

Home Vegetable Garden Insect Control

VEGETABLE/INSECT	INSECTICIDE & FORMULATION L=Liquid, D=Dust, G=Granular	AMOUNT OF FORMULATION PER GALLON OF SPRAY (or as otherwise noted)*	MIN. INTERVAL (DAYS) BETWEEN LAST APPLICATION AND HARVEST	REMARKS AND PRECAUTIONS
ASPARAGUS				
asparagus beetle	carbaryl			
Japanese beetle	22.5% L	3 Tbsp	1	Treat fern and brush growth as beetles appear. Repeat applications as necessary up to 3 times prior to harvest or 5 times per crop but not more often than once every 7 days.
	permethrin 2.5% L 0.25% D	3 Tbsp Apply according to label	3 1-3 see label	Do not apply L more than 4 times per crop. Do not apply D more than 4 times per season.
BEANS - check product for specific beans				When available, insecticide-treated seeds should be used to avoid problems with seed corn maggots and other soil insect pests.
	malathion 50% L (Spectracide)	1 ½ to 2 tsp	1	Apply up to 2 times/yr. waiting at least 7 days between applications.
aphids	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
bean beetles (Mexican bean beetle, bean leaf beetle)	carbaryl 22.5% L	3 Tbsp	3 (fresh beans) 21 (dried beans)	For both fresh and dried beans repeat as necessary up to 4 times, but not more than once every 7 days.
	5 D	Apply according to label	3 (fresh beans) 21 (dried beans)	
	bifenthrin 0.3% & Zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	gamma cyhalothrin 0.08% L	Apply according to label.	7	Wait at least 7 days between each application. Do not apply more than 9 times per growing season.
corn earworm	carbaryl 22.5% L	3 Tbsp	3 (fresh beans) 21 (dried beans)	Repeat treatments at 7 day intervals may be needed on late beans. Do not treat fresh or dried beans more than 4 times per season.
	5 D	Apply according to label	3 (fresh beans) 21 (dried beans)	
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.

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BEANS (Cont'd) corn earworm	gamma cyhalothrin 0.08% L	Apply according to label.	7	Wait at least 7 days between each application. Do not apply more than 9 times per growing season.
	spinosad 0.5% L	4 Tbsp	3	Maximum of 6 applications per year. Wait 5 days before reapplying.
cowpea curculio	See peas.			
spider mites	Safer Brand Insect Killing Soap Concentrate II 49.52%	5 Tbsp	0	Begin at first signs of mites and off-color. Repeat applications may be needed, especially during hot weather. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
	malathion 50% L (Spectracide)	1 Tbsp	1	Apply up to 2 times/yr. waiting at least 7 days between applications.
stink bug	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
thrips, lima bean borer	spinosad 0.5%	4 Tbsp	3	Maximum of 6 applications per season; Wait 5 days before reapplying.
whitefly	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
BEETS, GARDEN flea beetles	carbaryl 22.5 % L	3 Tbsp	7	Repeat up to 6 times but not more often then once every 7 days.
BROCCOLI aphid	malathion 50% L (Spectracide)	1 ½ to 2 tsp	2	Apply up to 2 times/yr. waiting at least 7 days between applications.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.

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BROCCOLI (cont'd) aphid	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
cabbageworms	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label.	0	Treat as soon as damage is found and repeat weekly.
	esfenvalerate 0.425% L	As recommended on the label.	3	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	2 Tbsp Apply according to label.	1	Do not apply more than 8 applications of L and not more often than every 5 days. Do not apply D more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
stink bugs	carbaryl 22.5 % L	3 Tbsp	3	Repeat as necessary up to 4 times, but not more than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
BRUSSELS SPROUTS aphid	malathion 50% L (Spectracide)	1 ½ to 2 tsp	2	Apply up to 2 times/yr. waiting at least 7 days between applications.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
cabbageworms	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label.	0	Begin treatment when first noted and repeat weekly until harvest.

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BRUSSELS SPROUTS (cont'd) cabbageworms	permethrin 2.5% L 0.25% D	2 Tbsp Apply according to label.	1	Do not apply more than 8 applications of L and not more often than every 5 days. Do not apply D more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
CABBAGE aphid	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
cabbage maggot and cutworm	bifenthrin 0.115% G	Use 1 lb. product per 500 sq. ft.	7	A single application may be applied just prior to planting or after plants emerge and worked into the top 4 to 6 inches of soil.
cutworm	permethrin 0.25% D	Apply according to label.	1	Do not apply more than 5 times per season.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
cabbageworms	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label.	0	Good coverage is essential. Upper and lower leaves. Treat as soon as damage is found and repeat weekly until harvest.
	permethrin 2.5% L 0.25% D	2 Tbsp Apply according to label.	1	Do not apply L formulation more than 10 times. Do not apply D formulation more than 5 times per season for tight-heading varieties.
	esfenvalerate 0.425% L	As recommended on the label.	3	Wait at least 7 days between each application.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
flea beetles	carbaryl 22.5% L	3 Tbsp	3	On foliage, as needed Repeat as necessary up to 4 times, but not more than once every 7 days.
	permethrin 0.25% D	Apply according to label.	1	Do not apply more than 5 times per season.

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CABBAGE (cont'd) harlequin bug	carbaryl 22.5% L	3 Tbsp	3	Apply when necessary but not more than 4 times; wait at least 7 days between applications.
CANTALOUPE aphid	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
cucumber beetles	carbaryl 22.5% L	3 Tbsp	3	Repeat as necessary up to 6 times, but not more than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	As recommended on the label	0	Do not apply L more than 8 times per year. Do not apply D formulation more than 8 times per season. For use on adult beetles.
leafminer	spinosad 0.5% L	4 Tbsp	3	Maximum of 6 applications per season. Wait 5 days before reapplying.
pickleworm	carbaryl 22.5 % L	3 Tbsp	3	Late-planted cantaloupes are heavily attacked. Begin treatments at first bloom; repeat as necessary up to 6 times, but not more than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	As recommended on the label	0	Do not apply L formulation more than 8 times per year. Do not apply D formulation more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	3	Maximum of 6 applications per season; wait 5 days before reapplying.

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CANTALOUPE (cont'd) spider mite	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
COLLARDS aphid	malathion 50% L (Bonide)	3 tsp	7	Make 2 or more applications as needed. Apply when necessary, waiting at least 7 days between applications.
cabbageworms	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label	0	Begin treatments as soon as damage is found and repeat weekly until harvest.
	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
	spinosad 0.5%	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
flea beetles	carbaryl 22.5 % L	3 Tbsp	14	On foliage as needed. Repeat as necessary up to 4 times, but not more than once every 7 days.
	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
harlequin bug	malathion 50% L (Bonide)	1 Tbsp	7	Make 2 or more applications as needed. Apply when necessary, waiting at least 7 days between applications
	carbaryl 22.5% L	3 Tbsp	14	Repeat as necessary up to 4 times, but not more than once every 7 days.
CORN, SWEET corn earworm, fall armyworm, European corn borer	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	carbaryl 22.5% L	3 Tbsp	2	Begin treating when silks appear. Repeat with sprays directed at ears as necessary up to 8 times, but not more than once every 7 days.

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CORN, SWEET (cont'd) corn earworm, fall armyworm, European corn borer	cyfluthrin 0.75% L	Ready-to-spray formula	0	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply ready-to-spray more than 5 times per season nor concentrate more than 10 times.
	cyfluthrin 0.75% L	1 Tbsp	0	
	esfenvalerate 0.425% L	As recommended on the label.	1	
	permethrin 2.5% L 0.25% D	3 Tbsp Apply according to label	1	
	spinosad 0.5% L	4 Tbsp	1	
flea beetle	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	carbaryl 22.5% L	3 Tbsp	2	Early application on seedling corn is usually necessary. Repeat up to 8 times, but not more than once every 7 days. Application during pollen shed will seriously reduce bee populations.
	cyfluthrin 0.75% L	Ready-to-spray formula	0	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply ready-to-spray more than 5 times per season nor concentrate more than 10 times.
	cyfluthrin 0.75% L	1 Tbsp	0	
stink bug	cyfluthrin 0.75% L	Ready-to-spray	0	Do not spray more than 10 times per season.
CUCUMBER aphid	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F. Apply to cucumbers at night or during coolest part of day.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.

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CUCUMBER (Cont'd) cucumber beetle, squash bug	carbaryl 22.5% L	3 Tbsp	3	Apply Sevin late in the day to minimize killing pollinating insects. Repeat up to 6 times, but not more than once every 7 days.
	5 D	Apply according to label	3	
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	esfenvalerate 0.425% L	As recommended on the label.	3	For use on cucumber beetle adults. Wait at least 7 days between each application.
	malathion 50% L (Bonide)	3 tsp or 1 Tbsp	1	Apply when necessary, waiting at least 7 days between applications. Do not apply unless plants are dry.
	permethrin 2.5% L 0.25% D	As recommended on the label	0	For use on cucumber beetle adults. Do not apply more than 8 times per year.
spider mites	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F. Apply to cucumbers at night or during coolest part of day.
EGGPLANT aphids	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
	malathion 50% L (Bonide)	4 tsp	3	Apply treatment when aphids present and repeat when needed. Make 2 or more applications. Wait at least 7 days between each application
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
Colorado potato beetle	carbaryl 22.5% L	3 Tbsp	3	On foliage as needed. Repeat up to 7 times, but not more than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.

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EGGPLANT (cont'd) Colorado potato beetle	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	6 Tbsp Apply according to label	3	Do not apply L formulation more than 16 times. Do not apply D formulation more than 10 times per season.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
flea beetle	carbaryl 22.5% L	3 Tbsp	3	On foliage as needed. Repeat up to 7 times, but not more than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
lacebug	malathion 50% L (Bonide)	4 tsp	3	Wait at least 7 days between each application.
spider mite	malathion 50% L (Bonide)	4 tsp	3	Repeat treatments are often necessary. Do not use Kelthane! Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
stink bug	cyfluthrin 0.75% L	Ready-to-spray	7	Do not spray more than 6 times per season.
whitefly	pyrethrin (aerosol)		1	
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.

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EGGPLANT (cont'd) whitefly	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
LETTUCE aphid	malathion 50% L (Spectracide)	1 ½ to 2 tsp.	14	Apply up to 2 times/yr. Wait 6 days between application for head lettuce and 5 days for leaf lettuce.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
cabbageworms	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label	0	Begin treatments as soon as damage is found and repeat weekly until harvest.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	4 Tbsp Apply according to label	1	Apply every 5 to 10 days as needed, but do not apply L formulation more than 10 times per season. Do not apply D formulation more than 5 times per season.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
MUSTARD GREENS aphid	malathion 50% L (Bonide)	3 tsp	7	Wait at least 7 days between each application.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
caterpillars	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label	0	Begin treatments as soon as damage is found and repeat weekly or as necessary until harvest.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
flea beetles	carbaryl 22.5% L	3 Tbsp	14	Repeat up to 4 times, but not more than once every 7 days.

OKRA		Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
	aphids				
		permethrin 2.5% L	4 Tbsp	1	Every 5 to 10 days as needed, but do not apply L formulation more than 10 times per season.
	stink bug	carbaryl 22.5% L	3 Tbsp	3	Repeat up to 7 times, but not more than once every 7 days.
		cyfluthrin 0.75% L	Ready-to-spray	0	Do not spray more than 4 times per season.
ONIONS		malathion 50% L (Bonide)	2 ½ tsp	3	Wait at least 7 days between each application.
	thrips				
PEAS		malathion 50% L (Spectracide)	1 ½ to 2 tsp	3	Make up to 2 applications per yr. Wait at least 7 days between each application.
	aphid				
		Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
	cowpea curculio	esfenvalerate 0.425% L	As recommended on the label.	3 (fresh peas) 21 (dried peas)	Wait at least 7 days between each application.
	European corn borer	carbaryl 22.5% L	3 Tbsp	3 (fresh peas) 21 (dried peas)	This insect is a more serious pest on late peas. Treat 1 to 2 weeks prior to bloom. Repeat applications as necessary up to 4 times, but not more often than once every 7 days.
		esfenvalerate 0.425% L	As recommended on the label.	3 (green peas) 21 (dried peas)	Wait at least 7 days between each application.
	lesser cornstalk borer	spinosad 0.5% L	4 Tbsp	3	Maximum of 6 applications per season. Wait 5 days before reapplying.
		spinosad 0.5% L	4 Tbsp	3	A problem on late peas. Maximum of 6 applications per season; wait 5 days before reapplying.
	stink bug	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
PEPPER		bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	7	Wait at least 7 days between each application.
	aphid				

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PEPPER (cont'd) aphids	malathion 50% L (Bonide)	2 ½ tsp	3	Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
armyworms, cabbage loopers, corn earworms, leafminers	cyfluthrin 0.75% L	Ready-to-spray formula	7	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply more than 6 times per season.
	cyfluthrin 0.75% L	1 Tbsp	7	
	permethrin 0.25% D	Apply according to label	3	Do not apply more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season; wait 4 days before reapplying.
flea beetle	carbaryl 22.5% L	3Tbsp	3	Repeat applications as necessary up to 7 times, but not more often than once every 7 days.
European corn borer	carbaryl 22.5% L	3 Tbsp	3	Spray plants thoroughly, especially pepper caps, every 7 days after blossoms appear and fruit forms, but not more than 7 times.
	cyfluthrin 0.75% L	Ready-to-spray formula	7	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply more than 6 times per year.
	cyfluthrin 0.75% L	1 Tbsp		
	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25%D	4 Tbsp Apply according to label	3	Do not apply more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
stink bug	cyfluthrin 0.75% L	Ready-to-spray	7	Do not spray more than 6 times per season.
POTATOES, IRISH aphid	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
Colorado potato beetle	malathion 50% L (Bonide)	1 ½ tsp	0	Wait at least 7 days between each application.

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POTATOES, IRISH (cont'd) Colorado potato beetle	permethrin 2.5% L 0.25% D	3 Tbsp Apply according to label	7 14	Do not apply L formulation more than 12 times. Do not apply D formulation more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	7	Maximum of 6 applications per season. Wait 7 days before reapplying.
flea beetle, leafhoppers	carbaryl 22.5% L 5 D	3 Tbsp Apply according to label	7 6	Repeat applications as necessary up to 6 times, but not more often than once every 7 days.
	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
potato tuberworm	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	3 Tbsp Apply according to label	7 7-14 see label	Do not apply L formulation more than 12 times. Do not apply D formulation more than 8 times per season.
	spinosad 0.5% L	4 Tbsp	7	Maximum of 6 applications per season. Wait 7 days before reapplying.
RADISHES aphid	malathion 50% L (Spectracide)	1 ½ to 2 tsp	7	Make up to 3 applications per year. Wait at least 7 days between each application.
	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
cutworms	cyfluthrin 0.75% L	Ready-to-spray formula	0	Do not apply more than 5 times per season.
	cyfluthrin 0.75% L	1 Tbsp		
	esfenvalerate 0.425% L	As recommended on the label.	7	Wait at least 7 days between each application.
flea beetles	carbaryl 22.5% L 5 D	3 Tbsp Apply according to label	7 7	Do not apply L formulation more than 6 times. Do not apply D formulation more than 4 times per season.
	cyfluthrin 0.75% L	Ready-to-spray formula	0	Do not apply more than 5 times per season.
	cyfluthrin 0.75% L	1 Tbsp		

VEGETABLE/INSECT	INSECTICIDE & FORMULATION L=Liquid, D=Dust, G=Granular	AMOUNT OF FORMULATION PER GALLON OF SPRAY (or as otherwise noted)*	MIN. INTERVAL (DAYS) BETWEEN LAST APPLICATION AND HARVEST	REMARKS AND PRECAUTIONS
SQUASH & PUMPKIN aphid	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	malathion 50% L (Bonide)	3 tsp	3 Pumpkin 1 squash	Do not apply unless leaves are dry. Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For summer squash. For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F.
cucumber beetles, flea beetles	carbaryl 22.5% L	3 Tbsp	3	Apply Sevin late in the day to minimize killing pollinating insects. Leaf injury may occur if tender foliage is wet or humidity is high. Repeat applications as necessary up to 6 times, but not more often than once every 7 days.
	5 D	Apply according to label	3	
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	esfenvalerate 0.425% L	As recommended on the label.	3	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	4 Tbsp Apply according to label	0 0	Do not apply L more than 8 times per year. Do not apply D more than 8 times per season.
leafminer	spinosad 0.5% L	4 Tbsp	3	Maximum of 6 applications per season. Wait 5 days before reapplying.
pickleworm, squash vine borer	carbaryl 22.5% L	3 Tbsp	3	Treat when damage to blossoms or other plant parts is noticed. More of a problem on late squash than early. Direct sprays at base of plants for vine borer control. Repeat applications as necessary up to 6 times, but not more often than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	esfenvalerate 0.425% L	As recommended on the label.	3	Wait at least 7 days between each application.
	permethrin 0.25% D	Apply according to label	0	Do not apply more than 8 times per season.

VEGETABLE/INSECT	INSECTICIDE & FORMULATION L=Liquid, D=Dust, G=Granular	AMOUNT OF FORMULATION PER GALLON OF SPRAY (or as otherwise noted)*	MIN. INTERVAL (DAYS) BETWEEN LAST APPLICATION AND HARVEST	REMARKS AND PRECAUTIONS
SQUASH & PUMPKIN (cont'd) pickleworm, squash vine borer	spinosad 0.5% L	4 Tbsp	3	Maximum of 6 applications per season; wait 5 days before reapplying.
squash bug	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
	esfenvalerate 0.425% L	As recommended on the label.	3	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	As recommended on the label	0	Do not apply more than 8 times per season.
stink bug	cyfluthrin 0.75% L	Ready-to-spray	0	Do not spray more than 4 times per season.
TOMATO aphid	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
	malathion 50% L (Spectracide)	1 ½ to 2 tsp	1	Make up to 4 applications per yr. at least 5 days apart.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F. Apply to cucumbers at night or during coolest part of day.
beetles, blister beetles	carbaryl 22.5% L 5 D	3 Tbsp Apply according to label	3 3	Flea beetles are more destructive on new set plants. Blister beetles are more common later in the season. Repeat applications as necessary up to 7 times, but not more often than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
	gamma cyhalothrin 0.08% L	Apply according to label.	5	Wait at least 7 days between each application. Do not apply more than 9 times per growing season.

VEGETABLE/INSECT	INSECTICIDE & FORMULATION L=Liquid, D=Dust, G=Granular	AMOUNT OF FORMULATION PER GALLON OF SPRAY (or as otherwise noted)*	MIN. INTERVAL (DAYS) BETWEEN LAST APPLICATION AND HARVEST	REMARKS AND PRECAUTIONS
TOMATO (cont'd) cutworms	cyfluthrin 0.75% L	Ready-to-spray formula	0	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply more than 6 times per season.
	cyfluthrin 0.75% L	1 Tbsp		
	carbaryl 22.5% L	3 Tbsp	3	Mix in enough water to get sufficient coverage of plants and soil around plants. Repeat applications as necessary up to 7 times, but not more often than once every 7 days.
	esfenvalerate 0.425% L	As recommended on the label.	1	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	3 Tbsp As recommended on the label	0 0	Do not apply L formulation more than 8 times per season. Do not apply D formulation more than 6 times per year.
Colorado potato beetle	carbaryl 22.5% L	3 Tbsp	3	Repeat applications as necessary up to 7 times, but not more often than once every 7 days.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	3 Tbsp As recommended on the label	0	Do not apply L formulation more than 8 times per season. Do not apply D formulation more than 6 times per year.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season; wait 4 days before reapplying.
leafminer	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season; wait 4 days before reapplying.
spider mite	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	No more than 3 applications in 2 weeks. Do not apply in heat of day when leaf temp above 90F.
	malathion 50% L (Spectracide)	1 Tbsp	1	Make up to 4 applications per yr. at least 5 day s apart.
stink bug and leaf-footed bug	carbaryl 22.5% L	3 Tbsp	3	Repeat applications as necessary up to 7 times, but not more often than once every 7 days.
	cyfluthrin 0.75% L	Ready-to-spray formula	0	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply more than 6 times per season.
	cyfluthrin 0.75% L	1 Tbsp		
	permethrin 0.25% D	Apply according to label	0	Do not apply more than 6 times per season.

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TOMATO (cont'd) stink bug and leaf-footed bug	esfenvalerate 0.425% L	As recommended on the label.	1	Wait at least 7 days between each application.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
tomato fruitworm and hornworm	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label	0	Begin treatments when damage is first noted and repeat weekly until harvest. Handpicking of hornworms is often sufficient if few plants are involved.
	carbaryl 22.5% L	3 Tbsp	3	Repeat applications as necessary up to 7 times, but not more often than once every 7 days.
	cyfluthrin 0.75% L cyfluthrin 0.75% L	Ready-to-spray formula 1 Tbsp	0	Apply to flowering plants during early morning or late evening, when bees are not present. Do not apply more than 6 times per season.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
	esfenvalerate 0.425% L	As recommended on the label.	1	Wait at least 7 days between each application.
	permethrin 2.5% L 0.25% D	3 Tbsp As recommended on the label	0 0	Do not apply L formulation more than 8 times per season. Do not apply D formulation more than 6 times per year.
	spinosad 0.5% L	4 Tbsp	1	Maximum of 6 applications per season. Wait 4 days before reapplying.
whitefly	Pyrethrin (aerosol)	According to label	0	Inspect undersides of leaves when purchasing transplants. Do not buy if whiteflies are observed. Spray underside of leaves; repeated weekly applications needed for control.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	No more than 3 applications in 2 weeks. Do not apply in heat of day when leaf temp above 90F.

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TOMATO (cont'd) tomato pinworm	spinosad 0.5%	4 Tbsp	1	Maximum of 6 applications per season; wait 4 days before reapplying.
	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	1	Wait at least 7 days between each application.
TURNIPS				
aphid	malathion 50% L (Bonide)	3 tsp	3	On foliage as needed. Wait at least 7 days between each application.
caterpillars	Bacillus thuringiensis subsp. kurstaki (Dipel, Thuricide and other formulations)	As recommended on the label	0	Begin treatment when damage is first found and repeat weekly until harvest.
flea beetles, harlequin bug	carbaryl 5 D	Apply according to label	7 (roots) 14 (tops)	See label for application restrictions. Maximum applications per season are not to exceed 4.
WATERMELON				
aphid	bifenthrin 0.3% & zeta-cypermethrin 0.075% L	RTS	3	Wait at least 7 days between each application.
aphid	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	For suppression. Repeat applications may be needed. Repeat at weekly to biweekly intervals up to 3 times. Do not make more than 3 sequential applications over a 2 week period. Do not apply during heat of day or when temps exceed 90F
cucumber beetles	carbaryl 22.5% L	3 Tbsp	3	Apply late in the day to minimize killing pollinating insects. Repeat applications as necessary up to 6 times, but not more often than once every 7 days.
	5D	Apply according to label	3	
	permethrin 2.5% L 0.25%D	As recommended on the label	0	
rindworms	See pickleworms on cantaloupes, but check label to ensure watermelon is listed.			
spider mite	Safer Brand Insect Killing Soap Concentrate II 49.52% L	5Tbsp	0	No more than 3 applications in 2 weeks. Do not apply in heat of day when leaf temp above 90F.
thrips	spinosad 0.5%	4 Tbsp	3	Maximum of 6 applications per season; wait 5 days before reapplying.

* Rates vary according to manufacturer; read the label to determine the correct rate for the product chosen.

NOTE: Slugs and snails can be controlled in home gardens using iron phosphate (Sluggo, Escar-Go!, Worry Free) or metaldehyde baits. Do not contact plant material with slug baits. Consult the label for specific vegetables it can be used on. Grasshoppers and crickets can be controlled in the home garden using a 5% Sevin bait.

A single application of 0.115% bifenthrin (Hi-Yield Vegetable & Ornamental Insect Control Granule, or Heavy Weight Multi Insect & Fire Ant Killer) applied just prior to planting or after plants emerge and worked into the top 4 to 6 inches of soil **may** protect seedlings from wireworms, fire ants or other soil insects. Use 1.0 lb. of product for a 400 to 500 sq. ft. area, see label for rate.

Fire Ants

Ants occasionally feed on vegetable plants in home gardens. They tunnel into potatoes underground and feed on okra buds and developing pods. The worst damage usually occurs during hot, dry weather. Ants may also be a nuisance to gardeners during weeding and harvesting. See our fire ant web site <http://fireants.utk.edu> or the eXtension web site at <http://www.extension.org/fire+ants> for more information on managing fire ants.

Fire ant treatment options

- * A bait, Extinguish (methoprene), is labeled for cropland. Another fire ant bait, Esteem (pyriproxyfen), is labeled for some crops such as broccoli, cabbage, cauliflower, kale, mustard greens, cucumber, pumpkins, squash, melons, okra, pepper, tomato, etc. Extinguish and Esteem are insect growth regulators and may require several months to work. Fertlome Come and Get It Fire Ant Killer (spinosad) and Payback Fire Ant Bait with spinosad (OMRI approved) labels list home garden plants and may require a few weeks to work.
- * Hi-Yield Vegetable & Ornamental Insect Control Granule, or Bonide Eight Insect Control Flower & Vegetable Above & Below Soil Insect Granules (bifenthrin) or Monterey Garden Insect Spray (spinosad, OMRI listed) may be used as an individual mound treatment in a variety of crops such as tomatoes, sweet corn, green peas, sugar snap peas, snow peas, green beans (wax beans, snap beans), dry beans (black-eyed peas, cow pea), cucumber, gourds, muskmelon, pumpkin, squash, and watermelon, broccoli, Chinese broccoli, cabbage, cauliflower, kohlrabi, Chinese mustard, eggplant, head lettuce, and peppers (bell and non-bell). GreenLight Lawn and Garden Spray₂ (OMRI listed) is also registered for a variety of home garden plants.
- * Ant mounds can be shoveled out of the garden or treated with very hot water, taking care not to disturb or treat the garden plants. Caution should be taken to prevent hot water and/or steam from injuring the applicator.
- * Since most other baits are not registered for use inside gardens, those baits can be applied around the garden perimeter. Foraging ants from colonies both inside and outside the garden will collect the bait and take it to their colonies.
- * To prevent ants from entering a garden, apply insecticidal spray or granules around the perimeter of the garden as a barrier, and treat individual mounds near the garden as needed.

Listed below are some of the products used to give rate recommendations in the previous tables.

These are suggested products, other products do exist. If you are unable to find the product listed, but can find the active ingredient and formulation, always check the label on the pesticide container to ensure the formulation chosen can be used on the pest or site needed. As always, follow the label directions when applying pesticides.

Active Ingredient	Trade Name & Web Site
bifenthrin 0.115% G	Heavy Weight Multi-Insect & Fire Ant Killer http://www.kellysolutions.com/erenewals/documentsubmit/KellyData%5COK%5Cpesticide%5CProduct%20Label%5C75111%5C228-496-75111%5C228-496-75111_Heavy_Weight_Multi_Insect_Fire_Ant_Killer_Granules_F_3_Months_5_14_2009_2_51_26_PM.pdf
bifenthrin 0.3% & zeta-cypermethrin 0.075% L RTS	Ortho Bug-B-Gon® Insect Killer for Lawns & Gardens Ready-to-Spray ₁
bifenthrin 0.1% G	Hi-Yield Vegetable & Ornamental Insect Control Granules http://www.fertilome.com/ProductFiles/32327%20Veg%20Orn%20Insect%20Control%20Approved%2007-06-11.pdf
bifenthrin 0.115% G	Bonide Eight Insect Control Flower & Vegetable Above & Below Soil Insect Granules, http://www.kellysolutions.com/erenewals/documentsubmit/KellyData/OK/pesticide/Product%20Label/4/53883-194-4/53883-194-4_Bonide_Eight_Insect_Control_Flower_Vegetable_Above_Below_Soil_Insect_Granules_2_8_2013_1_46_24_PM.pdf
carbaryl 22.5% L	GardenTech Sevin Concentrate Bug Killer http://www.gardentech.com
carbaryl 5% D	GardenTech Sevin-5 Ready-To-Use 5% Dust Bug Killer http://www.gardentech.com
cyfluthrin 0.75% L	Bayer Advanced Vegetable & Garden Insect Spray, Concentrate http://www.bayeradvanced.com
cyfluthrin 0.75% L (RTS)	Bayer Advanced Vegetable & Garden Insect Spray, Ready-to-spray (hose end sprayer) http://www.bayeradvanced.com
esfenvalerate 0.425% L	Monterey_Bug_Buster_II http://216.119.118.152/documents/public/products/BugBusterII-2column(01)-Bilingual.pdf
gamma-cyhalothrin 0.08%	Spectracide Triazicide Insect Killer for Lawns & Landscapes, Concentrate http://www.spectracide.com/Products-and-Solutions/Outdoor-Insect-Killer.aspx
malathion 50% L	Bonide Malathion Insect Control Concentrate http://www.bonide.com/
malathion 50% L	Spectricide Malathion Insect Spray Concentrate http://www.spectracide.com/Customer-Help/Labels-and-MSDS.aspx

Active Ingredient	Trade Name & Web Site
permethrin 2.5% L	Bonide® Eight Insect Control Vegetable, Fruit and Flower Concentrate http://www.bonideproducts.com
permethrin 0.25% D	Bayer Advanced Vegetable & Garden Insect Dust http://www.bayeradvanced.com KGRO Garden Dust for asparagus (3 day REI for asparagus) http://www.kellysolutions.com/erenewals/documentsubmit/KellyData%5COK%5Cpesticide%5CProduct%20Label%5C4%5C4-430%5C4-430_KGRO_Garden_Dust_2_8_2013_1_38_41_PM.pdf
potassium salts of fatty acids	Safer Brand Insect Killing Soap Concentrate II http://www.saferbrand.com
spinosad 0.5% L	Ferti-lome Borer, Bagworm, Tent Caterpillar and Leafminer Spray http://www.fertilome.com/ProductFiles/10081%20Borer%20Bagworm%20Approved%2003-10-10.pdf
spinosad 0.5% L	Monterey Garden Insect Spray http://216.119.118.152/documents/public/products/MontereyGardenInsectSpray-2-column-(08)-0111-Bilingual.pdf

PRECAUTIONARY STATEMENT

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

DISCLAIMER STATEMENT

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label takes precedence over the recommendations found in this publication. Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), The University of Tennessee Institute of Agriculture and the University of Tennessee Extension assume no liability resulting from the use of these recommendations.