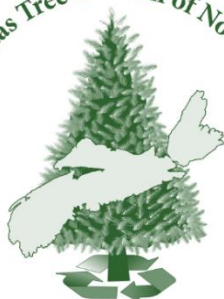


Christmas Tree Council of Nova Scotia



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GUIDE TO WEED, INSECT, AND DISEASE MANAGEMENT IN CHRISTMAS TREES

Nova Scotia Guide to Chemical Pest Management in Christmas Trees 2021 [CTREE2021]

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Nova Scotia's Guide to Chemical Pest Management in Christmas Trees 2021
[CTREE2021]

Last Updated July 08, 2021 by the CTCNS Research Team and Jay Woodworth, M.Sc., P. Ag, EP, Christmas Tree Specialist, Perennia
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IMPORTANT

This publication was compiled by representatives from Perennia using information from the Pest Management Regulatory Agency of Health Canada, and specific pesticide labels. **This information is continuously changing and therefore it can cease to be current and accurate. Pesticide labels are the best source of information and should always be consulted prior to using a product.** The label is the best source of information on; registered crop uses, rates, days to harvest, compatibility with other pesticides, toxicity and other special information on its effective and safe use.

By printing this publication, Perennia does not offer any warranty or guarantee, nor do they assume any liability for any crop loss, animal loss, health, safety or environmental hazard caused by the use of a pesticide mentioned in this publication.

WARNINGS

This publication is meant to be used as a reference for possible pest control options. Where there are multiple brand names of a specific active ingredient registered in Canada, Perennia has only listed a few for reference purposes and as such does not endorse one brand over another. If you have purchased a generic product not specifically in this guide but has your crop and pest on the label, always follow that product label.

If any information in this or any other publication conflicts with the information on the label, always use the label recommendation. If you have an old label, your pesticide supplier should be able to give you the newest label. You are legally responsible for the safe use of pesticides you purchase. This means the safe transport and storage of these materials, the label rates used on crops, and the safe disposal of containers.

ALWAYS CHECK WITH YOUR PROCESSOR OR BUYER TO SEE WHAT PRODUCTS ARE ALLOWABLE FOR THEIR MARKETS.

ADJUVANT PRODUCTS

Pest	Group	Active Ingredient	Registration Number	Product Name	Label Rate	Restricted Entry Interval (REI)	Remarks
Used to enhance effectiveness of agricultural chemicals (improves wetting, spreading and penetration of chemical)	No group indicated on label.	SILOXYLATED POLYETHER	23078	XIAMETER OFX-0309 FLUID	For tank mix (broadleaf weeds, woody species, and grasses), add at rate of 0.25% to 0.375% by spray solution volume (250-375 mL per 100 L of water).	Use REI of the herbicide used in tank mix.	Improves uptake of herbicides. Can be used in a tank mix to enhance the efficiency of water-soluble post-emergence herbicides such as; Banvel II and RoundUp. Can be used with other glyphosate products including Vision, Renegade and Glyphos.

ANIMAL PEST PRODUCTS

Pest	Group	Active Ingredient	Registration Number	Product Name	Label Rate	Restricted Entry Interval (REI)	Remarks
Voles Deer Mice	No group indicated on label.	DIPHACINONE	11670	RAMIK BROWN RODENTICIDE	Broadcast ground application: 2 applications of 11 kg/ha (70 pellets/10 m ²). Apply 20-40 days apart. Hand spot application: Place 1-1/2 oz of bait around active holes and trails.	No REI indicated, keep domestic pets and animals away from baited area.	Apply when three rain-free days are expected. Do not place bait in piles on bare ground or on top of snow. Scatter bait into grass or vegetation. Do not place bait on the bare ground, it must be incorporated into surrounding vegetation. Do not use around ditches, roadsides or edges of lots, this reduces hazard of ingestion by dogs. Treatment areas MUST be posted.
Field Mice	No group indicated on label.	ZINC PHOSPHIDE	8024	BARTLETT WAXED MOUSE BAIT	4.5-9 kg/ha or 15 g per bait station.	No REI indicated, keep domestic pets and animals away from baited area.	Apply in early fall or any time before snow covering. Apply bait covering entire tree area using a cyclone seeder or by hand. Use rubber gloves when spreading by hand and wash thoroughly after use. Apply bait evenly but do not place on bare ground. Do not place in piles. Do not use around ditches, roadsides or edges of lots, this reduces hazard of ingestion by dogs. Treatment areas MUST be posted.

WEED & GROUND COVER PRODUCTS (HERBICIDES)

Pest	Group	Active Ingredient	Registration Number	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Remarks
Baby's Breath Blue Grass Bracken Fern Canada Thistle Chickweed Crab Grass Curled Dock Dandelion Diffuse Knapweed English Daisy Fall Panicum Flowering Nightshade Goat's Beard Goldenrod Hemp Dogbane Hemp Nettle Japanese Knotweed Lamb's-Quarters Milkweed Narrow-Leaved Vetch Perennial Cinquefoil Poison Ivy Poverty Weed Prickly Lettuce Purple Loosestrife Ragweed Scentless Chamomile Sheep Sorrel Tansy Ragwort Toad Flax Velvet Grass Wild Buckwheat	4	DICAMBA	29223 33851 26722 26980 29249 29251	HAWKEYE(TM) POWER DISHA 480 HERBICIDE ORACLE DICAMBA AGRICULTURAL HERBICIDE VANQUISH HERBICIDE BANVEL VM HERBICIDE VMD 480 DICAMBA HERBICIDE	Broadleaf weeds: 1.7-9.2 L DISHA 480 in 110 to 220 L of water per hectare. Maple, Ash: 5.2 L of DISHA 480 + 7.1 L 2,4 D amine (350g/L formulation) in 220 to 330 L of water per hectare. Birch, Elm, Oak, Tamarack, Spruce: 4 L of DISHA 480 + 8 L 2,4 D amine (500g/L formulation) in 220 to 330 L of water per hectare.	12 Hours	Apply to foliage and stems to the point of run-off. Complete coverage is essential for effective control.

Aspen Canada Goldenrod Canada Thistle Chickweed Common Tansy Common Yarrow Dandelion Diffuse Knapweed Giant Hogweed Hemp-Nettle Lamb's-Quarters Maple Spotted Knapweed Sumac Tartary Buckwheat Wild Buckwheat Wild Carrot Willow	2 & 4	METSULFURON- METHYL & AMINOCYCLOPYR ANCHLOR	30922 31382 33964	NAVIUS FLEX NAVIUS VM HERBICIDE TRURANGE	Broadleaf weeds: 167g in 100 L of water per hectare. Softwood: 334g in 100 L of water per hectare. Hardwoods: 499g in 100 L of water per hectare.	12 Hours	Used to treat softwood and hardwood under two metres in height. Avoid application of this product on or near the roots of desirable trees. Avoid overspray or drift to aquatic systems.
Bittercress Common Yellow Wood Sorrel Dandelion Lady's-Thumb Lamb's-Quarter Low Cudweed Watson's Willow Herb	14	OXYFLUORFEN	33346 33560	AGROGILL OXYFLUORFEN 240EC BASKET 2XL	Broadleaf weeds: 1-2 L/ha in 200 to 500L of water per hectare.	12 Hours	Can be used in as a tank mix with select glyphosate products. Avoid overspray or drift to aquatic systems.

<p>Alder Aspen Birch Bull Thistle Burdock Canada Thistle Chicory Cinquefoil Curled Dock Dogbane Elderberry Goat's-Beard Goldenrod Ground Juniper Hawkweed Hawthorn Honeysuckle Horse Tail Milkweed Mullein Perennial Sow Thistle Plantain Poison Ivy Poplar Rose Scotch Pine Sugar Maple Sumac Sweet Clover Tamarack Tansy Toadflax Vetch Wild Carrot Wild Cherry Wild Raspberry Yellow Rocket</p>	4	Dichlorprop-P & 2,4-D	29660	NUFARM ESTAPROP XT LIQUID HERBICIDE	Broadleaf weeds: 2.75 L in 1000 L of water per hectare. Deciduous shrubs and trees: 6-8 L in 1000 L of water per hectare.	12 Hours	Do not apply more than two treatments a year. Applicators must wear a respirator if they are handling more than 12.5 L of this product per day. DO NOT handle more than 20 L of this product per day.
<p>Canada Thistle Curled Dock Dandelion Pigweed Plantains Prickly Lettuce</p>	4	2,4-D DIMETHYLAMINE SALT	5931 33920	2,4-D AMINE 600 HERBICIDE USHA 6 HERBICIDE	Broadleaf weeds: 0.83 L of 2,4-D Amine 600 Herbicide and 1 L of Glyphos tank mix in 100 L of water per hectare.	12 Hours	Preharvest interval of one year. Use directed and shielded jet below branches of trees that are at least 1.2m in height. Do not touch herbicide to desirable trees.

Vetch Wild buckwheat Willow							
Alder Aspen Basswood Birch Burdock Canada Thistle Curled Dock Elderberry Hawthorne Honeysuckle Juniper Lamb's-Quarters Poison Ivy Ragweed Rose spp. Sugar Maple Sumac Tamarack Wild Apple Wild Buckwheat Wild Raspberry Willow	4	DICHLORPROP-P	29664 30111 30112	IPCO DICHLORPROP-DX HERBICIDE WEEDAWAY DICHLORPROP-DX HERBICIDE VITERRA DICHLORPROP-DX HERBICIDE	Annual broadleaf weeds: 1.2 L in 750-1500 L of water per hectare. Shrubs & trees: 6 -8 L in 750 to 1500 L of water per hectare.	12 Hours	Should be applied to the point of runoff in spring or early summer. Ground application, when weeds are at the 4-leaf stage.
American Burnweed Annual Bluegrass Aster Bedstraw Blue-Eyed Grass Common Chickweed Crabgrass Dandelion Hard Fescue Honeysuckle Large-Hop Clover Mouse-Ear Chickweed Nutsedge Quackgrass Sedges Vetch	2	FLAZASULFURON	32910	FLAZASULFURON 25WG HERBICIDE	Broadleaf weeds: 150/200 g in 150 to 450 L of water per hectare.	12 Hours	Avoid drift or contamination of aquatic systems. Do not use where water table is shallow. Weed growth stops within hours of application but herbicide damage will be seen within 2 to 4 weeks. Can be tank mixed with glyphosate. Do not apply to conifer seedbeds or within 1 year of planting. Do not apply to trees that have not sufficiently hardened off.

Yellow Rocket Yellow Wood Sorrel							
Alder Birch Blue Grass Broadleaved Brome Grass Canada Thistle Common Cattail Curled Dock Dandelion Field Bindweed Goldenrod Hemlock Hemp Dogbane Japanese Knotweed Maple Meadow Sweet Milkweed Mountain-Fly Honeysuckle Poison Ivy Poplar Purple Loosestrife Quackgrass Raspberry Sheep Laurel Sweet Fern Toad Flax Willow Wormwood	9	GLYPHOSATE	19899 24359 25344 25866 26401 27287 27615 27736 27764 27946 27988 28322 28486 28608 28609 28840 28924 28925 28977 29009 29022 29124 29125 29126 29290 29364 29480 29498 29588 29774 29775 29841 29868 29888 29994 29995 30076 30104 30235 30319 30366 30516 30678 30721	Sold under various product names.	Annual grasses: 2.35-3.5 L with 50-100 L of water per hectare. Broadleaf weeds: 2.5-9 L in 100-300 L of water per hectare. Softwood, hardwood & shrubs: 3-6 L in 100-300 L of water per hectare. Cut stump application: 0.33 mL for every 5 cm diameter at breast height.	12 Hours	Use buffer zones and do not allow drift into aquatic systems. Avoid contact with foliage of desirable trees. Can be used as a foliar spray or as a cut stump application. For cut stump application ensure treatment is administered within 5 minutes of cutting stems. Apply to cambial tissue.

			31063 31090 31199 31314 31316 31493 31598 31655 31913 32122 32181 32209 32228 32314 32457 32504 32532 32817 32945 33029 33030 33087 33088 33337 33379 33400 33456 33671 33675 33694 33697 33746 33768 33849 33882 33898 33940 33976 34044				
Annual Bluegrass Aster Common Bentgrass Common Velvet Grass Crabgrass Curly Dock	2	HALOSULFURON	31211	SEDGEHAMMER TURE HERBICIDE	First application (weeds 3 to 5 cm tall): 35-47 g in 404-810 L of water per hectare. Second application (weeds 10 cm tall): 70 to 93 g in 404-810 L of water per hectare.	Allow spray to dry before re-entry.	Avoid contact with upper two thirds of the tree crown. Do not use on seedbeds, transplants or any over the top applications. Allow three months after planting to apply this product.

False Dandelion Fescue Goldenrod Horsetail Orchard Grass Common Ragweed Perennial Rye Grass Oxeye Daisy Common Dandelion Wild Carrot							
Blackberry Blue Joint Grass Brome Grass Goldenrod Pigweed Raspberries	5	HEXAZINONE	31766 31786	VELPAR DF VU HERBICIDE VELPAR L VU HERBICIDE	Grasses and broadleaf weeds: 672 g to 2.656 kg in 100 to 300 L of water per hectare.	48 Hours	Can be applied in established lots in both transplanted and naturally regenerating stands for controlling herbaceous weeds and shrubs. Apply in the spring when weeds have 5 cm of growth. Do not contaminate aquatic systems.
Bittercress Common Yellow Wood Sorrel Dandelion Lady's-Thumb Pearlwort Redroot Pigweed Lamb's-Quarter Watson's Willow Herb	14	OXYFLUORFEN	24913	GOAL 2XL HERBICIDE	Apply 0.5 to 1 L/ha. Apply in 200-500 L of water per hectare.	12 Hours	Application should be made before bud break or after foliage has hardened off. Do not apply by air. Do not contaminate aquatic systems. Do not apply to sandy soil. Apply to healthy trees that are not under stress. Two or more post emergence applications may be necessary for season-long weed control.
Common Chickweed Fall Panicum Green Foxtail Lamb's-Quarters Panicum Redroot Pigweed Crabgrass Yellow Foxtail	3	PENDIMETHALIN	33837 34003 29542	PENSHUI HERBICIDE FBN PENDIMETH HERBICIDE PROWL H2O HERBICIDE	Broadleaf weeds & grasses: 3.7L in at least 100 L of water per hectare.	24 Hours	Do not make over-the-top applications. Do not apply during bud break. Apply as a directed spray. If newly budded or graphed rootstock, make an application using a shielded sprayer.

Ash Barberry Barnyard Grass Crabgrass Dogwood Hemlock Juniper Lady's-Thumb Lamb's-Quarter Volunteer Clovers Multiflora Rose Ragweed Red Spruce White Spruce Wild Buckwheat Smartweed Wild Oats Yellow Foxtail	5	SIMAZINE	15902 16370	SIMADDEX SIMAZINE FLOWABLE PRINCEP NINE-T HERBICIDE	Simadex: 4.5-6.7 L in 300 L of water per hectare. Princep: 4.48 kg in 300 L of water per hectare.	12 hours	Avoid drift into aquatic systems. Do not apply by air. Hand-held or backpack sprayer and spot treatment do not require a buffer zone. Do not apply to seedlings less than 2 years of age.
Barnyard Grass Crabgrass Lady's-Thumb Lamb's-Quarters Ragweed Smartweed Volunteer Clovers Wild Buckwheat Yellow Foxtail	5	SIMAZINE PLUS RELATED ACTIVE TRIAZINES	23181	SIMAZINE 480 HERBICIDE	Sandy soil: 3.4-4.7 L in 300 L of water per hectare. Loam and clay soil: 4.7-8.3 L in 300 L of water per hectare.	12 Hours	This is a residual herbicide. Avoid drift into aquatic systems. Do not apply by air. Apply prior to weed emergence. In Christmas tree lots, no not apply to newly planted trees. Apply in the fall or early spring prior to weed emergence. If applied in the spring, apply before bud break. Rainfall is required to move the chemical into the root zone. Use 4.7 L for sandy or low organic matter soils. Use 7 L for clay or high organic matter soils.
Crabgrass Fall Panicum Foxtail Lamb's-Quarters Nightshade Witchgrass Yellow Nutsedge	15	S-METOLACHLOR & R-ENANTIOMER	25729 29347 33599 33645 34054 25728 32847	Sold under various product names.	Broadleaf weeds and grasses: 1.25-1.75L in a minimum of 300 L of water per hectare.	12 Hours	Apply before bud break or after buds have hardened off. Some temporary burn may occur. Hand-held or backpack sprayer and spot treatment do not require a buffer zone. Use higher rate for areas with a greater density of weeds. Use higher rate in clay or high organic soils. Use a lower rate in sandy soils or those with low levels of organic matter. Product is toxic to aquatic habitats.

Alder Ash Aspen Basswood Beech Birch Blackberry Buckthorn Burdock Choke Cherry Curled Dock Dandelion Dogwood Elderberry Elm Hawthorn Hickory Lamb's-Quarters Maple Poison Oak Poplar Raspberry Smooth Bedstraw Sumac Tamarack Vetch Wild Lettuce Wild Rose Willow	4	TRICLOPYR	28945	GARLON XRT HERBICIDE	Apply at a rate of 635 mL in 250 to 300 L of water per hectare.	12 Hours	Post emergence herbicide. Apply when weeds have 2-4 leaves. Apply as a direct spray below branches. Apply to trees at least 1.2 m tall.
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INSECT PROUDUCTS (INSECTICIDES)

Pest	Group	Active ingredient	Registration number	Pesticide product name	Rate	Restricted entry interval (REI)	Remarks
Aphid Armyworm Bagworm Cankerworm Greenhouse Whitefly Gypsy Moth Lace Bug Mealybug Nantucket Pine Tip Moth Scale Insects Spider Mites Tent Caterpillars Tussock Moth Yellow-Necked Caterpillar	1B	ACEPHATE	14225	ORTHENE 75% SOLUBLE POWDER SYSTEMIC INSECTICIDE	Mist blower: 1.75 kg in 1000 L of water per hectare. Hydraulic sprayer: 850 g in 1000 L of water per hectare.	72 Hours	Scatter pellets in two applications at prescribed rate. Do not apply product when rainfall is expected within 48 hours. This product has the potential to leach through soils to ground water. Applications can be made 20-40 days apart, dependent on monitoring. A buffer zone of 10 meters from any aquatic environment is recommended.
Aphids	4	ACETAMIPRID	27127	TRISTAR 70 WSP INSECTICIDE	Mix three water soluble packs per 1000 L water per hectare.	12 hours	This product is a wettable powder. The entire contents of the bag must be used; do not attempt to subdivide product. Do not make more than 5 applications per year. Do not reapply more than once every 7 days. Do not apply more than 22 water soluble packs per year. Spray foliage uniformly.
Eastern Black-Headed Budworm Eastern Spruce Budworm Forest Tent Caterpillar Gypsy Moth Jack Pine Budworm Eastern Hemlock Looper White-Marked Tussock Moth	11	BACILLUS THURINGIENSIS - KURSTAKI (ALL STRAINS)	30026 33191 11302 27489 17980 27099 27749 24976	Sold under various product names.	Refer to specific product label for application rates and instructions.	4 Hours	Do not allow spray mixture to stand in tank for more than 18 hours. Do not apply through any type of irrigation system. May be applied up to the day of harvest. Agitate as necessary to maintain suspension.

Mites	20D	BIFENAZATE	27924	FLORAMITE SC MITICIDE	Mix 625 mL in 1000 L of water per hectare.	12 hours	Maximum of 2 applications per year. Do not apply a spray volume of more than 2000 L/ha.
Aphids Bagworms European Pine Shoot Moths Nantucket Pine Tip Moths Scale Insects Spruce Budworm Spruce Needle Miners Zimmerman Pine Moths	1B	DIMETHOTE	9382 9807	LAGON 480 E INSECTICIDE CYGON 480 EC SYSTEMIC INSECTICIDE	Aphids, Mites, Scale Insects, Needle Miners & Spruce budworms: Mix 1.5 L in 1000 of L water per hectare. Bagworms, Shoot Moths, Pine Tip Moths & Pine moths: Mix 2 L in 1000 L water per hectare.	12 hours	Minimum application interval of 14 days. Maximum of 2 applications per year.
Balsam Twig Aphid	29	FLONICAMID	29796	BELEAF 50SG INSECTICIDE	Mix 0.12- 0.16 kg in 300 L of water per hectare.	4 Hours	Do not apply by air. Do not use with liquid fertilizers or spray adjuvants. Allow a minimum of 7 days between applications. Maximum of 2 applications per year. Do not apply more than 0.6 kg/ha per application.
Aphids	4D	FLUPYRADIFURO NE	33175 33176 33696	BCS 2960 INSECTICIDE ALTUS INSECTICIDE BYI 02960 200SL INSECTICIDE	ATLUS Mix 500-750 mL in at least 500 L of water per hectare. BIY 02960 Mix 370 g/ha in enough water to create a slurry.	12 Hours	For application by field sprayer, or air blast, refer to product label for appropriate buffer zones. Apply as a directed foliar spray ensuring thorough coverage. Minimum interval between application of 7 days. Maximum ALTUS insecticide allowed per crop season of 2000 mL/ha.
Aphids Japanese Beetle Whiteflies	MERIT 60 WP: 4A INTERCE PT 60 WP: 4	IMIDACLOPRID	25636 27357	MERIT 60 WP GREENHOUSE AND NURSERY INSECTICIDE INTERCEPT 60 WP GREENHOUSE INSECTICIDE	Mix 467 g in 200 L of water per hectare.	12 Hours	Do not apply as a foliage application. Do not apply more than once per year. Tank mix compatible with commonly used liquid fertilizers For field grown nursery stock, do not apply through any irrigation system or by aerial application.
Spruce Budworm	1A	METHOMYL	10868	LANNATE INSECTICIDE	Mix 270-540 g in at least 4 parts waters to 1-part Lannate insecticide	12 Hours	Maximum of 2 applications per year. Do not exceed 540 g/ha/year.

					per hectare, to minimize fire hazards.		Make first spray at larval emergence to protect new growth. Apply a second application 3-4 days after first if needed. Use high rates on trees more than 9 m tall. Hand-held application: do not handle more than 2.36 kg in a day.
Aphids Mites Sawfly Scale Insects Powdery Mildew Psyllids Rust	13-07, 8-09,5- 13, 13- 07, 8-09, 9	MINERAL OIL	33099	SUFFOIL-X	Spider Mites, Scale Insects & to deter Aphids: Mix 10-20 L in 1000 L water per hectare. Whitefly: 20 L in 1000 L water per hectare.	4 Hours	Do not apply this product through any type of irrigation system. Apply at an interval of 7-14 days. Do not apply more than 8 applications per year. For air blast application a buffer zone of 1-20 m is required.
Balsam Fir Sawfly	N/A	NEODIPRION ABIETIS NUCLEOPOLYHE DROVIRUS	28304	ABIETIV FLOWABLE BIOLOGICAL INSECTICIDE	Mix 0.25-0.75 mL in 30 L of water per hectare. Mix product with a 20% aqueous solution of molasses (1L of molasses for every 4 L water).	N/A	A second application may be required after 7-10 days if monitoring indicates that a damaging population of larvae remains. Agitate thoroughly and maintain agitation during spraying. The mixture should be used as soon as possible after mixing.
Aphids Cutworm Douglas Fir Tussock Moth Eastern Tent Caterpillar Forest Tent Caterpillar Sawflies White-Marked Tussock Moth	3	PERMETHRIN	14882 16688 28877 33838	AMBUSH 500EC INSECTICIDE POUNCE 384 EC INSECTICIDE PERM-UP EMULSIFIABLE CONCENTRATE INSECTICIDE IPCO SYNCRO INSECTICIDE	AMBUSH 500 EC Mix 35-70 mL in at least 100 L of water per hectare. POUNCE 384 EC PERM-UP EMULSIFIABLE CONCENTRATE IPCO SYNCRO Mix 45-90 mL in at least 100 L of water per hectare.	12 Hours	Maximum of 1 application per season. In Christmas tree plantations, do not apply using aerial application; apply by ground use only. Do not apply by any ground application within 15 M of any body of water.

Balsam Twig Aphid	9B	PYMETROZINE	27273	ENDEAVOR 50WG INSECTICIDE	Balsam Twig Aphid: Mix 193 g in 275 L of water per hectare.	12 Hours	Apply first application in spring, second application may be required to control consistent applications. Do not apply this product through any type of irrigation system. Do not exceed 2 applications or 386 g of product/ha. Do not apply by air. Allow at least 7 days between applications.
Balsam Gall Midge	23	SIPROTETRAMAT	28953	MOVENTO 240 SC INSECTICIDE	Mix 585 mL in a minimum of 500 mL water per hectare.	12 Hours	Apply during bud break. Do not apply this product using high-pressure hand wand equipment. Do not apply this product when weeds are present in the treatment area. Observe buffer zones specified under directions for use on product label. Maximum number of 2 applications with an application interval of 7 days. Maximum application of 1.17 L/ha per year.

Bagworm European Pine Shoot Moth Forest Tent Caterpillar Gypsy Moth Pine Tussock Moth Spruce Budworm Jack Pine Budworm Hemlock Looper Douglas Fir Tussock Moth White-Marked Tussock Moth	18	TEBUFENOZIDE	24502 32535	MIMIC 240 LV FORESTRY INSECTICIDE LIMIT 240 FORESTRY INSECTICIDE	Mix 118-290 mL in a minimum of 190 L per hectare.	Allow spray to dry before re-entry.	Do not apply more than 1 application per year (290 mL). Dilute with enough water to provide a uniform spray. Uniform coverage of the foliage is essential to maximize efficacy and to minimize defoliation. Avoid application when significant rainfall is imminent.
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FUNGAL INFECTION PRODUCTS (FUNGICIDES)

Pest	Group	Active Ingredient	Registration Number	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Remarks
Botrytis Lophodermium Needle Cast Phoma Twig Blight Rhabdocline Needle Cast Scirrhia Brown Spot Scleroderris Canker Seedling Blight Sirococcus Tip Blight Swiss Needle Cast	M5	CHLOROTHALONIL	32030 33479 33516 33519	CHLOROTHALONIL 720F ECHO NP FUNGICIDE BRAVO WEATHERSTIK FUNGICIDE ECHO 90WSP AGRICULTURAL FUNGICIDE	Rates vary per target disease, refer to product label for application rates. Refer to specific product labels for rates.	7 Days	Hand-held or backpack prayer and sport treatment do not require a buffer zone. Field sprayer application on outdoor conifers require a buffer zone of 1-5 m depending on habitat protecting, refer to label for details. A vegetative filter strip of at least 10 meters must be corrected and maintained between the field edge and adjacent, downhill aquatic habitat. Outdoor conifers: Maximum of 2 applications per year. Conifers in nursery beds: Maximum of 1 application per year. Do not apply by air. TOXIC to aquatic organisms, avoid application when heavy rain is forecast. If handling more than 122 kg/day, applicator must wear a respirator with a NIOSH

							approved organic vapour-removing cartridge with a prefilter approved for pesticides. Do not apply these products within 10 days before or after an oil application as the presence of oil may result in burning to flowers and leaf tissue.
<p>Botrytis Seedling Blight Lophodermium Needle Cast Phoma Twig Blight Rhabdocline Needle Cast Rhizosphaera Needle Cast Scirrhia Brown Spot Scleroderris Canker Siroccus Tip Blight Swiss Needle Cast</p>	M5	CHLOROTHALONIL & PROPYLENE	33479	ECHO NP FUNGICIDE	<p>Scleroderris Canker, Swiss Needle Cast & Rhabdocline Needle Cast: 1.7 – 3.3 L in 100 to 1000 L of water per hectare.</p> <p>Siroccus Tip Blight: 2.5 – 4.2 L in 100 to 1000 L of water per hectare.</p> <p>Rhizosphaera Needle Cast & Scirrhia Brown Spot: 6.6 L in 100 to 1000 L of water per hectare.</p> <p>Lophodermium Needle Cast: 1.7 – 3.3 L in 100 to 1000 L of water per hectare.</p> <p>Botrytis Seedling Blight & Phoma Twig Blight: 1.7 – 3.3 in 100 to 1000 L of water per hectare.</p>	<p>Christmas Tree Lot: 7 Days</p> <p>Conifer Nursery Beds: 12 Hours</p>	<p>Spot treatments using hand-held equipment do not require a buffer zone. Field sprayer application on outdoor conifers require a buffer zone of 1-5 m depending on habitat protecting, refer to label for details. A vegetative filter strip of at least 10 metres wide must be constructed and maintained. Maximum of 2 applications per year. Do not apply this product within 10 days before or after an oil application as the presence of oil may result in burning to flowers and leaf tissue. Toxic to aquatic organisms, avoid application when heavy rain is forecast.</p>

<p>Botrytis Seedling Blight Lophodermium Needle Cast Phoma Twig Blight Rhabdocline Needle Cast Rhizosphaera Needle Cast Scirrhia Brown Spot Scleroderris Canker Siroccus Tip Blight Swiss Needle Cast</p>	<p>M5</p>	<p>CHLOROTHALONIL</p>	<p>29355</p>	<p>ECHO 720 AGRICULTURAL FUNGACIDE</p>	<p>Scleroderris Canker, Swiss Needle Cast & Rhabdocline Needle Cast: 1.7 – 3.3 L in 100 to 1000 L of water per hectare.</p> <p>Siroccus Tip Blight: 2.5 – 4.2 L in 100 to 1000 L of water per hectare.</p> <p>Rhizosphaera Needle Cast & Scirrhia Brown Spot: 6.6 L in 100 to 1000 L of water per hectare.</p> <p>Lophodermium Needle Cast: 1.7 – 3.3 L in 100 to 1000 L of water per hectare.</p> <p>Botrytis Seedling Blight & Phoma Twig Blight: 1.7 – 3.3 in 100 to 1000 L of water per hectare.</p>	<p>Christmas Tree Lots: 7 Days Conifer Nursery Beds: 12 Hours</p>	<p>Spot treatments using hand-held equipment do not require a buffer zone. Field sprayer application on outdoor conifers require a buffer zone of 1-5 m depending on habitat protecting, refer to label for details. A vegetative filter strip of at least 10 metres wide must be constructed and maintained. Maximum of 2 applications per year. Do not apply this product within 10 days before or after an oil application as the presence of oil may result in burning to flowers and leaf tissue. Toxic to aquatic organisms, avoid application when heavy rain is forecast.</p>
<p>Rhizosphaera Needle Cast Stigmina Needle Cast Lirula Needle Cast</p>	<p>3</p>	<p>PROPOCONAZOLE</p>	<p>27003</p>	<p>BANNER MAXX FUNGACIDE</p>	<p>Mix 350 mL in 1000 L of water per hectare.</p>	<p>12 Hours</p>	<p>Application interval/duration of control: the first application is to be made when shoot emergence is less than 5 cm, and subsequent applications at 7 to 10-day intervals until conditions no longer favour disease development. Toxic to aquatic organisms and non-targeted terrestrial plants. Avoid application when heavy rain is forecast. Do not apply by air, through any type of irrigation system, or in greenhouses. Do not add surfactants or wetting agents as this may result in phytotoxicity. Maximum of 3 applications per year. Apply as foliar application only. Hand-held or backpack sprayer and spot treatment do not require a buffer zone. Field sprayer and air blast application on</p>

							spruce and fir Christmas trees require a buffer zone depending on the habitat requiring protection, refer to pg. 9 of product label for details.
Rhizosphaera Needle Cast	11	TRIFLOXYST ROBIN	27529 30427 30619	FLINT 50WG FUNGICIDE CGA279202 50 WG FUNGICIDE FLINT FUNGICIDE	Mix 210 g in 250 – 1000 L of water per hectare. Apply to the point of run-off.	12 Hours	Apply first application at bud break when new growth is less than 5cm. Sequential applications should be applied at an interval of 7-10 days. Maximum of 3 applications or a total of 630 g of FLINT Fungicide per hectare per season. Do not apply by air, or in greenhouses. Toxic to aquatic organisms. Hand-held or backpack application methods do not require a buffer zone.

For more detailed information on pest management request information from the Christmas Tree Pest Management spreadsheet by contacting the Christmas Tree Specialist.

Use the following web link to search for any pesticide label mentioned in this guide, or any other pesticide registered in Canada: <https://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>

Product Toxicity Table				
COMMON NAME	TRADE NAMES	TOXICITY		
		TO BEES	TO APPLICATOR	
			ORAL	DERMAL
Herbicides				
CLOPYRALID	Lontrel 360, Transline	low	low	low
DICAMBA	Various	mod	mod	mod
GLYPHOSATE	Roundup and various others	low	low	low
HEXAZINONE	Pronone, Velpar	low	mod	low
SIMAZINE	Simazine/Prince-Nine-T	low	low	low
METASULFURON-METHYL	Ally, Allie, Gropper, and Escort	low	low	low
AMINOCYCLOPYRACHLOR	Various	low	low	low
OXYFLUORFEN	Goal, Koltar and RH-2915	low	low	mod
2,4-D	Various	mod	mod	mod
CAPRYLIC ACID	BioLink	low	low	low
DICHOLOBENIL	Casoron, Barrier	low ¹	mod	mod
DICHLORPROP-P	Various	low	mod	low
FLAZASULFURON	Mission, Katana, Flazasulfuron 25WG	low	low	low
HALOSULFURON	Permit, Battalion	low	mod	low
PENDIMETHALINE	Various	low	mod	mod
S-METOLACHLOR and R-ENANTIOMER	Various	low ²	mod ³	mod ⁴
TRICLOPYR	Various	low	mod	mod
Insecticides				
ACEPHATE	Orthene	mod	high	low
ACETAMIPRID	Tristar 70 WSP	mod ⁵	mod ⁶	low
BACILLUS THURINGIENSIS-KURSTAKI	Various	low	low	low
BIFENAZATE	Floramite SC	mod ⁷	low ⁸	mod ⁹
FLONICAMID	Beleaf	low ¹⁰	low ¹¹	low ¹²
FLUPYRADIFURONE	Sivanto Prime	low	mod	mod
IMIDACLOPRID	Merit 60 WP and Intercept 60 WP	high ¹³	mod ¹⁴	mod ¹⁵
METHOMYL	Lannate	high	high	mod
MINERAL OIL	Suffoil-X	mod ¹⁶	low ¹⁷	low ¹⁸
NEODIPRION ABIETIS NUCLEOPOLYHEDROVIRUS	Abietiv	low ¹⁹	low ¹⁹	low ²⁰
PERMETHRIN	Pounce, Ambush and various others	high	mod	low
PYMETROZINE	Endeavour 50 WG	low ²¹	low ²²	low ²³
SIPROTETRAMAT	Movento 240 SC	low ²⁴	low ²⁵	low ²⁶
TEBUFENOZIDE	Limit	low	mod	low
Fungicides				
CHLOROTHALONIL	Bravo, Echo and others	low	low	low
PROPYLENE	Echo	low ²⁷	low ²⁸	low ²⁹
PROPICONAZOLE	Banner Maxx	low ³⁰	mod ³¹	mod ³²
TRIFLOXYSTROBIN	Flint, Flint 50 WG, and CGA 279202 50 WG	low ³³	mod ³⁴	mod ³⁵

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PESTICIDE EMERGENCY CONTACT INFORMATION

Poison Control Centres		
Nova Scotia	800.565.8161 or 902.428.8161	IWK, Halifax, NS
New Brunswick	911	Ask for Poison Information
Prince Edward Island	800.565.8161 or 902.428.8161	IWK, Halifax, NS
Newfoundland	709.722.1110	Dr. Charles A. Janeway Child Health Care Centre, St. John's, NF
Environmental Emergencies (Pesticide Spills)		
Transport Canada Regional Operations Centre (24 hours)		
Nova Scotia	800.565.1633	
New Brunswick	800.565.1633	
Prince Edward Island	800.565.1633	
Newfoundland	800.563.9089	

ABBREVIATIONS & CONVERSIONS			
Formulation and Measurement			
FORMULATIONS		MEASUREMENTS	
DF	Dry flowable	mL	millilitre
EC,E	Emulsifiable concentrate	kPa	kilopascal
F	Flowable	kg	kilogram
G	Granular	g	gram
L	Liquid	L	litre
WDG	Wettable dry granule	BIU	Billions of International Units
WP,W	Wettable powder	ppm	parts per million
SC	Suspension concentrate		
Sn	Solution		
SP	Soluble powder		

Helpful Conversions*	
kPa X 0.14 = pounds per square inch (psi) hectares X 2.47 = acres kilograms X 2.2 = pounds kilograms per hectare X 0.89 = pounds per acre kilograms per hectare X 0.40 = kilograms per acre	millilitres X 0.035 = fluid ounces litres X 35 = fluid ounces litres X 0.22 = imperial gallons litres per hectare X 14.17 = fluid ounces per acre litres per hectare X 0.40 = litres per acre degree-days C X 1.8 = degree-days F

* Pesticide Units of Measurement

It is not recommended to convert label rates to imperial units because there is a high probability of mathematical and rounding errors. Present day pesticides are formulated to have greater toxic effects in smaller amounts. Therefore, even small conversion errors can lead to the use of incorrect dosages (either too high or too low). Use metric – you will be glad you did!