COMMERCIAL CHRISTMAS TREE PRODUCTION INSECT CONTROL

Pesticide labels for commercial and homeowner products that are currently registered for use in Arkansas may be found through the Arkansas Department of Agriculture/State Plant Board website by clicking on the following link: https://agriculture.arkansas.gov/crops-industry/pesticides/pesticide-registration/

Insect or Mite	Insecticide and Formulations	Amount of Formulation Per Gallon of Spray	Amount Per 100 Gallons of Water	Minimum Interval (Hours) Between Application and Reentry	Precautions and Remarks
Adelgids (Balsam Woolly Adelgid, Cooley, Eastern Spruce Gall, Hemlock Woolly Adelgid)	bifenthrin 25% (Sniper)		3.9-12.8 oz/acre	12	Will also control twig aphids and spider mites but not rust mites.
	bifenthrin (OnyxPro)		See label.	12	See label.
	chlorpyrifos (Lorsban 4E, Nufos 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress. Control is achieved only when eggs and crawlers are not present.
	dimethoate (Dimethoate 400)		1 to 1.5 pt/acre	10 days	
	dinotefuran (Safari)		4-8 oz/100 gal	12	DO NOT apply more than 2.7 lb per acre.
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	Use full rate to control balsam woolly adelgid.
	imidacloprid (Pasada 1.6F, Provado 1.6 F)		4-8 oz/acre OR 2 oz/100 gal	12	Adding a spray adjuvant may improve coverage. DO NOT apply more than 40 oz/acre per year.
	lambda-cyhalothrin (Silencer,)		2.58-5.12 oz/acre	24	Maximum use 1.92 pt/acre per year.
	petroleum oil (Damoil)		2-4 gal/100 gal dormant use 1-3 gal/100 gal summer use	4	
	spirotetramat (Movento)		5-10 oz/acre	24	Maximum use 20 oz/acre per year. Use adjuvant to increase penetration.
	thiamethoxam (Flagship 25WG)		4 to 8.5 oz/100 gal or 8 to 17 oz/acre	12	Maximum use 17 oz/acre/year.
Ants	bifenthrin (OnyxPro)		See label.	12	See label.
	carbaryl (Sevin SL)		1 qt/acre	12	
	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress.
	insecticidal soap (M-Pede)		1 to 2 gal/100 gal	12	May cause foliage discoloration.
Aphids (including balsam twig aphid and cinara aphid)	abamectin (Avid 0.15 EC)		8 oz/100 gal	12	DO NOT apply more than 16 oz or less than 8 oz per acre. To suppress aphids, spray must contact young immatures.
	acephate (Orthene Tree, Turf, & Ornamental) 97% Spray WSP		1/4 to 1/2 lb. (4 to 8 oz) 1/3 to 2/3 lb (5 1/3 to 10 2/3 oz)	24	Apply the specified amount of ORTHENE Turf, Tree & Ornamental in 100 gals. of water with a hydraulic sprayer. The addition of a suitable sticker improves control.
	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pt may be used.
	Beaveria bassiana (Naturalis L)	0.3-1.0 oz/gal	30-100 oz/100 gal	4	Spray immediately after mixing.
	bifenthrin 25% (Sniper)		3.9-12.8 oz/acre	12	Will also control twig aphid and spider mites but not rust mites.
	bifenthrin (OnyxPro)		See label.	12	See label.
	carbaryl (Sevin SL)		1 qt/acre	12	
	chlorpyrifos (Lorsban 4E, Nufos 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress.
	cinnamaldehyde (Cinnamite)	0.85 oz/gal	85 oz/100 gal	4	
	cyantraniliprole (Mainspring GNL)		See label.	4	No more than 32 fl oz per acre per year.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	

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Aphids (cont.) (including balsam twig aphid and cinara aphid)	flupyradifurone (Sivanto Prime)		7 to 14 oz/acre	4	Not for use in bare-ground plantations. May also control balsam woolly adelgid.
	imidacloprid (Pasada 1.6F, Provado 1.6 F)		4-8 oz/acre OR 2 oz/100 gal	12	Adding a spray adjuvant may improve control. DO NOT apply more than 40 oz/acre per year.
	insecticidal soap (M-Pede)		1 to 2 gal/100 gal	12	May cause foliage discoloration.
	lambda-cyhalothrin (Silencer) (Warrior II)		 2.58-5.12 oz/acre 1.28-2.56 oz/acre	 24 24	Maximum use 1.92 pt/acre per year.
	mineral oil emulsion (TriTek)		1 to 2 gal/100 gal	4	Maintain agitation until solution is used.
	petroleum oil (Damoil)		2-4 gal/100 gal dormant use 1-3 gal/100 gal summer use	4	
	pymetrozine (Endeavor)		up to 10 oz/acre	12	
	spirotetramat (Movento)		5-10 oz/acre	24	Maximum use 20 oz/acre per year. Use adjuvant to increase penetration.
	thiamethoxam (Flagship 25WG)		4 to 8.5 oz/100 gal or 8 to 17 oz/acre	12	Maximum use 17 oz/acre/year.
Bagworm	acephate (Orthene Tree, Turf, & Ornamental) 97% Spray WSP		 1/4 to 1/2 lb. (4 to 8 oz) 1/3 to 2/3 lb (5 1/3 to 10 2/3 oz)	24	Apply the specified amount of ORTHENE Turf, Tree & Ornamental in 100 gals. of water with a hydraulic sprayer. The addition of a suitable sticker improves control.
	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pt may be used.
	bifenthrin (OnyxPro)		See label.	12	See label.
	carbaryl (Sevin SL)		1 qt/acre	12	
	cyantraniliprole (Mainspring GNL)		See label.	4	No more than 32 fl oz per acre per year.
	diflubenzuron (Dimilin 25W)		2-4 oz/acre	12	Apply to early instars in mid to late June.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	lambda-cyhalothrin (Silencer) (Warrior II)		 2.58-5.12 oz/acre 1.28-2.56 oz/acre	 24 24	Maximum use 1.92 pt/acre per year.
	spinosad (Conserve SC, SpinTor 2SC)		See label.	4	
	tebufenozide (Confirm 2F)		4-8 oz/acre	4	Apply to early instar larvae; foliage development should be a minimum of 20%. DO NOT apply more than 16 oz/acre per year.
Elongate Hemlock Scale and Cryptomeria Scale	bifenthrin 25% (Sniper)		3.9-12.8 oz/acre	12	Will also control twig aphid and spider mites but not rust mites.
	bifenthrin (OnyxPro)		See label.	12	See label.
	buprofezin (Talus 70 DF)		14 oz/acre	12	
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	dinotefuran (Safari)		4-8 oz/100 gal	12	DO NOT apply more than 2.7 lb per acre.
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	Best results when mixed with dimethoate.

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Insect or Mite	Insecticide and Formulations	Amount of Formulation Per Gallon of Spray	Amount Per 100 Gallons of Water	Minimum Interval (Hours) Between Application and Reentry	Precautions and Remarks
Elongate Hemlock Scale and Cryptomeria Scale(cont.)	mineral oil emulsion (TriTek)		1 to 2 gal/100 gal	4	Maintain agitation until solution is used.
	spirotetramat (Movento)		5 to 10 oz/acre	24	Maximum use 20 oz/acre/year. Use adjuvant to increase penetration.
European Pine Shoot Moth	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pt may be used.
	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	phosmet (Imidan 70-W)		1.3-1.5 lb/acre	13 days	
Midge (Douglas fir needle midge, pine needle midge)	acephate (Orthene Tree, Turf, & Ornamental) 97% Spray WSP		 1/2 lb. (8 oz) 2/3 lb (10 2/3 oz)	24	Apply the specified amount of ORTHENE Turf, Tree & Ornamental in 100 gals. of spray per acre by ground.
	azadirachtin (Aza-Direct)		1 to 2 pts/acre	4	Under extremely heavy pest pressure up to 3.5 pints may be used.
	carbaryl (Sevin SL)		1 qt/acre	12	
	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	Do not treat plants under extreme heat or drought stress.
	diflubenzuron (Dimilin 4L)		1 to 2 oz/acre	12	Apply when second generation instars are present or 70% of first generation pupal cases are empty.
	dimethoate (Dimethoate 400 or Clean Crop)		1 to 1 1/2 pt/acre	10 days	
	esfenvalerate (Asana XL)		5.8 to 9.6 oz/100 gal	12	
	permethrin (Permethrin 3.2 EC)		4 to 8 oz/acre	12	
	phosmet (Imidan 70-WSB)		1.3 to 1.5 lb/acre	13 days	
	tebufenozide (Confirm or Mimic 2LV)		8 oz/acre	4	Apply to early instar larvae after each foliage flush at approximately 25% foliage expansion. Allow at least 6 hours between application and rainfall to assure thorough spray drying.
Nantucket Pine Tip Moth	acephate (Orthene Tree, Turf, & Ornamental) 97% Spray WSP		 3/4 lb. (12 oz) 1 lb (16 oz)	24	Apply the specified amount of ORTHENE Turf, Tree & Ornamental in 100 gals. of spray per acre by ground.
	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pt may be used.
	bifenthrin (OnyxPro)		See label.	12	See label.
	carbaryl (Sevin SL)		1 qt/acre	12	
	diflubenzuron (Dimilin 25W)		2-4 oz/acre	12	Apply when second generation instars are present or 70% of first generation pupal cases are empty.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	Apply as needed for control. Spray sufficient gallonage to obtain good coverage of entire tree.
	lambda-cyhalothrin (Warrior II)		1.28-2.56 fl oz/A	12	Do not apply more than 15.36 fl oz/year. Thorough coverage is very important.

COMMERCIAL CHRISTMAS TREE PRODUCTION INSECT CONTROL

Insect or Mite	Insecticide and Formulations	Amount of Formulation Per Gallon of Spray	Amount Per 100 Gallons of Water	Minimum Interval (Hours) Between Application and Reentry	Precautions and Remarks
Nantucket Pine Tip Moth (cont.)	permethrin (Permethrin 3.2 EC, Pounce)		4-8 oz/100 gal	12	Begin applications when adults appear. Repeat applications may be made in 5- to 7-day intervals as needed.
	phosmet (Imidan 70-W)		1.3-1.5 lb/acre	13 days	
	spinosad (Conserve SC, SpinTor 2SC)		See label.	4	
	tebufenozide (Confirm)		8 oz/acre	4	Apply to early instar larvae after each foliage flush at approximately 25% foliage expansion. Allow at least 6 hours between application and rainfall to ensure thorough spray drying.
Pine Chafer	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	
	lambda-cyhalothrin (Silencer) (Warrior II)		 2.58-5.12 oz/acre 1.28-2.56 oz/acre	 24 24	Maximum use 1.92 pt/acre per year.
Rosette Bud Mite	dimethoate (Dimethoate 400)		1.3 pt/acre	10 days	
	bifenthrin (OnyxPro)		See label.	12	See label.
	spirotetramat (Movento)		5-10 oz/acre	24	Maximum use 20 oz/acre per year. Use adjuvant to increase penetration.
Rust Mite	abamectin (Ardent 0.15 EC)		4 oz/100 gal	12	
	bifenthrin (OnyxPro)		See label.	12	See label.
	carbaryl (Sevin SL)		1 qt/acre	12	
	chloropyridan (Sanmite)		4 oz/100 gal OR 10.7 oz/acre	12	
	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	fenpyroximate (Akari 5SC)		24 oz/100 gal	12	
	insecticidal soap (M-Pede)		1 to 2 gal/100 gal	12	May cause foliage discoloration.
	mineral oil emulsion (TriTek)		1 to 2 gal/100 gal	4	Maintain agitation until solution is used.
	petroleum oil (Damoil)		2-4 gal/100 gal dormant use 1-3 gal/100 gal summer use	4	
	spirodiclofen (Envidor 2SC)		18-24.7 oz/acre	24	Make only one application per season.
Sawfly (redheaded pine, red pine, European pine)	acephate (Orthene Tree, Turf, & Ornamental) 97% Spray WSP		 3/4 lb. (12 oz) 1 lb (16 oz)	24	Apply the specified amount of ORTHENE Turf, Tree & Ornamental in 100 gals. of spray per acre by ground.
	carbaryl (Sevin SL)		1 qt/acre	12	
	chlorpyrifos (Nufos 4E)		1 qt/acre	24	
	diflubenzuron (Dimilin 25W)		4-8 oz/acre	12	Apply to early instars.
	dinotefuran (Safari)		4 to 8 oz/100 gal	12	Do not apply more than 2.7 pounds per acre.
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	
	imidacloprid (Pasada 1.6F, Provado 1.6 F)		4-8 oz/acre OR 2 oz/100 gal	12	Adding a spray adjuvant may improve control. DO NOT apply more than 40 oz/acre per year.

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Insect or Mite	Insecticide and Formulations	Amount of Formulation Per Gallon of Spray	Amount Per 100 Gallons of Water	Minimum Interval (Hours) Between Application and Reentry	Precautions and Remarks
Sawfly (cont.) (redheaded pine, red pine, European pine)	insecticidal soap (M-Pede)		1 to 2 gal/100 gal	12	May cause foliage discoloration.
	lambda-cyhalothrin (Silencer) (Warrior II)		 2.58-5.12 oz/acre 1.28-2.56 oz/acre	 24 24	Maximum use 1.92 pt/acre per year.
	malathion (Malathion 8 or Gowan)	2 Tbsp/gal	1 pt/100 gal	12	
	mineral oil emulsion (TriTek)		1 to 2 gal/100 gal	4	Maintain agitation until solution is used.
	phosmet (Imidan 70-W)		1.3-1.5 lb/acre	13 days	
	spinosad (Conserve SC, SpinTor 2SC)		See label.	4	
	thiamethoxam (Flagship 25WP)		4 to 8.5 oz/100 gal or 8 to 17 oz/acre	12	Maximum use 17 oz/acre/year.
Scale (cont.) (pine needle, pine tortoise, spruce bud, black pine, stripped pine See also **elongate hemlock scale**)	acephate (Orthene 75SP and others Tree and Ornamental Spray Formulations)		2/3 lb	24	
	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pint may be used.
	carbaryl (Sevin SL)		1 qt/acre	12	Controls crawlers only.
	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat and drought stress. Apply when scale crawlers are active.
	dinotefuran (Safari)		4-8 oz/100 gal	12	DO NOT apply more than 2.7 lb per acre.
	lambda-cyhalothrin (Silencer) (Warrior II)		 2.58-5.12 oz/acre 1.28-2.56 oz/acre	 24 24	Maximum use 1.92 pt/acre/year.
	mineral oil emulsion (TriTek)		1 to 2 gal/100 gal	4	Maintain agitation until solution is used.
	petroleum oil (Damoil)		2-4 gal/100 gal dormant use 1-3 gal/100 gal summer use	4	
	spirotetramat (Movento)		5 to 10 oz/acre	24	Maximum use 20 ounces/acre/year. Use adjuvant to increase penetration.
	spirodiclofen (Envidor 2SC)		18-24.7 oz/ 100 gal		
	Superior oil, 70 sec		2 gal/100 gal		Apply oil as dormant spray.
	thiamethoxam (Flagship 25WP)		4 to 8.5 oz/100 gal or 8 to 17 oz/acre	12	Maximum use 17 oz/acre/year.
Seed Bug	esfenvalerate (Asana XL or Adjourn)		9.6 oz/100 gal	12	
	lambda-cyhalothrin (Silencer, Warrior)		2.58-5.12 oz/acre	24	Maximum use 1.92 pt/acre per year.
	permethrin (Permethrin 3.2 EC)		30 oz/acre	12	
	phosmet (Imidan 70-WSB)		1.3 to 1.5 lb/acre	13 days	

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Insect or Mite	Insecticide and Formulations	Amount of Formulation Per Gallon of Spray	Amount Per 100 Gallons of Water	Minimum Interval (Hours) Between Application and Reentry	Precautions and Remarks
Spider Mite (spruce spider mite)	abamectin (Ardent 0.15 EC)		4 oz/100 gal	12	
	abamectin (Avid 0.15 EC)		4-8 oz/100 gal	12	DO NOT apply more than 16 oz or less than 8 oz per acre.
	azadirachtin (Aza-Direct)		1 to 2 pts/acre	4	Under extremely heavy pest pressure up to 3½ pints may be used.
	Beauveria bassiana (Naturalis L)	0.3-1.0 oz/gal	30-100 oz/100 gal	4	Spray immediately after mixing.
	bifenazate (Floramite)		2-8 oz/100 gal	12	Add an adjuvant like Silwet L-77 or Slygard 309 to the Floramite solution.
	bifenthrin 25% (Sniper)		3.9-12.8 oz/acre	12	Will also control twig aphids and spider mites but not rust mites.
	bifenthrin (OnyxPro)		See label.	12	See label.
	chloropyridan (Sanmite)		4 oz/100 gal OR 10.7 oz/acre	12	
	chlorpyrifos (Lorsban 4E, Nufos 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress. If eggs are present, reapply in 7 to 10 days to control newly hatched nymphs.
	clofentezine (Apollo SC)		4-8 oz/acre	12	Most effective when applied at first sign of mite activity and mite eggs.
	cinnamaldehyde (Cinnamite)	2 Tbsp/gal	85 oz/100 gal	4	
	cyflumetofen (Sultan Miticide)		13.7 fl oz/100 gal	12	DO NOT exceed the maximum seasonal use rate of 27.4 fl oz of Sultan per crop growing cycle. DO NOT make more than two (2) applications of Sultan per crop per year.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	etoxazole (TetraSan 5 WDG)		8-16 oz/100 gal	12	TetraSan kills mite eggs and nymphs but not adult mites. Treated adults will not produce viable eggs.
	fenazaquin Magus		12 to 24 oz/100 gal	12	Do not exceed 24 oz per acre per year for outdoor applications.
	fenpyroximate (Akari 5 SC)		16-24 oz/100 gal	12	
	hexathiazox (Savey) 50 WP	3-6 oz/acre	2 oz/100 gal	12	DO NOT make more than one application per year.
	insecticidal soap (M-Pede)		1 to 2 gal/100 gal	12	May cause foliage discoloration.
	mineral oil emulsion (TriTek)		1 to 2 gal/100 gal	4	Maintain agitation until solution is used.
	propargite (Ornamite-CR)		3.0-7.5 lb/acre	7 days	No more than 3 applications per year. Compatibility restrictions.
	spirodichlofen (Envidor 2SC)		18-24.7 oz/acre	24	Make only 1 application per season.
	spiromesifen (Judo)		1-4 oz/100 gal	12	DO NOT apply more than 4 times per season.
Spittlebug	bifenthrin (OnyxPro)		See label.	12	See label.
	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress.
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	
	lambda-cyhalothrin (Silencer) (Warrior II)		 2.58-5.12 oz/acre 1.28-2.56 oz/acre	 24 24	Maximum use 1.92 pt/acre per year.

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Insect or Mite	Insecticide and Formulations	Amount of Formulation Per Gallon of Spray	Amount Per 100 Gallons of Water	Minimum Interval (Hours) Between Application and Reentry	Precautions and Remarks
Spruce Needle Miner	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	DO NOT treat plants under extreme heat or drought stress.
Weevil (pales, northern pine, pitch eating, root collar, white pine)	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pint may be used.
	bifenthrin (OnyxPro)		See label.	12	See label.
	chlorpyrifos (Lorsban 4E, Nufos 4E)	2 Tbsp/gal	3 qt/100 gal	24	Apply as a cut stump drench.
	diflubenzuron (Dimilin 25W)		See label.	12	Treat prior to egg deposition.
	esfenvalerate (Asana XL)		5.8-9.6 oz/100 gal	12	
	permethrin (Astro, etc.)		See label.	12	
	phosmet (Imidan 70-W)		1.3-1.5 lb/acre	13 days	
White Grub	chlorpyrifos (Lorsban 4E)		1 qt/acre	24	Incorporate into the soil if possible.
	imidacloprid (Admire Pro)		7-14 oz/acre	12	Maximum per season: 14 oz/acre.
	thiamethoxam (Flagship 25WG)		6 to 8.5 oz/100 gal or 12.7 to 17 oz/acre	12	Apply from adult flight through peak egg hatch. Maximum use 17 oz/acre/year.
Zimmerman Pine Moth	azadirachtin (Aza-Direct)		1-2 pt/acre	4	Under extremely heavy pest pressure, up to 3 1/2 pint may be used.
	bifenthrin (OnyxPro)		See label.	12	See label.
	diflubenzuron (Dimilin 25W)		4-8 oz/acre	12	Apply to early instars.
	dimethoate (Dimethoate 400)		1.0-1.5 pt/acre	10 days	
	tebufenozide (Confirm 2F)		4 to 8 oz/acre	4	Apply to early instar larvae; foliage development should be a minimum of 20%. Do not apply more than 16 oz per acre per year.