Insecticides & Miticides for PA Christmas Tree Pests
Prepared by the PA Dept. of Agriculture

Adelgids (Cooley Spruce Gall, Eastern Spruce Gall, Pine Bark)
For controlling Pine Bark Adelgid, apply specifically labeled products from late April through May, when adelgids are active. To control over-wintering forms, apply Damoil before new growth starts. Cooley Spruce Gall Adelgids on Douglas-fir and Colorado Spruce and Eastern Spruce Gall Adelgid on Norway Spruce are best controlled in the over-wintering stage. Thorough coverage, including inner branches, is essential. Spray from mid-September through early October, or just before bud break in the spring, when temperatures are above 60°F. After bud break, chemical controls are not effective. If only a few galls are present, pruning and destroying unopened green galls before mid-July is recommended. Each product below controls a specific pest(s) or life stage and is marked accordingly (A= Adelgids; CSG=Cooley Spruce Gall Adelgid; ESG= Eastern Spruce Gall Adelgid; PB= Pine Bark Adelgid).

- All Pro Insecticidal Soap 40%CSG; ESG
- Carbaryl 4L & 80S CSG; ESG
- Chlorpyrifos 4E AG CSG; ESG
- Chlorpyrifos E-Pro 4CSG; ESG; PB
- Chlorpyrifos Pro 2CSG; ESG; PB
- Chlorpyrifos Pro 4CSG; ESG; PB
- Couraze 1.6FA
- Damoil A
- DeltaGard GC 5SCA
- Discus A
- Dursban 50W CSG; ESG; PB
- Govern 4E CSG; ESG
- Hatchet CSG; ESG
- Imida E-AG 1.6 F A
- Impulse 1.6FL A
- Lorsban 4E & Advanced CSG; ESG
- Lorsban 75WG CSG; ESG
- Marathon II A
- Movento A
- M-Pede CSG
- MSR Spray Concentrate A
- Nufoos 4E CSG; ESG
- Omni Oil 6EA
- OnyxPro A
- Pasada 1.6FA
- Pilot 4E CSG; ESG
- Prey 1.6 A
- Provado 1.6FA
- Sevin 1FCSG; ESG
- Sevin 80S & 80 WSP CSG; ESG
- Sherpa A
- SunSpray 6EA
- Tristar 70 WSPA
- Ultra-Fine Oil A
- Whirlwind CSG; ESG
- Yuma 4E

Aphids (Balsam Twig, Cinara sp., Spotted Pine, White Pine)
Control over-wintering forms with Damoil or Ultra-Fine Oil. When aphids are active and before populations build to damaging levels, apply specifically labeled products, which most are listed below. Each product below controls a specific pest(s) or life stage and is marked accordingly (A=Aphids; BTA=Balsam Twig Aphid; CA= Cinara sp. Aphids; SPA=Spotted Pine Aphid; WPA= White Pine Aphid).

- 5 lb. Malathion Spray A
- Abamectin 0.15 ECA
- ACE-jet A
- Adjourn BTA
- Ardent 0.15 ECA
- Asana XL BTA
- Avid 0.15EC A
- Carbaryl 80S BTA
- Chlorpyrifos 4E AG A
- Chlorpyrifos Pro 2 & Pro 4 A
- Couraze 1.6FA
- Damoil A
- Decathlon 20 WPA
- DeltaGard GC 5SCA
- Diazinon 50W & AG 500A
- Dibrom 8EA
- Dimate 4EC BTA
- Dimethoate 4E BTA
- Discus A
- Distance A
- DuraGard ME A
- Dursban 50W A; BTA; WPA
- Endeavor A
- Flagship 25WG A
- Flora-Mek 0.15ECA
- Govern 4E A
- Hatchet A
- Imida E-AG 1.6 F A
- Impulse 1.6FL A
- Lambda T BTA
- Lorsban 4E & Advanced A
- Lorsban 75WG A
- Lucid A
- Malathion 5EC & 50% EA
- Marathon II A
- Mesurol 75-WA
- Movento A
- M-Pede A
- MSR Spray Concentrate A
- Naturalis L A
- Nufoos 4E A
- Nuprid 1.6 F A
- Omni Oil 6EA
- OnyxPro A
- Orthene TT&O Spray A
- Orthene TT&O Spray 97A
- Orthene TT&O WSPA
- Pasada 1.6FA
- Pilot 4E A
- Prey 1.6 A
- Provado 1.6FA
- Pyrene Crop Spray A
- Pyrethrum-trit Formula 2A
- Pyrene TR A
- Pyronyl Crop Spray A
- Safari 20 SG A
- Saf-T-Side A
- Scimitar GCA
- Sevin 1F BTA
- Sevin 80 Solupak & 80SBTA
- Sevin 80 WSP BTA
- Sherpa A
- Sevin XLR Plus BTA
- S-FenvaloStar BTA
- Silencer BTA
- SorbiShield 90 A
- SucraShield A
- SunSpray 6EA
- Triac 70 A
- TriStar 70 WSPA
- Ultra-Fine Oil A
- Up-Star SCA
- Warhawk A
- Warrior BTA
- Whirlwind A
- Wisdom Flowable A
- Yuma 4E A
- Yuma 4EA
**Bagworm**

When practical, hand pick over-wintering bags before June. If chemical control is necessary and when the bags are small (early to mid-June), spray with the products listed below. Each product below controls a specific pest(s) or life stage and is marked accordingly (B= Bagworms; BL= Bagworm Larvae).

- 5lb. Malathion Spray
- ACE-jet
- Acephate E 75 WP
- 3Atain Nursery
- Azatin XL
- 3Bifenthrin Pro
- Biobit HP
- Carbaryl 4L & 80S
- 3Chlorpyrifos Pro 2 & Pro 4
- Conserve SC
- Crymax
- Cygon 2E (Pine)
- Decathlon 20 WP
- DeltaGard GC 5SC
- Diazinon 50W & AG 500
- Dimate 4EC
- Dimethoate 4E
- Dimilin 25W & 4L
- DiPel ES & Pro DF
- Discus
- Dursban 50W
- Entrust
- Foray 76B
- Javelin WG
- Lambda T
- Lepinox WDG
- Malathion 5 EC & 50% E
- Mimic 2LV
- OnyxPro
- Ornamin 3% EC
- Orthene TT&O Spray
- Orthene TT&O WSP
- Permethrin 3.2EC
- Pounce 25 WP
- Pyrene Crop Spray
- Pyreth-it Formula
- Pyronyl Crop Spray
- Scimitar GC
- Sevin 4F
- Sevin 80 Solupak & 80S
- Sevin 80WSP
- Sevin RP4
- Sevin SL
- Sevin XLR Plus
- Silencer
- SpinTor 2SC
- Talstar Nursery Flowable
- Up-Star SC
- Warrior
- Wisdom Flowable
- XenTari

**Bark Beetles**

Most bark beetles are secondary, attacking only dying or dead trees. Sanitation is important in reducing the effect of these pests. Each product below controls a specific pest(s) or life stage and is marked accordingly (BB= Bark Beetles; PSB= Pine Shoot Beetles).

- Astro
- Carbaryl 4L & 80S
- DeltaGard GC 5SC
- 3Dursban 50W
- Ecozin Plus 1.2% ME
- OnyxPro
- Ornamin 3% EC
- Scimitar GC
- Sevin 4F
- Sevin 80 Solupak & 80S
- Sevin 80WSP
- Sevin RP4
- Sevin SL
- Sevin XLR Plus
- Talstar Nursery Flowable

**Gypsy Moth**

When larvae are still small (early to mid-May) a selection from the following list may be applied. Each product below controls a specific pest(s) or life stage and is marked accordingly (GM= Gypsy Moth; GME= Gypsy Moth Eggs; GML= Gypsy Moth Larvae).

- ACE-jet
- Acephate E 75 WP
- All Pro Insecticidal Soap 40%
- 3Atain Nursery
- 3Bifenthrin Pro
- Biobit HP
- Carbaryl 4L & 80S
- 3Chlorpyrifos 4E AG
- 3Chlorpyrifos E-Pro
- 3Chlorpyrifos Pro 2 & Pro 4
- Conserve SC
- Crymax
- Decathlon 20 WP
- 3DeltaGard GC 5SC
- 3Dimilin 25W & 4L
- DiPel ES & Pro DF
- Discus
- Dursban 50W
- Ecozin Plus 1.2% ME
- Entrust
- Foray 76B
- Goverrn
- Hatchet
- Imidan 70-WG
- Javelin WG
- Lambda T
- Lepinox WDG
- Lorsban 4E & Advanced
- Lorsban 75WG
- Mimic 2LV
- M-Pede
- MSR Spray Concentrate
- Nufoes 4E
- OnyxPro
- Ornamin 3% EC
- Orthene TT&O Spray
- Orthene TT&O Spray 97
- Orthene TT&O WSP
- Pilot 4E
- Pyrene Crop Spray
- Pyreth-It
- Pyreth-It Formula
- Pyronyl Crop Spray
- Sevin 4F
- Sevin 80 Solupak & 80S
- Sevin 80WSP
- Sevin RP4
- Sevin SL
- Sevin XLR Plus
- Silencer
- SpinTor 2SC
- Talstar Nursery Flowable
- TriStar 70 WSP
- Up-Star SC
- Warrior
- Whirlwind
- XenTari
- Yuma 4E
Applications for pine needle midge should be made to the top 1/3 of the tree, when needles are beginning to elongate. Each product below controls a specific pest(s) or life stage and is marked accordingly (DFN= Douglas-fir Needle Midge; M= Midge; PN= Pine Needle Midge).

- Acephate E 75 WP
- Adjourn F
- Asana XL
- Aza-Direct M
- Chlorpyrifos 4E AG
- Chlorpyrifos Pro 2 & Pro 4
- Dimate 4EC
- Dursban 50W
- Govern 4E
- Hatchet
- Lorsban 4E & Advanced
- Nufos 4E
- Ornazin 3% EC
- Orthene TT&O Spray
- Pilot 4E
- Pyrenone Crop Spray
- Pyreth-It Formula 2
- Pyronyl Crop Spray
- Scimitar GC
- S-FenvaloStar
- Warhawk
- Whirlwind
- Yuma 4E

Midges (Douglas-fir Needle, Pine Needle)

Effective mite control requires two sprays, 7-10 days apart, unless prohibited on the label. Monitor populations regularly and apply control when increases are noted. Most eriophyid mites and spider mites on conifers are “cool season” mites, with peak populations in the spring and fall. To avoid resistance, use a different class of miticide every third application. Each product below controls a specific pest(s) or life stage and is marked accordingly (EM= Eriophyid Mites; EME= Eriophyid Mite Eggs; M= Mites; SM= Spider Mites; SME= Spider Mite Eggs).

- DeltaGard GC 5SC
- Dimethoate 4E
- Dursban 50W & AG500
- Dymron 8EC
- Dimate 4EC
- DuraGard ME
- Flora-Mek 0.15EC
- Flominate SC
- Glacial Spray Fluid
- Govern 4E
- Hatchet SM
- Hexygon DFM
- Judo SM
- Lorsban 4E & Advanced
- Lorsban 75WG
- Lucid
- Malathion 5 EC
- Menace GC 7.9% Flowable
- Mesurol 75-WM
- M-Pede SM
- Mesurol 75-W
- M-Saf-T-Side
- Skylar
- Sparry
- Timectin 0.15 EC
- Triact 70M
- Ultra-Fine Oil
- Up-Star SC
- Whirlwind
- Wisdom Flowable
- Yuma 4E
- Zeal SM

Mites

Sawflies

Each product below controls a specific pest(s) or life stage and is marked accordingly (EPS= European Pine Sawflies; EPL= European Pine Sawfly Larvae; PS= Pine Sawflies; S= Sawflies/Sawfly spp.; SL= Sawfly Larvae).

- Ace-Jet SC
- Adjourn F
- Asana XL
- Azatin XL
- Carbaryl 4L & 80S
- Chlorpyrifos 4E AG
- Chlorpyrifos E-Pro 4E
- Chlorpyrifos Pro 2 & Pro 4
- Conserve SC
- Damol SM
- Couraze 1.6F
- Decathlon 20 WP
- DeltaGard GC 5SC
- Dimilin 25W & 4L
- DiscusSL
- Dursban 50W
- Entrust PL
- Flagship 25WG
- Govern 4E
- Hatchet F
- Imida E-AG 1.6 F
- Imidac 70-WS
- Impulse 1.6FL
- Lambda T
- Lorsban 4E & Advanced
- Lorsban 75WG
- Marathon II
- M-Pede SM
- Nufos 4E
- Nuprid 1.6F
- Omni Oil 6EC
- OnyxPro F
- Ornazin 3% ECE
- Orthene TT&O Spray 97
- Orthene TT&O WSP
- Pilot 4E
- Pasada 1.6F
Sawflies (continued)  

- Prey 1.6™  
- Provado 1.6F™  
- Saf-T-Side™  
- Scimitar GC™  
- Sevin 4F™; S  
- Sevin 80 Solupak™  

- Sevin 80SP™; S  
- Sevin 80WSP™; S  
- Sevin RP™4F™; S  
- Sevin SL™; S  
- Sevin XLR Plus™; S  
- RS-FenvalStar™  

- Sherpa™  
- RSilencer™; S  
- SpinTor 2SC™; P  
- SunSpray 6ES™; L  
- Torrent 1.6F™  
- TriStar 70 WSP™  

Scales (Cryptomeria, Elongate Hemlock, Pine Needle, Pine Tortoise, Striped Pine, Spruce Bud)  
Scale control is generally directed toward the crawler stage and at least two applications, 7 days apart and is recommended when crawlers are present. Striped Pine and Pine Tortoise scales can be controlled by a dormant spray of Ultra-Fine Oil or a crawler spray during late May through June. These scales (Striped Pine & Pine Tortoise) tend to be spotty and removal of a few infested trees prior to crawler emergence is effective in limiting spread. Each product below controls a specific pest(s) or life stage and is marked accordingly (C= Cryptomeria Scale; EH= Elongate Hemlock Scale; PN= Pine Needle Scale; PNC= Pine Needle Scale; PT= Pine Tortoise Scale; S= Scales; SC= Scale Crawlers; SB= Spruce Bud Scale; SP= Striped Pine Scale).  

- 5lb. Malathion Spray™; P  
- ACE-jet™  
- Acephate E 75 WP™; S  
- Acephate Pro 75 & WP™SC  
- Attain Nursery™; PNC  
- Bifenthrin Pro™; PNC  
- Carbaryl 4L™; SC  
- Carbaryl 80SC™  
- Chlorpyrifos 4E AG™; PN; PT; SB; SP  
- Chlorpyrifos E-Pro™ 4PN  
- Chlorpyrifos Pro 2PN  
- Chlorpyrifos Pro 4PN; PT; SB; SP  
- Damoil™  
- Decathlon 20 WP™; P  
- DeltaGard GC 5SC™  
- Diazinon 50W & AG500™; PNC  
- Dimate 4EC™; EH  
- Dimethoate 4E™; P  
- Discus™  
- DuraGard ME™  
- Dursban 50WP™; P  
- Flagship 25WG™  
- Glacial Spray Fluid™  
- Govern 4E™; PT; SB; SP  
- Lambda TP™; PT  
- Lime Sulfur Solution™  
- Lorsban 75WG™; PT; SB; SP  
- Lorsban Advanced™; PT; SB; SP  
- Malathion 5 EC™; PNC  
- Malathion 50% ESC  
- Marathon II™  
- Menace GC 7.9% Flowable™; PNC  
- Monterey™  
- M-Pede™; S  
- MSR Spray Concentrate™; P  
- NufoS 4ES™; PT; SB; SP  
- Omni Oil 6ES™  
- OnyxProG™; EH; PNC  
- Orthene TT&Spray™  
- Orthene TT&Spray 97™  
- Orthene WSP™  
- Pilot 4E™; PT; SB; SP  
- PureSpray Green™  
- Pyrethrum TRS  
- Safari 20 SC™; EH; S  
- Saf-T-Side™  
- Scimitar GC™  
- Sevin 4F™; S  
- Sevin 80 Solupak & 80SC™  
- Sevin 80WSP™; S  
- Sevin RP™SC; S  
- Sevin SL™; S  
- Sevin XLR Plus™; S  
- Sevin 4FSC; S  
- Acephate E 75 WP™; PT; SB; SP  
- Acephate Pro 75 & WP™; S  
- Acephate Pro 75 & WP™; PNC  
- Adjourn™; PNC; PTM  
- Ambush™  
- Ambush 25WP™; PNC  
- Asana XL™; PNC; PTC; PNM  
- Astro™; PNC  
- Azatin XL™; PNC; PTM  
- Bifenthrin Pro™; PNC  
- Carbaryl 4E™; PNC; PNM; PTC  
- Carbaryl 80SP™; PNM; PTC  
- Chlorpyrifos 4E AG™; PNC; PNM; PTC  
- Chlorpyrifos E-Pro™ 4EM; PNC; PNM  
- Chlorpyrifos Pro 2™; PNM; PTC  
- Chlorpyrifos Pro 4™; PNM  
- Confirm 2™; PNM; PTC  
- Conserve SCP™; PNC  
- Cygon 2E™; PNM; PNC; PNM; PTC  
- Decathlon 20 WP™; PTC  
- DeltaGard GC 5SC™; PTC  
- Dianazon 50W & AG500™; PNC; PTC  
- Dimate 4EC™; PNC; PTC  
- Dimethoate 4E™; PNM  
- Dimilin 25W & 4L™; PNC; PTC; PNM  
- Discus™; PTC  
- Dursban 50WP™; PNC; PNM  
- Entrust™; PTC  
- Hatchet™; PNC; PTC  
- Imidan 70W™; PNC; PTC  
- Lambda T™; PT; SB  

Shoot & Tip Boring Moths (Eastern Pine Shoot Borer, European Pine Shoot Moth, Nantucket Pine Tip Moth)  
Numerous compounds are specifically labeled for Eastern Pine Shoot Borer, European Pine Shoot Moth, and Nantucket Pine Tip Moth. Of these, Imidan 70W are labeled for all three pests. To control Eastern Pine Shoot Borer, sprays should be applied in May to kill larvae before they bore into shoots. Most larvae have left shoots when damage is apparent and control will not be effective. Adults emerge from mid-April through June. Larvae of European Pine Shoot Moth should be controlled during the first two weeks of April, as they migrate to new shoots. Pines can also be treated in late-June or early-July, after eggs hatch. Nantucket Pine Tip Moth controls are directed at young larvae before they conceal themselves. Monitor adult emergence with pheromone traps and apply a registered insecticide 1-2 weeks after peak numbers of moths appear in traps (mid-May to mid-June). A second generation control may be needed between mid-July and late August, based on male moth emergence. Each product below controls a specific pest(s) or life stage and is marked accordingly (EPM= European Pine Shoot Moth Larvae; NPM= Nantucket Pine Tip Moth Larvae; PTC= Pine Tip Moths; PTL= Pine Tip Moths; PTML= Pine Tip Moth Larvae; RPM= Rhyacionia spp. Pine Tip Moth; PSM= Pine Shoot Moth; TM= Tip Moths).  

- 5lb. Malathion Spray™; P  
- ACE-jet™; RPM; P  
- Acephate E 75 WP™; PNC  
- Acephate E 75 WP™; PNC  
- Adjourn™; PNC; PTC  
- Ambush™  
- Ambush 25WP™; PNC  
- Asana XL™; PNC; PTC  
- Astro™; PNC  
- Azatin XL™; PNC; PTC  
- Bifenthrin Pro™; PNC  
- Carbaryl 4E™; PNC; PNM; PTC  
- Carbaryl 80SP™; PNM; PTC  
- Chlorpyrifos 4E AG™; PNC; PNM; PTC  
- Chlorpyrifos E-Pro™ 4EM; PNM  
- Chlorpyrifos Pro 2™; PNM; PTC  
- Chlorpyrifos Pro 4™; PNM  
- Confirm 2™; PNM; PTC  
- Conserve SCP™; PNC  
- Cygon 2E™; PNM; PNC; PNM; PTC  
- Decathlon 20 WP™; PTC  
- DeltaGard GC 5SC™; PTC  
- Dianazon 50W & AG500™; PNC; PTC  
- Dimate 4EC™; PNC; PTC  
- Dimethoate 4E™; PNM  
- Dimilin 25W & 4L™; PNC; PTC; PNM  
- Discus™; PTC  
- Dursban 50WP™; PNC; PNM  
- Entrust™; PTC  
- Hatchet™; PNC; PTC  
- Imidan 70W™; PNC; PTC  
- Lambda T™; PT; SB
### Shoot & Tip Boring Moths (continued)

- Lorsban 4E & Advanced<sup>EPM</sup>
- Lorsban 75WG<sup>EPM</sup>
- Malathion 5EC<sup>EPM</sup>
- Marathon II<sup>TM</sup>
- Mimic 2LV<sup>NPL</sup>
- Nufos 4E<sup>EPM</sup>
- Orthene TT&O Spray<sup>NPL</sup>
- Orthene TT&O WSP<sup>NPL</sup>
- Permethrin 3.2EC<sup>NPM</sup>
- Perm-UP 25DF<sup>NPM</sup>
- Pilot<sup>4EPM</sup>
- Pounce 25WP<sup>NPM</sup>
- Pyreneone Crop Spray<sup>EPM; NPM</sup>
- Pyrionyl Crop Spray<sup>EPM; NPM</sup>
- RScimitar GC<sup>PTM</sup>
- Sevin 4F<sup>EPM; NPM</sup>
- Sevin 80 Solupak & 80SP<sup>EPM; NPM</sup>
- Sevin 80WSP<sup>EPM; NPM</sup>
- Sevin RP<sup>4EPM</sup>
- Sevin SLE<sup>NPM</sup>
- Sevin XLR Plus<sup>EPM; NPM</sup>
- RS-FenvaloStar<sup>NPM; PTM</sup>
- RSilencer<sup>PTM</sup>
- SpinTor 2SC<sup>PTML</sup>
- Talstar Nursery Flowable<sup>TM</sup>
- Warhawk<sup>EP</sup>
- Whirlwind<sup>EP</sup>
- Yuma 4E<sup>EP</sup>

### Spittlebugs (Pine & Saratoga)

Adult spittlebugs should be controlled when 90% of the spittle masses are empty, usually in July. Each product below controls a specific pest(s) or life stage and is marked accordingly (PS= Pine Spittlebugs; S= Spittlebugs; SS= Saratoga Spittlebugs).

- Adjourn<sup>S</sup>
- Asana XL<sup>S</sup>
- Carbaryl 4L & 80SP<sup>PS</sup>
- Chlorypyrifos 4E AG<sup>PS; S</sup>
- Chlorypyrifos E-Pro 4<sup>S</sup>
- Chlorypyrifos Pro 2 & Pro 4<sup>S</sup>
- Decathlon 20 WP<sup>S</sup>
- DeltaGard GC 5SC<sup>S</sup>
- Dibrom 8E<sup>S</sup>
- Discus<sup>8</sup>
- Dursban 50W<sup>S</sup>
- Ecozin Plus ME 1.2%<sup>S</sup>
- Govern 4E<sup>PS; S</sup>
- Hatchet<sup>PS; S</sup>
- Lambda<sup>TS</sup>
- Lorsban 4E & Advanced<sup>PS; S</sup>
- Lorsban 75WG<sup>PS; S</sup>
- Nufos 4E<sup>PS; S</sup>
- Ornych Pro<sup>S</sup>
- Ornizin 3% EC<sup>PTML</sup>
- Pilot<sup>4EPM</sup>
- Pyrenone Crop Spray<sup>S</sup>
- Pyronyl Crop Spray<sup>S</sup>
- Scimitar GC<sup>PTM</sup>
- Sevin 4F<sup>EPM; NPM</sup>
- Sevin 80 Solupak & 80SP<sup>EPM; NPM</sup>
- Sevin 80WSP<sup>EPM; NPM</sup>
- Sevin RP<sup>4EPM</sup>
- Sevin SLE<sup>NPM</sup>
- Sevin XLR Plus<sup>EPM; NPM</sup>
- RS-FenvaloStar<sup>NPM; PTM</sup>
- RSilencer<sup>PTM</sup>
- RWarhawk<sup>EP</sup>
- RWarrior<sup>EP</sup>
- RWhirlwind<sup>EP</sup>
- Yuma 4E<sup>EP</sup>

### Weevils (Northern Pine, Pales, Pine Root Collar, & White Pine)

Each product below controls a specific pest(s) or life stage and is marked accordingly (NP= Northern Pine Weevil; P= Pales Weevil; PRC= Pine Root Collar Weevil; PW= Pine Weevils; WP= White Pine Weevil).

- ACE-jet<sup>WP</sup>
- Adjourn<sup>NP; P</sup>
- Asana XL<sup>NP; P</sup>
- Attain Nursery<sup>W</sup>
- Aza-Direct<sup>W</sup>
- Bifenthrin Pro<sup>W</sup>
- BotaniGard 22WP & ESW<sup>W</sup>
- Chlorypyrifos 4E AG<sup>P</sup>
- Chlorypyrifos E-Pro 4<sup>NP; P</sup>
- Chlorypyrifos Pro 2 & Pro 4<sup>NP; P</sup>
- Dibrom 8<sup>EWP</sup>
- Dimilin 25W & 4L<sup>W</sup>
- DuraGard ME<sup>RW</sup>
- Dursban 50W<sup>NP; P</sup>
- Furadan 4F<sup>P</sup>
- Govern 4E<sup>P</sup>
- Hatchet<sup>P</sup>
- Imidan 70-W<sup>P; PRC</sup>
- Lambda<sup>TP; PW</sup>
- Lorsban 4E & Advanced<sup>P</sup>
- Lorsban 75WG<sup>P</sup>
- Menace GC 7.9% Flowable<sup>W</sup>
- MSR Spray Concentrate<sup>W</sup>
- Mycotel<sup>ORW</sup>
- Naturalis L<sup>W</sup>
- Nufos 4E<sup>P</sup>
- Ornych Pro<sup>P; WP</sup>
- Orthene TT&O Spray 97R<sup>R</sup>
- Orthene TT&O WSP<sup>R</sup>
- Pilot<sup>4EP</sup>
- Pyreneone Crop Spray<sup>PW; W</sup>
- Pyrionyl Crop Spray<sup>P; PW</sup>
- Scimitar G<sup>CRW</sup>
- S-FenvaloStar<sup>NP; P</sup>
- Silencer<sup>P; PW</sup>
- Talstar Nursery Flowable<sup>W</sup>
- Up-Star SC<sup>W</sup>
- Warhawk<sup>P; PW</sup>
- Warrior<sup>P</sup>
- Whirlwind<sup>P</sup>
- Wisdom Flowable<sup>W</sup>

### Zimmerman Pine Moth

Each product below controls a specific pest(s) or life stage and is marked accordingly (ZM= Zimmerman Moth; ZPM= Zimmerman Pine Moth).

- ACE-jet<sup>ZPM (larvae)</sup>
- Chlorypyrifos Pro<sup>2ZPM</sup>
- Cygon<sup>2EZPM (Pine)</sup>
- Cymate<sup>267ZPM</sup>
- Dibrom<sup>8EZM</sup>
- Dimeate<sup>4ECZPM</sup>
- Dimethoate<sup>4EZPM</sup>
- Dimilin 25W & 4L<sup>ZM; ZPM</sup>
- Dursban 50W<sup>ZPM</sup>
- Endosulfan 3EC<sup>ZPM</sup>
- Mimic 2LV<sup>ZPM</sup>
- Onych Pro<sup>ZPM</sup>
- Thionex 3EC<sup>ZPM</sup>
Insecticides & Miticides Information

Call 1-800-PENN IPM (736-6476) for Christmas tree pest scouting reports (April through June)
Penn State Christmas tree website: http://www.ctrees.cas.psu.edu/
To view chemical labels, go to: http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=

DISCLAIMER
This publication (prepared by Dept of Agriculture) contains information pertaining to pesticides currently registered by the Pennsylvania Department of Agriculture for distribution and sale in the Commonwealth of Pennsylvania and is provided for informational purposes only by the PA Dept of Agriculture. Information derived from this publication does not constitute a label replacement or a recommendation. Before applying any pesticide, applicators must read and understand the entire pesticide label and any additional labeling related to the proposed use. Always check the container/package label to determine if the intended use site is included on the label. READ AND FOLLOW ALL LABEL INSTRUCTIONS BEFORE USING ANY PESTICIDE PRODUCT. NEVER USE ANY PESTICIDE IN A MANNER INCONSISTENT WITH THE US EPA APPROVED LABELING!

Document Key
L = Need Special Local Needs Label
R = RESTRICTED USE PESTICIDE

Class of Chemicals and Active Ingredients

Below is a listing of active ingredients in their respective chemical class, pertaining to all products listed throughout this document. AS ALWAYS, READ AND FOLLOW ALL LABEL INSTRUCTIONS BEFORE USING ANY PESTICIDE PRODUCT. NEVER USE ANY PESTICIDE IN A MANNER INCONSISTENT WITH THE US EPA APPROVED LABELING!

Biological/Botanical
- azadirachtin
  - Aza-Direct (Gowan Co)
  - Azatin XL (OHP, Inc)
  - Ecozin Plus 1.2% ME (Amvac Chemical Corp)
  - Ornizin 3% EC (ScPRO Corp)
- clarified hydrophobic extract of neem oil
  - Triact 70 (OHP, Inc)
- pyrethrins
  - Pyrenone Crop Spray (Bayer Environmental Science)
  - Pyreth-it Formula 2 (Whitmire Micro-Gen Research Labs Inc)
  - Pyrethrum TR (Whitmire Micro-Gen Research Labs Inc)
  - Pyronyl Crop Spray (Prentiss Inc)

Carbamates
- carbaryl
  - Carbaryl 4L (Drexel Chemical Co & Loveland Products Inc)
  - Carbaryl 80S (Drexel Chemical Co)
  - Sevin 4F, 80 Solupak, 80S, RP4, & XLR Plus (Bayer CropScience LP)
  - Sevin 80 WSP (Bayer CropScience LP & Bayer Environmental Science)
  - Sevin SL (Bayer Environmental Science, Lesco Inc, & PROKoZ Inc)
- carbofuran
  - Furadan 4F (FMC Corp)
- hexythiazox
  - Hexygon DF & Savey 50 DF (Gowan Co)
- methiocarb
  - Mesurol 75-W (Gowan Co)

Carbazate
- bifenthrine
  - Floramite SC (Chembura USA Corp)

Horticultural Oils
- paraffinic oil(s)
  - Ultra-Fine Oil (Whitmire Micro-Gen Research Labs Inc)
Horticultural Oils (continued)
  - petroleum oil(s)
    - Damoil (Drexel Chemical Co)
    - Glacial Spray Fluid (Loveland Products Inc)
    - Omni Oil 6E (Helena Chemical Co)
    - PureSpray Green (Petro Canada)
  - petroleum oil(s) (emulsified)
    - Saf-T-Side (Brandt Consolidated Inc)
  - refined petroleum distillate
    - SunSpray 6E (Sunoco Inc)

Hydrocarbon
  - endosulfan
    - Endosulfan 3EC (Drexel Chemical Co)
    - Thionex 3EC (Makhteshim Agan of North America Inc)

Insect Growth Regulator
  - buprofezin
    - Talus 40SC (Nichino North America Inc & SePRO Corp)
  - diflubenzuron
    - Dimilin 25W & 4L (Chemtura USA Corp)
  - pyriproxyfen
    - Distance (Valent U.S.A Corp)
  - tebufenozide
    - Confirm 2F & Mimic 2LV (Dow AgroSciences)

Insecticidal Soaps
  - potassium salts of fatty acids
    - All Pro Insecticidal Soap 40% (Value Garden Supply)
    - M-Pede (Dow AgroSciences LLC)

Macroyclic Lactone
  - abamectin
    - Abamectin 0.15 EC (FarmSaver.com LLC)
    - Ardent 0.15 EC & Avid 0.15 EC (Syngenta Crop Protection Inc)
    - Lucid (Rotam USA LLC)
    - Timectin 0.15EC (Tide International USA Inc)

Microbials
  - Bacillus thuringiensis
    - Biobit HP, Dipel ES & Pro DF, Foray 76B, & XenTari (Valent Biosciences Corp)
    - Crymax & Javelin WG (Certis USA LLC)
  - Beauveria bassiana
    - BotaniGard 22WP & ES & Mycotrol O (Laverlam International Corp)
    - Naturalis L (Troy Biosciences Inc)

Nictinoid
  - acetamiprid
    - TriStar 70 WSP (Cleary Chemical Corp)
  - dinotefuran
    - Safari 20SG (Valent U.S.A. Corp)
  - imidacloprid
    - Couraze 1.6F (Chemnovia Inc)
    - Discus & Marathon II (OHP Inc)
    - Imida E-AG 1.6F & Nuprid 1.6F (Nufarm Americas Inc)
    - Pasada 1.6F (Makhteshim Agan of North America Inc)
    - Prey 1.6 & Sherpa (Loveland Products Inc)
    - Provado 1.6F (Bayer CropScience LP)
    - Torrent 1.6F (Sipcam Agro USA Inc)
  - thiamethoxam
    - Flagship 25WG (Syngenta Crop Protection Inc)
Organophosphates

- acephate
  - ACE-Jet (Arborjet Inc)
  - Acephate E 75 WP (Nufarm Americas Inc)
  - Acephate Pro 75 & WSP (Micro Flo/Arysta LifeScience)
  - Acephate 75SP (Arysta LifeScience North America Corp)
  - Orthene TT&O Spray, Spray 97, & WSP (Amvac Chemical Corp)

- chlorpyrifos
  - Chlorpyrifos Pro 2 & Pro 4 (Micro Flo/Arysta LifeScience)
  - Chlorpyrifos 4E (FarmSaver.com)
  - Chlorpyrifos 4E AG (Drexel, FarmSaver.com, Makhteshim Agan of North America, & Micro Flo/Arysta)
  - Chlorpyrifos E-Pro 4 (Nufarm Americas)
  - DuraGard ME (Whitmire Micro-Gen Research Labs)
  - Dursban 50W (Dow AgroSciences)
  - Govern 4E (Tenkoz)
  - Hatchet (Dow AgroSciences)
  - Lorsban 4E & Advanced (Dow AgroSciences)
  - Lorsban 75WG (Gowan)
  - Nufos 4E (Cheminova)
  - Pilot 4E (Gharda Chemicals Ltd)
  - Warhawk (Loveland Products)
  - Whirlwind (Helena Chemical)
  - Yuma 4E (Winfield Solutions)

- diazinon
  - Diazinon 50W & AG500 (Makhteshim Agan of North America Inc)

- dimethoate
  - Dimate 4EC (Agriliance LLC)
  - Dimethoate 4E (Arysta LifeScience)

- malathion
  - 5 lb Malathion Spray & Malathion 50% E (Prentiss)
  - Malathion 5EC (Micro Flo/Arysta LifeScience & Drexel Chemical)

- naled
  - Dibrom 8E (Amvac Chemical)

- oxydemeton-methyl
  - MSR Spray Concentrate (Gowan)

- phosmet
  - Imidan 70-W (Gowan)

Oxadiazine

- indoxacarb
  - Avaunt (DuPont)

Oxazoline

- etoxazole
  - Tetrasan 5 WDG (Valent U.S.A.)

Phenoxpyrazoles

- fenpyroximate
  - Akari 5SC (SePRO)

Pyridine Azomethine

- pymetrozine
  - Endeavor (Syngenta Crop Protection)

Spinosyn

- calcium polysulfide
  - Lime Sulfur Solution (Miller Chemical & Fertilizer)
- spinosad
  - Conserve SC, Entrust, & SpinTor 2SC (Dow AgroSciences)
- sulfur
  - Sulfur 6L (Micro Flo/Arysta LifeScience)
Synthetic Pyrethroids

- bifenthrin
  - AAttain Nursery (Whitnire Micro-Gen Research Labs)
  - Bifenthrin Pro (Micro Flo/Arysta LifeScience)
  - Menace GC 7.9% Flowable (Nufarm Americas)
  - OnyxPro (FMC)
  - Talstar Nursery Flowable (FMC)
  - Up-Star SC (United Phosphorus)
  - Wisdom Flowable (Amvac Chemical)
- cyfluthrin
  - Decathlon 20 WP (OHP)
- deltamethrin
  - DeltaGard GC 5SC (Bayer Environmental Science)
- esfenvalerate
  - Adjourn (Makhteshim Agan of North America)
  - Asana XL (DuPont)
  - S-FenvaloStar (LG International (America))
- fenpropathrin
  - Tame 2.4 EC (Valent U.S.A.)
- lambda-cyhalothrin
  - Lambda T (Helena Chemical)
  - Scimitar GC (Syngenta Crop Protection)
  - Silencer (Makhteshim Agan of North America)
  - Warrior (Syngenta Crop Protection)
- permethrin
  - Ambush & Ambush 25W (Amvac Chemical)
  - Astro (FMC)
  - Perm-UP 25 DF (United Phosphorus)
  - Permethrin 3.2EC (Helena Chemical & Tenkcoz)
  - Pounce 25 WP (FMC)

Synthetic Sucrose Esters

- sorbitol octanoate
  - SorbiShield 90 (Natural Forces)
- sucrose octanoate esters
  - SucraShield (Natural Forces)

Tetrazine

- clofentezine
  - Apollo SC (Makhteshim Agan of North America)
  - Ovation SC (The Scotts Company)

Tetronic Acid

- spirodiclofen
  - Envidor 2SC (Bayer CropScience LP)
- spiromesifen
  - Judo (OHP)
- spirotetramat
  - Movento (Bayer CropScience LP)