

Chemical Control of Nursery Pests

Bee warning Read carefully before applying any material selected for use. Many insecticides are highly toxic to honeybees. Some should not be applied any time during bloom, while many others should be applied only in the early morning hours and/or late in the evening. Avoid spraying carbaryl and diazinon on plant surrounded by blooming flowers or weeds. Always take simple steps, such as removing (mowing) blooming clover from lawns adjacent to garden areas before applying materials that are hazardous to bees. In all cases, when given the choice, select the least hazardous material when plants in the infested vicinity are in bloom. Avoid using dusts wherever possible; spray formulations are preferred for bee safety.

Protect pollinators: See How to Reduce Bee Poisoning from Pesticides.

Note: Products are listed by alphabetical order and not in order of preference or superiority of pest control.

For greenhouse plant see:
Greenhouse Ornamental Pests
Characteristics of Insecticides

Using pyrethroid insecticides is associated with subsequent spider mite outbreaks: monitor plant closely after you use these materials.

Pesticides available for use in commercial nursery applications

Active ingredient	Trade name (examples)	Chemical class	Typical use pattern
abamectin	Avid, Lucid	acyclic lactone	translaminar systemic
acephate	Acephate, Orthene	organophosphate	foliar systemic
acequinocyl	Shuttle	nathoquinone	spider mite
acetamiprid	Tristar	chloro-nicotinyl	whitefly, aphid, adelgid, scale, psyllid, mealybug, leafhopper, thrips, leafminer, plant bug, leaf eating beetles, fungus gnat larvae
alpha-cypermethrin	Fendona CD	synthetic pyrethroid	aphid, lepidoptera, flea beetle, webworm, grasshopper, plant bug, spittlebug
azadirachtin	Amazin (organic) Azatin, Aza-Direct (OMRI), Azatrol (OMRI) Ornazin	terpenoid: insect growth regulator	immature stages of insects antifeedant, biopesticide.
<i>Bacillus thuringiensis</i>	various (organic labels available)	microbial	specific, depends on variety; biopesticide
<i>Beauveria bassiana</i>	Botanigard, Mycotrol, Naturalis L	fungus	whitefly, aphid, psyllid, thrips, weevil, mealybug
beta-cyfluthrin	Tempo	pyrethroid	aphid, caterpillar
bifenazate	Floramite	carbazate	spider mite—good coverage is especially important; compatible with predacious mite.
bifenthrin	Menace, Talstar, Wisdom, many labels	pyrethroid	general, check label; most are restricted use pesticides.
bifenthrin/imidacloprid	Atera, Bithor	pyrethroid/neonicotinoid	combination product; systemic, check label for pests.
buprofezin	Talus	insect growth regulator	scale, whitefly, mealybug, leafhopper, pear psylla acts on immature stages.
<i>Burkholderia</i> spp.	Venerate XC (OMRI)	bioinsecticide	loopers, aphids, mites, thrips, whiteflies, armyworms
carbaryl	Sevin	carbamate	general, check label for pest list.
chlorfenapyr	Pylon	pyrroles	spider mites
chlorantraniliprole	Acelepryn	anthranilic diamide	caterpillar, aphid, lace bug, birch leafminer, beetle, borers

Pesticides available for use in commercial nursery applications

Active ingredient	Trade name (examples)	Chemical class	Typical use pattern
chlorpyrifos	Dursban	organophosphate	general, check label for pest list; restricted use pesticide.
<i>Chromobacterium</i>	Grandevo	microbial	general, check label for pest lift.
canola oil	Earth-Tone Horticultural Oil (organic)	botanical oil	
citronella/farneson/geraniol/nerolidol	Biomite	botanical	mite
clarified hydrophobic extract of neem oil	Triact (OMRI), Trilogy (OMRI)	botanical oil	fungicide, miticide, insecticide, whitefly, mealybug, aphid, leafhopper
clofentezine	Ovation	tetrazine	spider mite
clothianidin	Arena	neonicotinoid	aphid, mealybug, whitefly, adelgid, lacebug, leaf beetle, psyllid, root weevils, systemic
cryolite	Cryolite Bait	inorganic	caterpillar, root weevil
cyantraniliprole	Mainspring	raynoid	plant bug, lepidopera, soft scale, thrips, whitefly, Japanese beetle
cyflumetofen	Sultan Miticide		spider mite
cyfluthrin	Decathlon	pyrethroid	general – check label; restricted use pesticide.
cyfluthrin/imadcloprid	Discus	pyrethroid/neonicotinoid	general – check label; combination product; systemic; restricted use pesticide.
cyfluthrin/piperonyl butoxide/pyrethrins	1600 X-clude	pyrethroid/synergist/pyrethrins	general – check label combination product; restricted use pesticide.
cypermethrin	Cyper TC, Enforcer	pyrethroid	ant, silverfish, sowbug greenhouse, seedhouse, and commercial building treatments; restricted use pesticide.
cyromazine	Citation	triazine: insect growth regulator	acts on immature fungus gnat, leaf miner, shore fly.
deltamethrin	Deltagard GC	pyrethroid	general – check label; restricted use.
diazinon	Diazinon	organophosphate	general; restricted use pesticide.
diflubenzuron	Dimilin 4L	benzoylphenylurea : insect growth regulator	acts on immature stages, conifer nursery; restricted use pesticide.
dimethoate	Dimethoate	organophosphate	general – check label; systemic.
dinotefuran	Safari	neonicotinoid	aphid, mealybug, whitefly, fungus gnat, weevil, psyllid, borer, thrips, scale; systemic.
emamectin benzoate	Enfold		
entomopathogenic nematode (live)	<i>Heterorhabditis</i> spp., <i>Steinernema</i> spp.	microbial	soil pests such as root weevil.
esfenvalerate	Fenvastar EcoCap, Onslaught FastCap	pyrethroid	spiders, scorpions, check label for other pests.
ethoprop	Mocap	organophosphate	nematode, symphytan, field nurseries only, pre-plant only: Easter lilies (Curry County, OR); SLN OR-120005.

Pesticides available for use in commercial nursery applications

Active ingredient	Trade name (examples)	Chemical class	Typical use pattern
etoxazole	TetraSan	oxazolin; insect growth regulator	spider mite
fenazaquin	Magus Miticide	quinazoline	spider mite, whitefly
fenbutatin oxide	Vendex, Meraz	organotin	spider mite
fenpropathrin	Tame 2.4 EC	pyrethroid	general – check label; restricted-use pesticide
fenpyroximate	Akari	phenoxy pyrazole	spider mite, broad mite, cyclamen mite, eriophyid mite, mealybug
fenvalerate	Onslaught	synthetic pyrethroid	lepidoptera, aphid, plant bug, sawfly, spittlebug, thrips
flonicamid	Aria Insecticide	pyridinecarboxamide	aphid, thrips, whitefly, scale leafhopper, mealybug
flupyradifurone	Altus	butenolides	leafminer, leafhopper, mealybug, lace bug, scale, whitefly, aphid
garlic oil/powder/cottonseed oil/oil of clove	Pestout (OMRI)	botanical	mite
hexythiazox	Hexagon	organosulfur	spider mite, ovicidal, larvicidal
hydramethylnon	Amdro, MaxForce		ant
imidacloprid	Imidacloprid, Marathon	chloronicotinyl	general – check label; systemic
indoxacarb	Provaunt	carbamate	caterpillar, sawfly, leafhopper
iron phosphate	Bug-N-Sluggo		slug, snail
<i>Isaria fumosorosea</i> strain 97	Preferal Microbial Insecticide	microbial	general – check label
kaolin	Surround (OMRI)	clay	may leave residue
lambda-cyhalothrin	Cyonara , Scimitar GC	pyrethroid	general – check label; restricted use pesticide
limonene	Orange Guard	botanical, monoterpene	aphid, spider mite
malathion	Malathion 5EC, Fyfanon, Prentox	organophosphate	check label for non-tolerant plant
metaldehyde	Metaldehyde	aldehyde molluscicide	slug, snail
<i>Metarhizium anisopliae</i> strain 52	Met 52	biological, fungus	root weevil grubs
methidathion	Supracide	organophosphate	aphid, scale, leafminer, moth, weevil; restricted use pesticide
methiocarb	Mesurol	carbamate	slug, snail, thrips; restricted use
methoxyfenozide	Intrepid 2F	diacylhydrazine	caterpillar
milbemectin	Ultiflora	macrocyclic lactonemite	mite; restricted use pesticide
mineral oil, petroleum distillate	Various	oil	soft-bodied pests
novaluron	Pedestal	benzoylphenyl urea	whitefly, thrips, leafminer, armyworm; insect growth regulator
oil of rosemary/peppermint	Ecotec Broad Spectrum (OMRI)	botanical/botanical oil	aphid, beetle, caterpillar, fungus gnat, shorefly, leafhopper, leafminer, mite, soft scale
orthoboric acid	Niban	inorganic acid	slug, snail
oxydemeton-methyl	MSR Spray Concentrate	organophosphate	aphid, adelgid, thrips, white pine weevil, field-grown nursery stock; systemic; restricted use pesticide
<i>Isaria fumosoroseus</i>	PFR 97	biological, fungus	whitefly
permethrin	Ambush, Permethrin, Pounce, many labels	pyrethroid	general – check label; most are restricted-use pesticides

Pesticides available for use in commercial nursery applications

Active ingredient	Trade name (examples)	Chemical class	Typical use pattern
phenylethyl propionate	EcoVia WD	botanical	general
phorate	Thimet 20G SLN OR	organophosphate	nematodes in Easter Lily
phosmet	Imidan	organophosphate	birch leafminer
pirimiphos-methyl	Actellic 5E SLN WA		mealybug
potassium laurate	M-Pede, Insecticidal Soap (several OMRI, organic)	soap	general, contact only, no residual.
propargite	Omite	organosulfur	mite
propyleneglycol monolaurate	Acaritouch	fatty acid monoester	spider mite – good contact required.
pymetrozine	Endeavor	triazine	aphid, whitefly
pyrethrins/piperonyl butoxide (PBO)	PT 1600 X-clude, PT Pyrethrum TR	pyrethrins/synergist	general – check label.
pyrethrins/canola	PyGanic Dust (OMRI)	pyrethrins	general – check label.
pyridalyl	Overture		lepidoptera, thrips
pyridaben	Sanmite	pyridazinone	spider mite, whitefly
pyrifluquinazon	Rycar		whitefly, aphid, leafhopper, thrips, mealybug
pyriproxyfen	Distance	insect growth regulator	aphid, whitefly, scale, fungus gnats, leafminer
s-kinoprene	Enstar	insect growth regulator	greenhouse, shadehouse, lath structures only; acts on immature stage of aphids, whitefly, scale, mealybug, thrips
silicon dioxide (diatomaceous earth)	Perma Guard Garden & Plant Protection Insecticide		cucumber beetle, ant, caterpillar, aphid, stink bug, leaf mite
sodium borate complex	Prev-Am Ultra	inorganic	aphid, leafhopper, lygus, mealybug, mite, thrips, whitefly
sorbitol octanoate	Sorbishield 90	sugar ester	soft-bodied insects
spinosad	Conserve, Entrust	fungal metabolite	thrips, caterpillar, midge
spiromesifen	Judo	ketoenole	spider mite, broad mite, cyclamen mite, false spider mite, eriophyid mite, whitefly
spirotetramat	Kontos	tetramic acid	aphid, adelgid, whitefly, rust mite, spider mite, psyllid, spittlebug, mealybug, leafhopper; systemic chemistry
tau-fluvalinate	Mavrik Aquaflow	pyrethroid	general, container stock only
tebufenozide	Mimic	hydrazine, IGR	acts on moth immature stages.
thiamethoxam	Flagship	neonicotinoid	beetle grub, aphid, whitefly, mealybug
tolfenpyrad	Hachi-Hachi	pyrazole	aphid, leafhopper, lepidoptera, scale, thrips
trichlorfon	Dylox Turn & Ornamental Ins.	organophosphate	caterpillar, bulb fly, cinch bug, beetle larvae
zeta-cypermethrin	various labels	pyrethroid	aphid, caterpillar, sucking insects

Pesticides registered for use on specific nursery pests

adelgid

abamectin (Avid)
acephate (Acephate 90WDG)
acetamiprid (TriStar)
azadirachtin (Azatin)
bifenthrin (Talstar, various)
canola oil (Earth-tone Hort Oil)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
clothianidin (Arena)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)
dinotefuran (Safari)
esfenvalerate (Fenvistar EcoCap)
imidacloprid (Marathon, various)
limonene (Orange Guard)
mineral oil/petroleum distillate (various)
oxydemeton-methyl (MSR Spray Concentrate)
potassium laurate (various)
pyrethrins (various)
sorbitol octanoate (Sorbishield 90)
spirotetramat (Kontos)—Systemic activity
tau-fluvalinate (Mavrik Aquaflo)
thiamethoxam (Flagship)
zeta-cypermethrin (Talstar, Cynoff)

aphid

abamectin (Avid)
acephate (Orthene TR, various)
acetamiprid (TriStar)—Systemic activity
alpha-cypermethrin (Fendona)
azadirachtin (Azatin, Neemix, various)—
Acts as an insect growth regulator and
anti-feedant.
Beauveria bassiana (Botanigard, Naturalis
L)—Fungal pathogens.
bifenthrin (Talstar, various)
Burkholderia spp. (Venerate XC)
canola oil (Earth-tone Hort Oil)—Other
oils include clove, cottonseed,
rosemary, peppermint, sesame.
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
clarified hydrophobic extract of neem oil
(Triact, Trilogy)—Avoid tank mixes
of oxythioquinox, captan, sulfur,
chlorothalonil.
clothianidin (Arena)
cyfluthrin (Decathlon)

deltamethrin (Deltagard)—For perimeter
treatments.
diazinon (Diazinon)
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvistar EcoCap)
fenpropathrin (Tame)
fenvalerate (Onslaught)
flonicamid (Aria)
flupyradifurone (Altus)
garlic oil/powder (Allityn Insect
Repellent)
garlic powder/oil of clove/cottonseed oil
(Pest Out)
horticultural oil (various)
imidacloprid (Marathon, various)
imidacloprid/cyfluthrin (Discus)
Isaria fumosorosea Apopka strain 97
(Preferal Microbial Insecticide, PFR
97)
kaolin (Surround)—May leave residue;
thorough coverage essential.
lambda-cyhalothrin (Scimitar, various)
limonene (Orange Guard)
malathion (various)
methiocarb (Mesurrol)
mineral oil
neem oil (Trilogy)
oxydemeton-methyl (MSR Spray
Concentrate)
peppermint/oil of rosemary (Ecotec Broad
Spectrum)
permethrin (Ambush, Pounce, Permethrin,
various)
potassium laurate (various)
pymetrozine (Endeavor)
pyrethrin (Pyganic Dust)
pyrethrin/canola (various)
pyrethrin/PBO3
pyrfluquinazon (Rycar)
pyriproxyfen (Distance)—Apply to the
immature stages of the insect.
s-kinoprene (Enstar II)—Apply to the
immature stages of the insect.
silicon dioxide (diatomaceous earth
- Perma Guard Garden & Plant
Protection Insecticide)
sodium borate
sorbitol octanoate (Sorbishield 90)
spirotetramat (Kontos)—Systemic
activity.
tau-fluvalinate (Mavrik Aquaflo)
thiamethoxam (Flagship)
tolenpyrad (Hachi-Hachi)
zeta-cypermethrin (Talstar, Cynoff)

borers (general)

acephate (Acephate 90WDG)
azadirachtin (Azatin, Neemix, various)
bifenthrin (Talstar, various)
carbaryl (Sevin)
clothianidin (Arena)

chlorpyrifos (Dursban, various)
cinnamaldehyde (Cinnacure)
cyfluthrin/imidacloprid (Discus)
cyfluthrin (Decathlon)
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvistar EcoCap)
garlic oil/powder (Allityn Insect
Repellent)
imidacloprid (Marathon, various)
lambda-cyhalothrin (Scimitar, various)
permethrin (Ambush, Pounce, Permethrin,
various)
pyrethrins
spinosad (Conserve, Entrust)
zeta-cypermethrin (Talstar, Cynoff)

caterpillars

acephate (Orthene, various)
acetamiprid (TriStar)
alpha-cypermethrin (Fendona)
azadirachtin (Azatin, Neemix, various)
Bacillus thuringiensis aizawai (Dipel,
various)—Most effective on younger
stages of the caterpillars.
Bacillus thuringiensis kurstaki (Zentari)—
Most effective on younger stages of
the caterpillars.
Beauveria bassiana (Mycotrol, Naturalis
O)
bifenthrin (Talstar, various)
Burkholderia spp. (Venerate XC)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
clothianidin (Arena)
cyantraniliprole (Mainspring)
cyfluthrin (Decathlon)
esfenvalerate (Fenvistar EcoCap)
deltamethrin (Deltagard)
fenvalerate (Onslaught)
garlic powder/oil (Allityn Insect
Repellent)—Acts as an insect growth
regulator and antifeedant. Other oils
include canola, neem, peppermint.
imidacloprid/bifenthrin (Atera)
imidacloprid/cyfluthrin (Discus)
indoxacarb (Provaunt)
insect growth regulator
Isaria fumosorosea Apopka strain 97
(Preferal Microbial Insecticide, PFR
97)
lambda-cyhalothrin (Scimitar, various)
malathion (various)
methoxyfenozide (Intrepid)—Begin
applications when larvae are observed
or at the first sign of feeding damage.
mineral oil/petroleum distillate
(various)—Apply in delayed-dormant
period to destroy overwintering egg
masses.

novaluron (Pedestal)
permethrin (Ambush, Pounce, Permethrin, various)
potassium laurate (various)
pyrethrin (Pyganic Dust)
pyrethrin/piperonyl butoxide
pyridalyl (Overture)
silicon dioxide (diatomaceous earth - Perma Guard Garden & Plant Protection Insecticide)
spinosad (Conserve, Entrust SC OMRI approved)
tau-fluvalinate (Mavrik Aquaflow)
tebufenozide (Minic)—Apply at initiation of egg hatch.
thiamethoxam (Flagship)
tolenpyrad (Hachi-Hachi)

clearwing moth borer

acephate (Acephate 90WDG)
bifenthrin (Talstar, various)
chlorpyrifos (Dursban, various)
methoxyfenozide (Intrepid)—Specific to caterpillars; mimics action of molting hormone.
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrin (Pyganic Dust)

coneworm

acephate (Acephate 90WDG)
azadirachtin (Azatin, Neemix, various)
Bacillus thuringiensis azawai (Xentari)
Bacillus thuringiensis kurstaki (Dipel, various)
carbaryl (Sevin)
dimethoate (Dimate, Dimethoate)
garlic oil/powder (Allityn Insect Repellent)
permethrin (Ambush, Pounce, Permethrin, various)
phosmet (Imidan)
spinosad (Conserve, Entrust)

flea beetle

acephate (Orthene, various)
alpha-cypermethrin (Fendona)
azadirachtin (Azatin, Neemix, various)—Acts as an insect growth regulator and anti-feedant.
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
clothianidin (Arena)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
diazinon (Diazinon)
esfenvalerate (Fenvastar EcoCap)

ethoprop (Mocap)—Mocap for nematodes, symphylans, field nurseries only, pre-plant only; Easter lilies (Curry County, OR). Supplemental label needed. Restricted use pesticide. SLN OR-120005
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
kaolin (Surround)
lambda-cyhalothrin (Scimitar, various)
malathion (various)
peppermint (Ecotec Broad Spectrum)—Other oils include rosemary, canola oil.
permethrin (Ambush, Pounce, Permethrin, various)
potassium laurate (various)
pyrethrin (Pyganic Dust)
pyrethrin/piperonyl butoxide
spinosad (Conserve, Entrust)
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)

lace bug

acephate (Orthene, various)
azadirachtin (Azatin, Neemix, various)
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
carbaryl (Sevin)
Chromobacterium subsugae (Grandevo)
chlorpyrifos (Dursban, various)
clothianidin (Arena)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
flupyradifurone (Altus)
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
imidacloprid/cyfluthrin (Discus)
kaolin (Surround)
lambda-cyhalothrin (Scimitar, various)
limonene (Orange Guard)
malathion (various)
mineral oil/petroleum distillate (various)
peppermint oil, rosemary oil
permethrin (Ambush, Pounce, Permethrin, various)
potassium laurate (various)
pyrethrins (Pyganic Dust)
sorbitol octanoate (Sorbishield 90)
thiamethoxam (Flagship)
zeta-cypermethrin (Talstar, Cynoff)

leaf beetle

acephate (Orthene, various)
acetamiprid (TriStar)
azadirachtin (Azatin, Neemix, various)
Bacillus thuringiensis tenebrionus (Btt) (Novodor)—Labeled for elm leaf beetle.

bifenthrin (Talstar, various)
Chromobacterium subsugae (Grandevo)
clothianidin (Arena)
cyfluthrin (Decathlon)
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
imidacloprid/cyfluthrin (Discus)
lambda-cyhalothrin (Scimitar, various)
mineral oil/petroleum distillate (various)
oil of rosemary (Ecotec Broad Spectrum)
permethrin (Ambush, Pounce, Permethrin, various)
phosmet (Imidan)
potassium laurate (various)
thiamethoxam (Flagship)

leafhopper

acephate (Orthene, various)
acetamiprid (TriStar)
azadirachtin (Azatin, Neemix, various)
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
buprofezin (Talus)—Do not rotate with chitin synthesis inhibitors.
canola oil (Earth-tone Hort Oil)
canola oil/pyrethrin (various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
cinnamaldehyde (Cinnacure)
clothianidin (Arena)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
diazinon (Diazinon)
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
fenpropathrin (Tame 2.4EC)
flonicamid (Aria)
flupyradifurone (Altus)
garlic oil/powder (Allityn Insect Repellent)
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
imidacloprid/cyfluthrin (Discus)
indoxacarb (Provaunt)
kaolin (Surround)
lambda-cyhalothrin (Scimitar, various)
limonene (Orange Guard)
malathion (various)
mineral oil/petroleum distillate (various)
neem oil, (Triact, Trilogy)—Pre-test on small number of plants to check for phytotoxicity. Buffer spray solution to pH 5.5-7.0.
oil of rosemary (Ecotec Broad Spectrum)
oxydemeton-methyl (MSR Spray Concentrate)

permethrin (Ambush, Pounce, Permethrin, various)
phosmet (Imidan)
potassium laurate (various)
pyrethrins (Pyganic Dust)
pyrethrins/piperonyl butoxide
pyrifluquinazon (Rycar)
sodium borate
sorbitol octoanoate (SorbiShield)
spinosad (Conserve, Entrust)
spirotetramat (Kontos)—Systemic activity.
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)
tolenpyrad (Hachi-Hachi)
zeta-cypermethrin (Talstar, Cynoff)

leafroller

acephate (Orthene, various)
azadirachtin (Azatin, Neemix, various)
Bacillus thuringiensis aizawai (Xentari)—Works best on small larvae.
Bacillus thuringiensis kurstaki (Dipel, various)
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
canola oil (Earth-tone Hort Oil)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)
diazinon (Diazinon)
emamectin benzoate (Enfold)
esfenvalerate (Fenvastar EcoCap)
fenpropathrin (Tame 2.4EC)
garlic oil/powder (Allityn Insect Repellent)
imidacloprid/bifenthrin (Atera, Bithor)
kaolin (Surround)
lambda-cyhalothrin (Scimitar, various)
methoxyfenozone (Intrepid)—Specific to caterpillars; mimics action of molting hormone.
mineral oil/petroleum distillate (various)
novaluron (Pedesta)—Apply to immature insects.
oil of rosemary (Ecotec Broad Spectrum)
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrin (Pyganic Dust)
spinosad (Conserve, Entrust)
tebufenozide (Mimic)—Specific to caterpillars; apply at initiation of egg hatch.
zeta-cypermethrin (Talstar, Cynoff)

midge

acetamiprid (TriStar)
azadirachtin (Azatin, Neemix, various)
bifenthrin (Talstar, various)
carbaryl (Drexel Carbaryl 4)
chlorpyrifos (Dursban, various)
cyfluthrin (Decathlon)
cyfluthrin/imidacloprid (Discus)
deltamethrin (Deltagard) —For perimeter treatments.
dimethoate (Dimate, Dimethoate)
esfenvalerate (Fenvastar EcoCap)
kaolin (Surround)—May leave residue.
imidacloprid
lambda-cyhalothrin (Scimitar, various)
oil of rosemary (Ecotec Broad Spectrum)
pyrethrin (Pyganic Dust)
spinosad (Conserve, Entrust)
thiamethoxam (Flagship)

mite, eriophyid

abamectin (Avid)
carbaryl (Sevin)
fenpyroximate (Akari)
milbemectin (Ultiflora)—Restricted use pesticide.
mineral oil/petroleum distillate (various)
pyrethrins/piperonyl butoxide
spiromesifen (Judo)—Avoid geranium, ferns, English ivy, Alstromeria, Impatiens.

mite, spider

abamectin (Avid)
acephate (Orthene, various)
acequinocyl (Shuttle)
azadirachtin (Azatin, Neemix, various)
bifenazate (Floramite)—Good coverage is especially important with bifenazate. Compatible with predatory mites.
bifenthrin (Talstar, various)
Burkholderia spp. (Venerate XC)
chlorfenapyr (Pylon)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
clofentezine (Ovation)
cyflumetofen (Sultan Miticide)
diazinon (Diazinon)
dimethoate (Dimate, Dimethoate)
emamectin benzoate (Enfold)
esfenvalerate (Fenvastar EcoCap, Onslaught FastCap)
etoxazole (TetraSan)
fenazaquin (Magus Miticide)
fenbutatin-oxide (Vendex)
fenpyroximate (Akari)
garlic powder/oil of clove/cottonseed oil (Pest Out)—Horticultural oils are most effective against the egg stage. Other oils include clove, peppermint, rosemary.

hexythiozox (Hexigon)
imidacloprid (Marathon, various)
Isaria fumosorosea Apopka strain 97 (Preferal Microbial Insecticide, PFR 97)
kaolin (Surround)—May leave residue.
lambda-cyhalothrin (Scimitar, various)
limonene (Orange Guard)
malathion (various)
milbemectin (Ultiflora)
mineral oil/petroleum distillate (various)—Horticultural oils are most effective against the egg stage.
oxydemeton-methyl (MSR Spray Concentrate)
permethrin (various)
potassium laurate (various)
propargite (Omite)
propyleneglycol monolaurate (Acaritouch)
pyrethrins (Pyganic Dust)
pyrethrins/piperonyl butoxide
pyridaben (Sanmite)
silicon dioxide (diatomaceous earth - Perma Guard Garden & Plant Protection Insecticide)
spinetoram (Delegate)
spinosad (Conserve, Entrust)
spiromesifen (Judo)
spirotetramat (Kontos)—Systemic activity.
tau-fluvalinate (Mavrik Aquaflow)

needleminer

acephate (Orthene, various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)

peachtree borer

azadirachtin (Azatin, Neemix, various)
bifenthrin (Talstar, various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
esfenvalerate (Fenvastar EcoCap)
lambda-cyhalothrin (Scimitar, various)
mineral oil/petroleum distillate (various)
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrins/piperonyl butoxide

peach twig borer

azadirachtin (Azatin, Neemix, various)
Bacillus thuringiensis kurstaki (Dipel, various)
bifenthrin (Talstar, various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
diazinon (Diazinon)
esfenvalerate (Fenvastar EcoCap)
kaolin (Surround)

lambda-cyhalothrin (Scimitar, various)
methidathion (Supracide)
methoxifenozone (Intrepid)—Specific to caterpillars; apply at initiation of egg hatch.
mineral oil/petroleum distillate (various)
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrin (Pyganic Dust)
spinosad (Conserve, Entrust)

plant bug

acephate (Orthene, various)
acetamiprid (TriStar)
alpha-cypermethrin (Fendona)
azadirachtin (Azatin, Neemix, various)
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
canola oil/pyrethrin (various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subtsugae (Grandevo)
cyantraniliprole (Mainspring)
cyfluthrin (Decathlon)
deltamethrin (Deltagard) —For perimeter treatments.
dimethoate (Dimate, Dimethoate)
esfenvalerate (Fenvastar EcoCap)
fenvalerate (Onslaught)
flonicamid (Aria)
garlic oil/powder (Allityn Insect Repellent)—Other oils include peppermint, rosemary.
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
Isaria fumosorosea Apopka strain 97 (Preferal Microbial Insecticide, PFR 97)
lambda-cyhalothrin (Scimitar, various)
malathion
mineral oil/petroleum distillate (various)
novaluron (Pedestal)
permethrin (Ambush, Pounce, Permethrin, various)
potassium laurate (various)
silicon dioxide (diatomaceous earth - Perma Guard Garden & Plant Protection Insecticide)
sorbitol octanoate (Sorbishield 90)
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)
zeta-cypermethrin (Talstar, Cynoff)

psyllid

acephate (Orthene, various)
acetamiprid (TriStar)
azadirachtin (Azatin, Neemix, various)
Beauveria bassiana (Botanigard, Naturalis O)
bifenthrin (Talstar, various)
canola oil (Earth-tone Hort Oil)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)

Chromobacterium subtsugae (Grandevo)
clothianidin (Arena)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
garlic oil/powder (Allityn Insect Repellent)—Other oils include cottonseed, peppermint.
imidacloprid (Marathon, various)
Isaria fumosorosea Apopka strain 97 (Preferal Microbial Insecticide, PFR 97)
kaolin (Surround)
mineral oil/petroleum distillate (various)
oil of rosemary/peppermint (Ecotec Broad Spectrum)
potassium laurate (various)
pyrethrin (Pyganic Dust)
sorbitol octanoate (Sorbishield 90)
spirotetramat (Kontos)—Systemic activity.
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)
zeta-cypermethrin (Talstar, Cynoff)

root weevil

acephate (Orthene, various)
azadirachtin (Azatin, Neemix, various)
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
clothianidin (Arena)
cryolite (Gowan Cryolite Bait)
cyfluthrin (Decathlon)
dinotefuran (Safari)
imidacloprid (Marathon, various)
imidacloprid/cyfluthrin (Discus)
Isaria fumosorosea Apopka strain 97 (Preferal Microbial Insecticide, PFR 97)
lambda-cyhalothrin (Scimitar, various)
Metarhizium anisopliae (Met 52)
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrins (Pyganic Dust)
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)

sawfly

acephate (Orthene, various)
azadirachtin (Azatin, Neemix, various)
bifenthrin (Talstar, various)
canola oil (Earth-tone Hort Oil)
canola oil/pyrethrin (various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
diflubenzuron (Dimilin 25W)
dimethoate
esfenvalerate (Fenvastar EcoCap)

fenvalerate (Onslaught)
garlic oil/powder (Allityn Insect Repellent)
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
indoxacarb (Provaunt)
lambda-cyhalothrin (Scimitar, various)
malathion (various)
mineral oil/petroleum distillate (various)
oil of rosemary
pyrethrin (Pyganic Dust)
spinosad (Conserve, Entrust)
thiamethoxam (Flagship)
zeta-cypermethrin (Talstar, Cynoff)

scale

abamectin (Avid)
acephate (Orthene, various)
acetamiprid (TriStar)
azadirachtin (Azatin, Neemix, various)
bifenthrin (Talstar, various)
buprofezin (Talus)—Do not rotate with chitin synthesis inhibitors.
canola oil (Earth-tone Hort Oil)—Other oils include cottonseed.
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
cinnamaldehyde (Cinnacure)
clothianidin (Arena)
cyantraniliprole (Mainspring)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
diazinon (Diazinon)
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
flonicamid (Aria)
garlic oil/powder (Allityn Insect Repellent)
imidacloprid (Marathon, various)
lambda-cyhalothrin (Scimitar, various)
limonene (Orange Guard)
malathion (various)
methidathion (Supracide)
mineral oil/petroleum distillate (various)
oil of rosemary (Ecotec Broad Spectrum)
permethrin (Ambush, Pounce, Permethrin, various)
potassium laurate (various)
pyrethrin (Pyganic Dust)
S-kinoprene (Enstar II)
sodium borate
sorbitol octanoate (Sorbishield 90)
spinetoram (Delegate)
thiamethoxam (Flagship)
tolenpyrad (Hachi-Hachi)
zeta-cypermethrin (Talstar, Cynoff)

thrips

abamectin (Avid)
acephate (Orthene, various)
acetamiprid (TriStar)
azadirachtin (Azatin, Neemix, various)
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
bifenazate (Floramite)—Good coverage is especially important with bifenazate. Compatible with predatory mites.
Burkholderia spp. (Venerate XC)
canola oil/pyrethrin (various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
cyantraniliprole (Mainspring)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
diazinon (Diazinon)
dimethoate (Dimate, Dimethoate)
dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
fenvalerate (Onslaught)
flonicamid (Aria)
garlic oil/powder (Allityn Insect Repellent)
garlic powder/oil of clove/cottonseed oil (Pest Out)
imidacloprid (Marathon, various)
Isaria fumosorosea Apopka strain 97 (Preferal Microbial Insecticide, PFR 97)
kaolin (Surround)
lambda-cyhalothrin (Scimitar, various)
malathion (various)
Metarhizium anisopliae (Met 52)
methidathion (Supracide)
mineral oil/petroleum distillate (various)
neem oil, clarified hydrophobic extract of (Triact, Trilogy)—Avoid tank mixes of oxythioquinox, captan, sulfur, chlorothalonil.
novaluron (Pedestal)
oil of rosemary (Ecotec Broad Spectrum)
oxydemeton-methyl (MSR Spray Concentrate)
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrins (Pyganic Dust)
pyrethrins
pyridalyl (Overture)
pyriproxyfen (Rycar)
S-kinoprene (Enstar II)
spinosad (Conserve, Entrust)
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)
tolenpyrad (Hachi-Hachi)

webworm

acephate (Orthene, various)
alpha-cypermethrin (Fendona)
azadirachtin (Azatin, Neemix, various)
Bacillus thuringiensis aizawai (Xentari)
Bacillus thuringiensis kurstaki (Dipel, various)
bifenthrin (Talstar, various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cyfluthrin (Decathlon)
deltamethrin (Deltagard)—For perimeter treatments.
diflubenzuron (Dimilin 25W)
garlic oil/powder (Allityn Insect Repellent)
imidacloprid/cyfluthrin (Discus)
indoxacarb (Provaunt)
lambda-cyhalothrin (Scimitar, various)
malathion (various)
methoxyfenozide (Intrepid)
mineral oil/petroleum distillate (various)
oil of rosemary (Ecotec Broad Spectrum)
permethrin (Ambush, Pounce, Permethrin, various)
pyrethrin (Pyganic Dust)—Some products.
spinosad (Conserve, Entrust)

white pine weevil

abamectin (Avid)
acephate (Acephate 90WDG)
bifenthrin (Talstar, various)
chlorpyrifos (Dursban, various)
imidacloprid (Marathon, various)
oxydemeton-methyl (Metasystox-R)
spinosad (Conserve, Entrust)

whitefly

abamectin (Avid)
acephate (Orthene, various)
acetamiprid (TriStar)
azadirachtin
Beauveria bassiana (Botanigard, Naturalis L)
bifenthrin (Talstar, various)
buprofezin (Talus)
Burkholderia spp. (Venerate XC)
canola oil (Earth-tone Hort Oil)—Other oils include cottonseed, peppermint.
canola oil/pyrethrin (various)
carbaryl (Sevin)
chlorpyrifos (Dursban, various)
Chromobacterium subsugae (Grandevo)
cinnamaldehyde (Cinnacure)
clarified hydrophobic extract of neem oil (Triact, Trilogy)
clothianidin (Arena)
cyfluthrin (Decathlon)
diazinon (Diazinon)
dimethoate (Dimate, Dimethoate)

dinotefuran (Safari)
esfenvalerate (Fenvastar EcoCap)
fenazaquin (Magus)
fenpropathrin (Tame 2.4EC)
fenpyroximate (Akari)
flonicamid (Aria)
flupyradifurone (Altus)
garlic oil/powder (Allityn Insect Repellent)
imidacloprid (Marathon, various)
imidacloprid/bifenthrin (Atera, Bithor)
Isaria fumosorosea Apopka strain 97 (Preferal Microbial Insecticide, PFR 97)
lambda-cyhalothrin (Scimitar, various)
limonene (Orange Guard)
malathion (various)
Metarhizium anisopliae (Met 52)
mineral oil/petroleum distillate (various)
novaluron (Pedestal)
oil of rosemary (Ecotec Broad Spectrum)
permethrin (Ambush, Pounce, Permethrin, various)
potassium laurate (various)
pymetrozine (Endeavor)
pyrethrin (Pyganic Dust)
pyrethrins/PBO
pyriproxyfen (Rycar)
S-kinoprene (Enstar II)
sodium borate
sorbitol octanoate (Sorbishield 90)
spiromesifen (Judo)
spirotetramat (Kontos)—Systemic activity.
tau-fluvalinate (Mavrik Aquaflow)
thiamethoxam (Flagship)
zeta-cypermethrin (Talstar, Cynoff)