

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).

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|---|--|---|--|
| ✓ All Pro Insecticidal Soap 40% ^{CSG} | ✓ ^R Govern 4E ^{CSG; ESG} | ✓ Omni Oil 6E ^A | ✓ Sherpa ^A |
| ✓ Carbaryl 4L & 80S ^{CSG; ESG} | ✓ ^R Hatchet ^{CSG; ESG} | ✓ ^R OnyxPro ^A | ✓ SorbiShield 90 ^A |
| ✓ ^R Chlorpyrifos 4E AG ^{CSG; ESG} | ✓ Imida E-AG 1.6 F ^A | ✓ Pasada 1.6F ^A | ✓ SucraShield ^A |
| ✓ ^R Chlorpyrifos E-Pro 4 ^{CSG; ESG; PB} | ✓ Impulse 1.6FL ^A | ✓ ^R Pilot 4E ^{CSG; ESG} | ✓ SunSpray 6E ^A |
| ✓ ^R Chlorpyrifos Pro 2 ^{CSG; ESG; PB} | ✓ ^R Lorsban 4E & Advanced ^{CSG; ESG} | ✓ Prey 1.6 ^A | ✓ Torrent 1.6F ^A |
| ✓ ^R Chlorpyrifos Pro 4 ^{CSG; ESG; PB} | ✓ Lorsban 75WG ^{CSG; ESG} | ✓ Provado 1.6F ^A | ✓ TriStar 70 WSP ^A |
| ✓ Couraze 1.6F ^A | ✓ Marathon II ^A | ✓ Sevin 4F ^{CSG; ESG} | ✓ Ultra-Fine Oil ^A |
| ✓ Damoil ^A | ✓ Movento ^A | ✓ Sevin 80S & 80 WSP ^{CSG; ESG} | ✓ ^R Warhawk ^{CSG; ESG} |
| ✓ ^R DeltaGard GC 5SC ^A | ✓ M-Pede ^{A; CSG} | ✓ Sevin RP4 ^{CSG; ESG} | ✓ ^R Whirlwind ^{CSG; ESG} |
| ✓ Discus ^A | ✓ ^R MSR Spray Concentrate ^A | ✓ Sevin SL ^{CSG; ESG} | ✓ ^R Yuma 4E ^{CSG; ESG} |
| ✓ ^R Dursban 50W ^{CSG; ESG; PB} | ✓ ^R Nufos 4E ^{CSG; ESG} | ✓ Sevin XLR Plus ^{CSG; ESG} | |

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).

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|--|---|---|---|
| ✓ 5 lb. Malathion Spray ^A | ✓ ^R Dursban 50W ^{A; BTA; WPA} | ✓ Omni Oil 6E ^A | ✓ Sevin XLR Plus ^{BTA} |
| ✓ Abamectin 0.15 EC ^A | ✓ Endeavor ^A | ✓ ^R OnyxPro ^A | ✓ ^R S-FenvaloStar ^{BTA} |
| ✓ ACE-jet ^A | ✓ Flagship 25WG ^A | ✓ Orthene TT&O Spray ^A | ✓ Sherpa ^A |
| ✓ ^R Adjourn ^{BTA} | ✓ Flora-Mek 0.15EC ^A | ✓ Orthene TT&O Spray 97 ^A | ✓ ^R Silencer ^{BTA} |
| ✓ Ardent 0.15 EC ^A | ✓ ^R Govern 4E ^A | ✓ Orthene TT&O WSP ^A | ✓ SorbiShield 90 ^A |
| ✓ ^R Asana XL ^{BTA} | ✓ ^R Hatchet ^A | ✓ Pasada 1.6F ^A | ✓ SucraShield ^A |
| ✓ Avid 0.15EC ^A | ✓ Imida E-AG 1.6 F ^A | ✓ ^R Pilot 4E ^A | ✓ SunSpray 6E ^A |
| ✓ Carbaryl 80S ^{BTA} | ✓ Impulse 1.6FL ^A | ✓ Prey 1.6 ^A | ✓ Talstar Nursery Flowable ^A |
| ✓ Chlorpyrifos 4E AG ^A | ✓ ^R Lambda T ^{BTA} | ✓ Provado 1.6 F ^A | ✓ Timectin 0.15 EC T&O ^A |
| ✓ Chlorpyrifos Pro 2 & Pro 4 ^A | ✓ ^R Lorsban 4E & Advanced ^A | ✓ Pyrenone Crop Spray ^A | ✓ Torrent 1.6F ^A |
| ✓ Couraze 1.6F ^A | ✓ Lorsban 75WG ^A | ✓ Pyreth-it Formula 2 ^A | ✓ Triact 70 ^A |
| ✓ Damoil ^A | ✓ Lucid ^A | ✓ Pyrethrum TR ^A | ✓ TriStar 70 WSP ^A |
| ✓ Decathlon 20 WPA | ✓ Malathion 5 EC & 50% E ^A | ✓ Pyronyl Crop Spray ^A | ✓ Ultra-Fine Oil ^A |
| ✓ ^R DeltaGard GC 5SC ^A | ✓ Marathon II ^A | ✓ Safari 20 SG ^A | ✓ Up-Star SC ^A |
| ✓ ^R Diazinon 50W & AG500 ^A | ✓ ^R Mesuroil 75-W ^A | ✓ Saf-T-Side ^A | ✓ ^R Warhawk ^A |
| ✓ Dibrom 8E ^A | ✓ Movento ^A | ✓ ^R Scimitar GC ^A | ✓ ^R Warrior ^{BTA} |
| ✓ Dimate 4EC ^{BTA} | ✓ M-Pede ^A | ✓ Sevin 4F ^{BTA} | ✓ ^R Whirlwind ^A |
| ✓ ^L Dimethoate 4E ^{BTA} | ✓ ^R MSR Spray Concentrate ^A | ✓ Sevin 80 Solupak & 80S ^{BTA} | ✓ ^R Wisdom Flowable ^A |
| ✓ Discus ^A | ✓ Naturalis L ^A | ✓ Sevin 80 WSP ^{BTA} | ✓ ^R Yuma 4E ^A |
| ✓ Distance ^A | ✓ ^R Nufos 4E ^A | ✓ Sevin RP4 ^{BTA} | |
| ✓ DuraGard ME ^A | ✓ Nuprid 1.6 F ^A | ✓ Sevin SL ^{BTA} | |

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).

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| ✓ 5lb. Malathion Spray ^B | ✓ ^R DeltaGard GC 5SC ^B | ✓ Malathion 5 EC & 50% E ^B | ✓ Sevin 80 Solupak & 80S ^B |
| ✓ ACE-jet ^B | ✓ ^R Diazinon 50W & AG 500 ^B | ✓ Mimic 2LV ^{BL} | ✓ Sevin 80WSP ^B |
| ✓ Acephate E 75 WP ^B | ✓ Dimate 4EC ^B | ✓ ^R OnyxPro ^B | ✓ Sevin RP4 ^B |
| ✓ ^R Attain Nursery ^B | ✓ ^L Dimethoate 4E ^B | ✓ Ornazin 3% EC ^{BL} | ✓ Sevin SL ^B |
| ✓ Azatin XL ^B | ✓ ^R Dimilin 25W & 4L ^B | ✓ Orthene TT&O Spray 97 ^B | ✓ Sevin XLR Plus ^B |
| ✓ ^R Bifenthrin Pro ^B | ✓ DiPel ES & Pro DF ^B | ✓ Orthene TT&O WSP ^B | ✓ ^R Silencer ^B |
| ✓ Biobit HP ^B | ✓ Discus ^B | ✓ ^R Permethrin 3.2EC ^B | ✓ SpinTor 2SC ^{BL} |
| ✓ Carbaryl 4L & 80S ^B | ✓ ^R Dursban 50W ^B | ✓ ^R Pounce 25 WP ^B | ✓ Talstar Nursery Flowable ^B |
| ✓ ^R Chlorpyrifos Pro 2 & Pro 4 ^B | ✓ Entrust ^{BL} | ✓ Pyrenone Crop Spray ^B | ✓ Up-Star SC ^{BL} |
| ✓ Conserve SC ^{BL} | ✓ Foray 76B ^{BL} | ✓ Pyreth-it Formula 2 ^B | ✓ ^R Warrior ^B |
| ✓ Crymax ^B | ✓ Javelin WG ^B | ✓ Pyronyl Crop Spray ^B | ✓ ^R Wisdom Flowable ^B |
| ✓ Cygon 2E ^B (Pine) | ✓ ^R Lambda T ^B | ✓ ^R Scimitar GC ^B | ✓ XenTari ^B |
| ✓ Decathlon 20 WP ^B | ✓ Lepinox WDG ^B | ✓ Sevin 4F ^B | |

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).

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|--|---|--|---|
| ✓ Astro ^{BB} | ✓ ^R OnyxPro ^{BB; PSB} | ✓ Sevin 80 Solupak & 80S ^{BB} | ✓ Sevin XLR Plus ^{BB} |
| ✓ Carbaryl 4L & 80S ^{BB} | ✓ Ornazin 3% EC ^{BB} | ✓ Sevin 80WSP ^{BB} | ✓ Talstar Nursery Flowable ^{PSB} |
| ✓ ^R Dursban 50W ^{BB} | ✓ ^R Scimitar GC ^{PSB} | ✓ Sevin RP4 ^{BB} | |
| ✓ Ecozin Plus 1.2% ME ^{BB} | ✓ Sevin 4F ^{BB} | ✓ Sevin SL ^{BB} | |

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).

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|---|--|--|---|
| ✓ ACE-jet ^{GML} | ✓ DiPel ES & Pro DF ^{GM} | ✓ ^R MSR Spray Concentrate ^{GM} | ✓ Sevin SL ^{GM} |
| ✓ Acephate E 75 WP ^{GML} | ✓ Discus ^{GML} | ✓ ^R Nufos 4E ^{GM} | ✓ Sevin XLR Plus ^{GM} |
| ✓ All Pro Insecticidal Soap 40% ^{GML} | ✓ ^R Dursban 50W ^{GM} | ✓ ^R OnyxPro ^{GML} | ✓ ^R Silencer ^{GM} |
| ✓ ^R Attain Nursery ^{GML} | ✓ Ecozin Plus 1.2% ME ^{GML} | ✓ Ornazin 3% EC ^{GML} | ✓ SpinTor 2SC ^{GML} |
| ✓ ^R Bifenthrin Pro ^{GML} | ✓ Entrust ^{GML} | ✓ Orthene TT&O Spray ^{GML} | ✓ Talstar Nursery Flowable ^{GML} |
| ✓ Biobit HP ^{GM} | ✓ Foray 76B ^{GML} | ✓ Orthene TT&O Spray 97 ^{GML} | ✓ TriStar 70 WSP ^{GML} |
| ✓ Carbaryl 4L & 80S ^{GM} | ✓ ^R Govern 4E ^{GM} | ✓ Orthene TT&O WSP ^{GML} | ✓ Up-Star SC ^{GML} |
| ✓ ^R Chlorpyrifos 4E AG ^{GM} | ✓ ^R Hatchet ^{GM} | ✓ ^R Pilot 4E ^{GM} | ✓ ^R Warhawk ^{GM} |
| ✓ ^R Chlorpyrifos E-Pro 4 ^{GM} | ✓ Imidan 70-W ^{GM} | ✓ Pyrenone Crop Spray ^{GM} | ✓ ^R Warrior ^{GM} |
| ✓ ^R Chlorpyrifos Pro 2 & Pro 4 ^{GM} | ✓ Javelin WG ^{GM} | ✓ Pyreth-It ^{GM; GML} | ✓ ^R Whirlwind ^{GM} |
| ✓ Confirm 2F ^{GML} | ✓ ^R Lambda T ^{GM} | ✓ Pyreth-It Formula 2 ^{GM; GML} | ✓ XenTari ^{GM} |
| ✓ Conserve SC ^{GML} | ✓ Lepinox WDG ^{GM} | ✓ Pyronyl Crop Spray ^{GM} | ✓ ^R Yuma 4E ^{GM} |
| ✓ Crymax ^{GM} | ✓ ^R Lorsban 4E & Advanced ^{GM} | ✓ Sevin 4F ^{GM} | |
| ✓ Decathlon 20 WP ^{GML} | ✓ Lorsban 75WG ^{GM} | ✓ Sevin 80 Solupak & 80S ^{GM} | |
| ✓ ^R DeltaGard GC 5SC ^{GML} | ✓ Mimic 2LV ^{GML} | ✓ Sevin 80WSP ^{GM} | |
| ✓ ^R Dimilin 25W & 4L ^{GM} | ✓ M-Pede ^{GME; GML} | ✓ Sevin RP4 ^{GM} | |

Midges (Douglas-fir Needle, Pine Needle)

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).

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|---|---|--|---|
| ✓ Acephate E 75 WP ^{DFN} | ✓ R ^D Dursban 50W ^{PN} | ✓ Orthene TT&O Spray ^{DFN} | ✓ R ^S Scimitar GCM |
| ✓ R ^A Adjourn ^{PN} | ✓ R ^G Govern 4E ^{DFN; PN} | ✓ Orthene TT&O Spray 97 ^{DFN} | ✓ R ^S FenvaloStar ^{PN} |
| ✓ R ^A Asana XL ^{PN} | ✓ R ^H Hatchet ^{DFN; PN} | ✓ Orthene TT&O WSP ^{DFN} | ✓ R ^W Warhawk ^{DFN; PN} |
| ✓ Aza-Direct ^M | ✓ R ^L Lorsban 4E & Advanced ^{DFN; PN} | ✓ R ^P Pilot 4E ^{DFN; PN} | ✓ R ^W Whirlwind ^{DFN; PN} |
| ✓ R ^C Chlorpyrifos 4E AG ^{PN} | ✓ Lorsban 75WG ^{DFN; PN} | ✓ Pyrenone Crop Spray ^M | ✓ R ^Y Yuma 4E ^{DFN; PN} |
| ✓ R ^C Chlorpyrifos Pro 2 & Pro 4 ^{PN} | ✓ R ^N Nufos 4E ^{DFN; PN} | ✓ Pyreth-It Formula 2 ^M | |
| ✓ Dimate 4E ^{CM} | ✓ Ornazin 3% EC ^M | ✓ Pyronyl Crop Spray ^M | |

Mites

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).

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|--|--|--|--|
| ✓ 5lb. Malathion Spray SM | ✓ R ^D DeltaGard GC 5SC ^M | ✓ R ^M Menace GC 7.9% Flowable SM | ✓ Sevin SL ^{EM} |
| ✓ Abacide 2 SM | ✓ R ^D Diazinon 50W & AG500 ^{M; SM} | ✓ R ^M Mesurool 75-W ^M | ✓ Sevin XLR Plus ^{EM} |
| ✓ Abamectin 0.15 EC ^{EM; SM} | ✓ Dibrom 8E SM | ✓ M-Pede SM | ✓ SorbiShield 90 ^M |
| ✓ Abamectin E-Pro 0.15 EC ^{EM; SM} | ✓ Dimate 4EC ^M | ✓ R ^M MSR Spray Concentrate ^M | ✓ SucraShield ^M |
| ✓ ACE-jet SM | ✓ L ^D Dimethoate 4E ^M | ✓ Naturalis L ^M | ✓ Sulfur 6L ^{M; SM} |
| ✓ Akari 5SC ^{EM; SM} | ✓ R ^D DuraGard ME SM | ✓ R ^N Nufos 4E SM | ✓ SunSpray 6E ^{EM; SM} |
| ✓ All Pro Insecticidal Soap 40% SM | ✓ R ^D Dursban 50W ^{M; SM} | ✓ Omni Oil 6E ^{EM; SM} | ✓ Talstar Nursery Flowable ^{M; SM} |
| ✓ Apollo SC SM | ✓ L ^E Envidor 2 SC ^{EM; SM} | ✓ R ^O OnyxPro ^{M; SM} | ✓ Tame 2.4 EC ^{M; SM} |
| ✓ Ardent 0.15 EC ^{EM; M; SM} | ✓ Flora-Mek 0.15EC ^{EM; M; SM} | ✓ Ovation SC SM | ✓ Tetrasan 5 WDG SM |
| ✓ R ^A Attain Nursery ^{M; SM} | ✓ Floramite SC ^{M; SM} | ✓ R ^P Pilot 4E SM | ✓ Timectin 0.15 EC ^{EM; SM} |
| ✓ Avid 0.15EC ^{EM; M; SM} | ✓ Glacial Spray Fluid SM | ✓ PureSpray Green SM | ✓ Triact 70 ^M |
| ✓ Aza-Direct ^M | ✓ R ^G Govern 4E SM | ✓ Pyrethrum TR ^{M; SM} | ✓ Ultra-Fine Oil SM |
| ✓ R ^B Bifenthrin Pro SM | ✓ R ^H Hatchet SM | ✓ Saf-T-Side ^M | ✓ Up-Star SC ^{M; SM} |
| ✓ Carbaryl 4L & 80SE ^M | ✓ Hexygon DF ^{M; SM} | ✓ Savey 50 DF SM | ✓ R ^W Warhawk SM |
| ✓ R ^C Chlorpyrifos 4E AG SM | ✓ Judo SM | ✓ R ^S Scimitar GC SM | ✓ R ^W Whirlwind SM |
| ✓ R ^C Chlorpyrifos E-Pro 4 SM | ✓ R ^L Lorsban 4E & Advanced SM | ✓ Sevin 4F ^{EM} | ✓ R ^W Wisdom Flowable SM |
| ✓ R ^C Chlorpyrifos Pro 2 & Pro 4 ^{M; SM} | ✓ Lorsban 75WG SM | ✓ Sevin 80 RP4 ^{EM} | ✓ R ^Y Yuma 4E SM |
| ✓ Conserve SC SM | ✓ Lucid ^{EM; M; SM} | ✓ Sevin 80 Solupak & 80SE ^M | ✓ Zeal SM |
| ✓ Damoil SM | ✓ Malathion 5 EC SM | ✓ Sevin 80WSP ^{EM} | |

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).

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|---|---|---|--|
| ✓ ACE-Jet ^{SL} | ✓ Couraze 1.6FS | ✓ R ^H Hatchet ^{EPS} | ✓ R ^N Nufos 4E ^{EPS} |
| ✓ R ^A Adjourn ^{EPS} | ✓ Decathlon 20 WP ^{EPS; SL} | ✓ Imida E-AG 1.6 FS | ✓ Nuprid 1.6FS |
| ✓ Asana XL ^{EPS} | ✓ R ^D DeltaGard GC 5SC ^{SL} | ✓ Imidan 70-W ^S | ✓ Omni Oil 6E ^{SL} |
| ✓ Azatin XL ^S | ✓ R ^D Dimilin 25W & 4L ^S | ✓ Impulse 1.6FL ^S | ✓ R ^O OnyxPro ^{PS} |
| ✓ Carbaryl 4L & 80SPS; S | ✓ Discus ^{SL} | ✓ R ^L Lambda T ^S | ✓ Ornazin 3% EC ^{EPS; S} |
| ✓ R ^C Chlorpyrifos 4E-AG ^{EPS; S} | ✓ R ^D Dursban 50W ^{EPS; S} | ✓ R ^L Lorsban 4E & Advanced ^{EPS} | ✓ Orthene TT&O Spray 97 ^S |
| ✓ R ^C Chlorpyrifos E-Pro 4 ^{PS; S} | ✓ Entrust ^{EPL; SL} | ✓ Lorsban 75WG ^{EPS} | ✓ Orthene TT&O WSP ^S |
| ✓ R ^C Chlorpyrifos Pro 2 & Pro 4 ^{EPS; S} | ✓ Flagship 25WG ^S | ✓ Marathon II ^{SL} | ✓ Pasada 1.6FS |
| ✓ Conserve SCE ^{EPL} | ✓ R ^G Govern 4E ^{EPS} | ✓ M-Pede ^{SL} | ✓ R ^P Pilot 4E ^{EPS} |

Sawflies (continued)

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|--|-----------------------------------|---|-------------------------------------|
| ✓ Prey 1.6 ^S | ✓ Sevin 80 ^{PS; S} | ✓ Sherpa ^S | ✓ RWarhawk ^{EPS} |
| ✓ Provado 1.6 ^{FS} | ✓ Sevin 80 ^{WSPPS; S} | ✓ RSilencer ^{PS} | ✓ RWarrior ^S |
| ✓ Saf-T-Side ^S | ✓ Sevin RP4 ^{PS; S} | ✓ SpinTor 2 ^{SC^{EPL}} | ✓ RWhirlwind ^{EPS} |
| ✓ RScimitar GC ^S | ✓ Sevin SL ^{PS; S} | ✓ SunSpray 6 ^{ESL} | ✓ RYuma 4 ^{E^{PS}} |
| ✓ Sevin 4 ^{F^{PS; S}} | ✓ Sevin XLR Plus ^{PS; S} | ✓ Torrent 1.6 ^{FS} | |
| ✓ Sevin 80 Solupak ^S | ✓ RS-FenvaloStar ^{EPS} | ✓ TriStar 70 WSP ^{EPS} | |

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 Crawlers; PT= Pine Tortoise Scale; S= Scales; SC= Scale Crawlers; SB= Spruce Bud Scale; SP= Striped Pine Scale).

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|---|---|--|---|
| ✓ 5lb. Malathion Spray ^{PN} | ✓ LDimethoate 4 ^{E^{EH}} | ✓ Movento ^S | ✓ Sevin 80 ^{WSP^{SC}} |
| ✓ ACE-jet ^S | ✓ Discus ^{SC} | ✓ M-Pede ^{PN; S} | ✓ Sevin RP4 ^{SC} |
| ✓ Acephate E 75 WP ^{SC} | ✓ RDuraGard ME ^S | ✓ RMSR Spray Concentrate ^{PN} | ✓ Sevin SL ^{SC} |
| ✓ Acephate Pro 75 & WSP ^{SC} | ✓ RDursban 50 ^{WP^{PN}} | ✓ RNufos 4 ^{E^{PN; PT; SB; SP}} | ✓ Sevin XLR Plus ^{SC} |
| ✓ RAttain Nursery ^{PNC} | ✓ Flagship 25 ^{WG^S} | ✓ Omni Oil 6 ^{ES^C} | ✓ SucraShield ^S |
| ✓ RBifenthrin Pro ^{PNC} | ✓ Glacial Spray Fluid ^S | ✓ ROnyxPro ^{C; EH; PNC} | ✓ SunSpray 6 ^{ES^C} |
| ✓ Carbaryl 4 ^{L^{S; SC}} | ✓ RGovern 4 ^{E^{PN; PT; SB; SP}} | ✓ Orthene TT&O Spray ^{SC} | ✓ Talstar Nursery Flowable ^{PNC} |
| ✓ Carbaryl 80 ^{SC} | ✓ RHatchet ^{PN; PT; SB; SP} | ✓ Orthene TT&O Spray 97 ^{SC} | ✓ Talus 40 ^{SC^S} |
| ✓ RChlorpyrifos 4E AG ^{PN; PT; SB; SP} | ✓ RLambda T ^{PN; PT} | ✓ Orthene WSP ^{SC} | ✓ Triact 70 ^S |
| ✓ RChlorpyrifos E-Pro 4 ^{PN} | ✓ Lime Sulfur Solution ^{PN} | ✓ RPilot 4 ^{E^{PN; PT; SB; SP}} | ✓ TriStar 70 WSP ^{PN} |
| ✓ RChlorpyrifos Pro 2 ^{PN} | ✓ RLorsban 4 ^{E^{PN; PT; SB; SP}} | ✓ PureSpray Green ^{SC} | ✓ Ultra-Fine Oil ^{SC} |
| ✓ RChlorpyrifos Pro 4 ^{PN; PT; SB; SP} | ✓ Lorsban 75 ^{WG^{PN; PT; SB; SP}} | ✓ Pyrethrum TR ^S | ✓ RWarhawk ^{PN; PT; SB; SP} |
| ✓ Damoil ^S | ✓ RLorsban Advanced ^{PN; PT; SB; SP} | ✓ Safari 20 SG ^{C; EH; S} | ✓ RWarrior ^{PN; PT} |
| ✓ Decathlon 20 WP ^{SC} | ✓ Malathion 5 EC ^{PN} | ✓ Saf-T-Side ^S | ✓ RWhirlwind ^{PN; PT; SB; SP} |
| ✓ RDeltaGard GC 5 ^{SC^{SC}} | ✓ Malathion 50% E ^{SC} | ✓ RScimitar GC ^{SC} | ✓ RWisdom Flowable ^{PNC} |
| ✓ RDiazinon 50W & AG500 ^{PNC} | ✓ Marathon II ^S | ✓ Sevin 4 ^{F^{SC}} | ✓ RYuma 4 ^{E^{PN; PT; SB; SP}} |
| ✓ Dimate 4 ^{EC^{EH}} | ✓ RMenace GC 7.9% Flowable ^{PNC} | ✓ Sevin 80 Solupak & 80 ^{SC} | |

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, and Imidan 70-W 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, again 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; NPL= Nantucket Pine Tip Moth Larvae; NPM= Nantucket Pine Tip Moth; PTM= Pine Tip Moths; PTML= Pine Tip Moth Larvae; RPM= Rhyacionia spp. Pine Tip Moth; PSM= Pine Shoot Moth; TM= Tip Moths).

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|---|---|--|---|
| ✓ 5lb. Malathion Spray ^{EPM} | ✓ Astro ^{NPM} | ✓ RChlorpyrifos Pro 4 ^{EPM; NPM} | ✓ LDimethoate 4 ^{E^{EPM; NPM}} |
| ✓ ACE-jet ^{NPL; RPM} | ✓ Azatin XL ^{EPM; PTM} | ✓ Confirm 2 ^{F^{EPM; NPM}} | ✓ RDimilin 25W & 4L ^{PSM; PTM} |
| ✓ Acephate 75 ^{SP^{NPL}} | ✓ RBifenthrin Pro TM | ✓ Conserve SC ^{NPM} | ✓ Discus ^{PTM} |
| ✓ Acephate E 75 WP ^{NPL} | ✓ Carbaryl 4 ^{L^{EPM; NPM}} | ✓ Cygon 2 ^{E^{EPM; NPM}} (Pine) | ✓ RDursban 50 ^{W^{EPM; NPM}} |
| ✓ RAdjourn ^{NPM; PTM} | ✓ Carbaryl 80 ^{S^{EPM; NPM}} | ✓ Decathlon 20 WP ^{PTM} | ✓ Entrust ^{PTML} |
| ✓ RAmbush ^{NPM} | ✓ RChlorpyrifos 4E AG ^{EPM} | ✓ RDeltaGard GC 5 ^{SC^{PTM}} | ✓ RHatchet ^{EPM} |
| ✓ Ambush 25 ^{W^{NPM}} | ✓ RChlorpyrifos E-Pro 4 ^{EPM; NPM} | ✓ RDiazinon 50W & AG500 ^{EPM} | ✓ Imidan 70-W ^{EPM; NPM} |
| ✓ RAsana XL ^{NPM; PTM} | ✓ RChlorpyrifos Pro 2 ^{EPM; NPM} | ✓ Dimate 4 ^{EC^{NPM}} | ✓ RLambda T ^{PTM} |

Shoot & Tip Boring Moths (continued)

- ✓ Lorsban 4E & Advanced^{EPM}
- ✓ Lorsban 75WG^{EPM}
- ✓ Malathion 5EC^{EPM}
- ✓ Marathon II^{PTML}
- ✓ Mimic 2LV^{NPL}
- ✓ RNufos 4E^{EPM}
- ✓ ROnyxPro^{NPM}
- ✓ Ornazin 3% EC^{PTML}
- ✓ Orthene TT&O Spray 97^{NPL}
- ✓ Orthene TT&O Spray^{NPL}
- ✓ Orthene TT&O WSP^{NPL}
- ✓ RPermethrin 3.2EC^{NPM}
- ✓ Perm-UP 25DF^{NPM}
- ✓ RPilot 4E^{EPM}
- ✓ RPounce 25WP^{NPM}
- ✓ Pyrenone Crop Spray^{EPM; NPM}
- ✓ Pyreth-it Formula 2^{EPM}
- ✓ Pyronyl Crop Spray^{EPM; NPM}
- ✓ RScimitar GC^{PTM}
- ✓ Sevin 4F^{EPM; NPM}
- ✓ Sevin 80 Solupak & 80S^{EPM; NPM}
- ✓ Sevin 80WSP^{EPM; NPM}
- ✓ Sevin RP4^{EPM; NPM}
- ✓ Sevin SL^{EPM; NPM}
- ✓ Sevin XLR Plus^{EPM; NPM}
- ✓ RS-FenvaloStar^{NPM; PTM}
- ✓ RSilencer^{PTM}
- ✓ SpinTor 2SC^{PTML}
- ✓ Talstar Nursery FlowableTM
- ✓ RWarhawk^{EPM}
- ✓ RWarrior^{PTM}
- ✓ RWhirlwind^{EPM}
- ✓ RYuma 4E^{EPM}

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).

- ✓ RAdjourn^S
- ✓ RAsana XL^S
- ✓ Carbaryl 4L & 80SPS
- ✓ RChlorpyrifos 4E AG^{PS; S}
- ✓ RChlorpyrifos E-Pro 4^S
- ✓ RChlorpyrifos Pro 2 & Pro 4^S
- ✓ Decathlon 20 WP^S
- ✓ RDeltaGard GC 5SC^S
- ✓ Dibrom 8E^S
- ✓ Discus^S
- ✓ RDursban 50WS
- ✓ Ecozin Plus ME 1.2%^S
- ✓ RGovern 4E^{PS; S}
- ✓ RHatchet^{PS; S}
- ✓ RLambda T^S
- ✓ RLorsban 4E & Advanced^{PS; S}
- ✓ Lorsban 75WG^{PS; S}
- ✓ RNufos 4E^{PS; S}
- ✓ ROnyxPro^S
- ✓ Ornazin 3% EC^S
- ✓ RPilot 4E^{PS; S}
- ✓ Pyrenone Crop Spray^S
- ✓ Pyronyl Crop Spray^S
- ✓ RScimitar GC^S
- ✓ Sevin 4F^{PS}
- ✓ Sevin 80 Solupak & 80SPS
- ✓ Sevin 80WSP^{PS}
- ✓ Sevin RP4^{PS}
- ✓ Sevin XLR Plus^{PS}
- ✓ RS-FenvaloStar^S
- ✓ RWarhawk^{PS; S}
- ✓ RWarrior^S
- ✓ RWhirlwind^{PS; S}
- ✓ RYuma 4E^{PS; S}

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; RW= Root Weevil; W= Weevils; WP= White Pine Weevil).

- ✓ ACE-jet^{WP}
- ✓ RAdjourn^{NP; P}
- ✓ Asana XL^{NP; P}
- ✓ RAttain Nursery^W
- ✓ RLavaunt^{WP}
- ✓ Aza-Direct^W
- ✓ RBifenthrin Pro^W
- ✓ BotaniGard 22WP & ES^W
- ✓ RChlorpyrifos 4E AG^P
- ✓ RChlorpyrifos E-Pro 4^{NP; P}
- ✓ RChlorpyrifos Pro 2 & Pro 4^{NP; P}
- ✓ Dibrom 8E^{PW}
- ✓ RDimilin 25W & 4L^W
- ✓ RDuraGard ME^{RW}
- ✓ RDursban 50W^{NP; P}
- ✓ RFuradan 4F^P
- ✓ RGovern 4E^P
- ✓ RHatchet^P
- ✓ Imidan 70-W^{P; PRC}
- ✓ RLambda T^{P; PW}
- ✓ RLorsban 4E & Advanced^P
- ✓ Lorsban 75WG^P
- ✓ RMenace GC 7.9% Flowable^W
- ✓ RMSR Spray Concentrate^{WP}
- ✓ Mycotrol OR^W
- ✓ Naturalis LR^W
- ✓ RNufos 4E^P
- ✓ ROnyxPro^{P; W; WP}
- ✓ Orthene TT&O Spray 97^R
- ✓ Orthene TT&O WSP^R
- ✓ RPilot 4E^P
- ✓ Pyrenone Crop Spray^{PW; W}
- ✓ Pyronyl Crop Spray^{P; PW}
- ✓ RScimitar GC^{RW}
- ✓ RS-FenvaloStar^{NP; P}
- ✓ RSilencer^{P; PW}
- ✓ Talstar Nursery Flowable^W
- ✓ Up-Star SC^W
- ✓ RWarhawk^{P; PW}
- ✓ RWarrior^P
- ✓ RWhirlwind^P
- ✓ RWisdom Flowable^W

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^{ZPM (larvae)}
- ✓ RChlorpyrifos Pro 2^{ZPM}
- ✓ Cygon 2E^{ZPM (Pine)}
- ✓ Cymate 267^{ZPM}
- ✓ Dibrom 8E^{ZM}
- ✓ Dimate 4EC^{ZPM}
- ✓ LDimethoate 4E^{ZPM}
- ✓ RDimilin 25W & 4L^{ZM; ZPM}
- ✓ RDursban 50W^{ZPM}
- ✓ REndosulfan 3EC^{ZPM}
- ✓ Mimic 2LV^{ZPM}
- ✓ ROnyxPro^{ZPM}
- ✓ RThionex 3EC^{ZPM}

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)
 - Ornazin 3% EC (SePRO 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
 - **R**Furadan 4F (FMC Corp)
- hexythiazox
 - Hexygon DF & Savey 50 DF (Gowan Co)
- methiocarb
 - **R**Mesurool 75-W (Gowan Co)

Carbazate

- bifenazate
 - Floramite SC (Chemtura 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
 - ^REndosulfan 3EC (Drexel Chemical Co)
 - ^RThionex 3EC (Makhteshim Agan of North America Inc)

Insect Growth Regulator

- buprofezin
 - Talus 40SC (Nichino North America Inc & SePRO Corp)
- diflubenzuron
 - ^RDimilin 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)

Macrocyclic 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 & Myocotrol 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 (Cheminova 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
 - RChlorpyrifos Pro 2 & Pro 4 (Micro Flo/Arysta LifeScience)
 - RChlorpyrifos 4E (FarmSaver.com)
 - RChlorpyrifos 4E AG (Drexel, FarmSaver.com, Makhteshim Agan of North America, & Micro Flo/Arysta)
 - RChlorpyrifos E-Pro 4 (Nufarm Americas)
 - RDuraGard ME (Whitmire Micro-Gen Research Labs)
 - RDursban 50W (Dow AgroSciences)
 - RGovern 4E (Tenkoz)
 - RHatchet (Dow AgroSciences)
 - RLorsban 4E & Advanced (Dow AgroSciences)
 - Lorsban 75WG (Gowan)
 - RNufos 4E (Cheminova)
 - RPilot 4E (Gharda Chemicals Ltd)
 - RWarhawk (Loveland Products)
 - RWhirlwind (Helena Chemical)
 - RYuma 4E (Winfield Solutions)
- diazinon
 - RDiazinon 50W & AG500 (Makhteshim Agan of North America Inc)
- dimethoate
 - RDimate 4EC (Agrilience LLC)
 - RLDimethoate 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
 - RMSR Spray Concentrate (Gowan)
- phosmet
 - Imidan 70-W (Gowan)

Oxadiazine

- indoxacarb
 - RLAvaunt (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
 - ^RAttain Nursery (Whitmire Micro-Gen Research Labs)
 - ^RBifenthrin Pro (Micro Flo/Arysta LifeScience)
 - ^RMenace GC 7.9% Flowable (Nufarm Americas)
 - ^ROnyxPro (FMC)
 - Talstar Nursery Flowable (FMC)
 - Up-Star SC (United Phosphorus)
 - ^RWisdom Flowable (Amvac Chemical)
- cyfluthrin
 - Decathlon 20 WP (OHP)
- deltamethrin
 - ^RDeltaGard GC 5SC (Bayer Environmental Science)
- esfenvalerate
 - ^RAdjourn (Makhteshim Agan of North America)
 - ^RAsana XL (DuPont)
 - ^RS-FenvaloStar (LG International (America))
- fenpropathrin
 - Tame 2.4 EC (Valent U.S.A.)
- lambda-cyhalothrin
 - ^RLambda T (Helena Chemical)
 - ^RScimitar GC (Syngenta Crop Protection)
 - ^RSilencer (Makhteshim Agan of North America)
 - ^RWarrior (Syngenta Crop Protection)
- permethrin
 - Ambush & Ambush 25W (Amvac Chemical)
 - Astro (FMC)
 - Perm-UP 25 DF (United Phosphorus)
 - ^RPermethrin 3.2EC (Helena Chemical & Tenkoz)
 - ^RPounce 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
 - ^REnvidor 2SC (Bayer CropScience LP)
- spiromesifen
 - Judo (OHP)
- spirotetramat
 - Movento (Bayer CropScience LP)