks 53.8% Glyphosate,Compare-N-Save 41% Glyphosate Grass and Weed Killer Concentrate, Farm General 41% Glyphosate See label for specific product used Make certain to use labeled products containing *glyphosate* as the only active ingredient!	Beans, Garden Beets, Broccoli, Brussels Sprouts, Cabbage, Carrot, Cauliflower, Celery, Collards, Garlic, Kale, Lettuce, Mustard Greens, Okra, Onion, Peas, Potato (Irish and sweet), Spinach, Tomato, and Turnip Cantaloupe, Cucumber, Eggplant, Gourds, Melons (all), Muskmelon, Peppers, Pumpkin, Squash (summer, winter), Tomato, and Watermelon See label for use on additional crops.	Controls most annual weeds and suppresses or controls many perennial weeds. A rate of 0.75 lb ae/A will control most weeds but rate can be increased up to 1.5 lb ae/A. For hand sprayers, 0.75 to 2% *glyphosate* solution and spraying the weed leaf surface until wet will likely be effective; drift on sensitive crops will likely be detrimental. See label for specific details on rates and weeds controlled. **For seeded crops on bareground**: Allow at least three days after application before seeding plus an irrigation/rainfall of 0.5 inch is advised after application and before planting. **For transplants on bareground**: If the soil is not tilled after application and before planting, apply no more than 0.75 lb ae/A of this product in a single application, and allow for a minimum accumulation of 0.5 inch of rainfall or overhead irrigation, and wait seven or more days between application and transplanting. Make no more than one application within two weeks of transplanting. **For seeded or transplants in plastic mulch**: Wait three or more days before planting following a single application at up to 0.75 lb ae/A or wait ten or more days following a single application up to 1.5 lb ae/A, AND allow for a single rainfall or irrigation event of at least 0.5 inch between application and planting. Make sure to punch new holes in mulch, not within four inches of tears or old holes.

APPLICATION/ TIMING	HERBICIDE	CROPS	REMARKS AND PRECAUTIONS
Pre-plant incorporated, pre-emergence, or post-emergence	*trifluralin* Weed Preventer, others See label for specific product used	**From seed**: Black eyed peas, Broccoli, Brussels Sprouts, Cabbage, Carrots, Cauliflower, Celery, Collard, Field Peas, Green Peas, Kale, Lentils, Lima Beans, Mustard Greens, Okra, Snap Beans, Southern Pea, Radish, and Turnip Greens	**DOES NOT CONTROL EMERGED WEEDS.** **From seed**: For residual control of annual grasses and small-seeded broadleaf weeds. Apply to prepared soil and incorporate 2 inches deep before planting. Be careful with use rate especially on broccoli, cabbage, cauliflower, turnip greens, mustard greens, collard and kale.
		Before transplanting: Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Celery, Eggplant, Pepper, and Tomato	**Before transplanting**: For residual control of annual grasses and small-seeded broadleaf weeds. Apply to prepared soil and incorporate 2 inches deep before planting.
		Post-emergence directed: Cantaloupe, Cucumber, and Watermelon	**Post-emergence directed**: Provides residual control of annual grasses and small-seeded broadleaf weeds. Apply after plants have developed at least 5 or more leaves. Apply between plants, taking care to limit spray drift on plants. If possible, irrigate for activation. Do not apply within 30 days of harvest, except for watermelon, which has a 60-day pre-harvest interval.
		After planting: Potato	Apply and incorporate after planting but before emergence or immediately following drag-off or after plants have fully emerged.
		Perennial vegetables: Asparagus	Apply to dormant asparagus in winter or early spring after removing mature ferns. Do not apply after new spears begin to emerge.
Post-emergence	*pendimethalin* Prowl 3.3 EC Prowl H20 3.8 AS	Onions (dry bulb only)	*Pendimethalin* will not control emerged weeds but will provide residual control for sensitive species. **Seedbed or direct seeded**: Apply when onions have 2–9 true leaves but prior to weed emergence. **Transplants**: Apply to onions after soil has settled (watered) around transplants and no cracks are present. Adding the herbicide 'Goal' would be beneficial if it can be obtained. Follow label closely. If no rainfall occurs within 2 days after application, irrigate as needed. Prowl 3.3 EC: 1.8–2.4 pt, Prowl H20: 1.5–2 pt. Use lower rates for applications to very young onions.
	pendimethalin Prowl H20 3.8 AS	Onions (green)	May be applied at 2 to 3 true-leaf stage at least 30 days before harvest. Do not irrigate more than 0.5 inch water and do not apply more than 2 pints per acre.
	clethodim Select Max	Broccoli, Cabbage, Cantaloupe, Carrots, Cauliflower, Celery, Cilantro, Collards, Cucumber, Eggplant, English Pea, Garden Beet, Garden Pea, Kale, Lettuce, Lima Bean, Okra, Onions, Pepper, Squash, Southern Pea, Sugar Beet, Tomato, and Turnip Greens	Does not control broadleaf weeds or sedges. Apply post-emergence over-the-top for control of emerged annual and perennial grasses. When using hand sprayers, mix ⅓ to ⅔% (0.44 oz to 0.85 oz per gal) and treat to wet vegetation. See label for adjuvant needs, adjuvants will increase crop injury. For broadcast applications see the label for rate and adjuvant recommendations; however, rates of 9 to 10 oz per acre are appropriate for nearly all applications to these crops. Follow the following pre-harvest intervals: *3 days*: okra *14 days*: cantaloupe, collards, cilantro, cucumber, kale, lettuce, pumpkin, spinach, turnip, watermelon *15 days*: radish *20 days*: eggplant, pepper, tomato *21 days*: English pea, garden pea, lima bean, snap bean, Southern pea *30 days*: broccoli, cabbage, carrots, cauliflower, celery, potato, sweet potato *40 days*: sugar beets *45 days*: onions

APPLICATION/ TIMING	HERBICIDE	CROPS	REMARKS AND PRECAUTIONS
Post-emergence (*continued*)	*sethoxydim* Poast 1.53 EC	Broccoli, Brussels Sprouts, Cabbage, Carrots, Cantaloupe, Cauliflower, Celery, Collard, Cucumber, Eggplant, Garlic, Green Pea, Kale, Leek, Lettuce (head and leaf), Lima Bean, Mustard, Okra, Onion, Pepper, Potato (Irish and sweet), Pumpkin, Spinach, Squash, Snap Bean, Southern Pea, Tomato, and Watermelon	Does not control broadleaf weeds or sedges. Apply postemergence over-the-top for control of emerged annual and perennial grasses at 1 pt/A or approximately 0.75 Tbsp/gal/1000 sq ft. Use a crop oil concentrate (adjuvant) at a rate of 1 qt/A or approximately 1.5 Tbsp/gal/1000 sq ft. Follow the following pre-harvest intervals: 3 days: cantaloupe, cucumber 7 days: pepper 14 days: mustard, okra, pumpkin, squash, watermelon 15 days: leaf lettuce, spinach, succulent beans, peas 20 days: eggplant, tomato 30 days: broccoli, brussels sprouts, cabbage, carrot, cauliflower, celery, collard, dry beans or peas, garlic, kale, leek, lettuce (head), potato, onion
	bentazon Basagran 4 SL	English Pea, Kidney Bean, Lima Bean, Navy Bean, Pinto Bean, Snap Bean, and Southern Pea	For post-emergence suppression of yellow nutsedge and control of some broadleaf weeds such as cocklebur and small flower morningglory. Does not control grasses. Apply when weeds are small and actively growing. Adjust rate according to weed size as suggested on label. Do not apply until after 3 pairs of leaves (or four nodes) are present. Do not apply when peas or beans are in bloom. Add adjuvant according to label. According to the label, Basagran cannot be applied alone and must be mixed with Raptor or Pursuit. However, neither Raptor nor Pursuit are labeled on all bean types; see label. Rate for Basagran 4L is 6–16 fluid ounces per acre while Basagran 5L rate ranges from 4.8 to 12.8 fluid ounces per acre. Do not apply to dry or succulent beans within 30 days of harvest, 30 days of dry pea harvest, or 10 days of succulent pea harvest.
Row middle	*glyphosate* Roundup PowerMax 3 5.88 SL	*Brassica*: Broccoli, Cabbage, Collard, Kale, and Mustard Greens *Bulb crops*: Garlic, Leek, and Onion *Cucurbits*: Cucumber, Melons, Pumpkin, Squash, and Watermelon *Leafy vegetables*: Celery, Lettuce (head and leaf), and Spinach *Fruiting vegetables*: Eggplant and Pepper *Legumes*: Lima Bean, Snap Bean, Southern Pea, English Pea, and Garden Pea *Roots and Tubers:* Beet, Carrot, Parsley, Radish, Rutabaga, and Potato (Irish and Sweet) *Other*: Globe Artichoke, Okra, and Sugar Beet See label for use on additional crops.	APPLY AS HOODED SPRAY in row middles or as a WIPER application in row middles. **DO NOT ALLOW HERBICIDE MIXTURE TO CONTACT ANY PART OF THE CROP INCLUDING THE ROOTS!** For crops that vine, applications must be made to row middles prior to vine development. Application must be made at least 14 days before harvest. May be applied as a POST-harvest application. Apply at least 30 days prior to planting any non-labeled crop. If applying over mulch of any type, the mulch must be washed off with 0.5 inch rain/irrigation prior to planting.
	trifluralin Treflan HFP	Cucurbits	Provides residual control of annual grasses and small-seeded broadleaf weeds. Apply after plants have reached the 3–4 leaf stage of growth. Apply as a directed spray between the rows. Avoid foliage contact as slight crop injury may occur. Do not apply within 30 days of harvest, except for watermelon, which has a 60-day pre-harvest interval.

APPLICATION/ TIMING	HERBICIDE	CROPS	REMARKS AND PRECAUTIONS
Row middle (*continued*)	*pendimethalin* Prowl H20 3.8 AS	bell pepper, broccoli, brussels sprouts, cabbage, cantaloupe, carrots, cauliflower, citron melon, eggplant, muskmelon, non-bell pepper, tomato, and watermelon	Provides residual control of annual grasses and small-seeded broadleaf weeds. Crops must be established, see label for exact size per crop. Apply as a directed spray between crop rows. Avoid foliage contact as slight crop injury may occur. Apply between 1 and 2 pts per acre. Follow the following pre-harvest intervals: 21 days: tomato 35 days: cantaloupe, citron melon, muskmelon, watermelon 60 days: broccoli, carrot 70 days: bell pepper, brussels sprouts, cabbage, cauliflower, eggplant, nonbell pepper