



DISEASE CONTROL

Disease control is an important part of Christmas tree production. Normally, diseases are responsible for the loss of few trees, but they often reduce tree quality as well as value in the market place. Good management should limit problems with most diseases. Foliar fungicides may be needed to control needlecast of pines and phomopsis blight on red cedar (*Juniperus* species).

A preventive fungicide spray program, begun on second-year trees and continued until harvest, should provide good protection from these diseases. When applying fungicides, be sure to wet all the foliage, not just the outer needles. A list of fungicides and spray intervals is found in the following table. Consult the label for specific application instructions.

Christmas Trees: Disease Control				
Disease	Fungicide and Formulation	Amount to Use (Unless stated otherwise)		Comments
		Rate per Gal.	Rate per 100 Gal	
PINE				
Eastern Gall and Fusiform Rust				
	myclobutanil EAGLE 20EW	---	12-18 fl.oz.	Apply in 100 gallons of water per acre. Begin sprays in early spring and continue at 2- to 3-week intervals until threat of disease has passed. Add spray adjuvant for good spray coverage. For control of fusiform rust.
	triadimefon BAYLETON 50	---	8 oz.	Apply to point of run-off as needed. See label for further information.
Needlecast and Other Needle Diseases				
	chlorothalonil BRAVO ULTREX	---	2.5-5 lb.	Apply 100 gallons per acre with ground equipment at 6- to 8-week intervals from March to June and September to November on second- or third-year trees. Apply monthly when weather is wet. Fall sprays may be omitted on trees ready to harvest. Thorough coverage of needles is critical for effective control.
	DACONIL ULTREX	---	2.5-5 lb.	
	ECHO 90DF	---	2.25-4.5 lb.	
	ECHO 6F	---	2.75-5.5 pt.	
	mancozeb DITHANE 75DF	---	1-2 lb.	Apply in 100 gallons of water per acre at 2-week intervals at same schedule listed for chlorothalonil, above. The addition of spreader-sticker to wettable powder formulations is recommended.
Pitch Canker				
	None labeled	See Comments.		Avoid mechanical damage. Prune out diseased limbs and destroy trees with trunk cankers.

Disease	Fungicide and Formulation	Amount to Use (Unless stated otherwise)		Comments
		Rate per Gal.	Rate per 100 Gal	
PINE (cont.)				
Pine Needle Rust				
	azoxystrobin HERITAGE 50WDG	---	1-4 oz.	Apply at first sign of disease and repeat at 14- to 28-day intervals.
	triadimefon BAYLETON 50	---	1-2 oz.	Apply at 1- to 2-week intervals from early spring to early summer. Use herbicides to eliminate stands of goldenrod or other members of the Compositae family within 1000 feet of pine trees. This is a rare disease on Virginia and white pines.
Rhizosphaera Needle Blight				
	chlorothalonil BRAVO ULTREX	---	5 lb.	Make first application when new shoot growth is 0.5 to 2 inches long. Apply again 3 to 4 weeks later to protect immature needles. Apply in 10 to 50 gallons of spray volume per acre with air or ground equipment. In nursery beds, apply on a 3-week schedule. Thorough coverage of needles is critical for effective disease control.
	DACONIL ULTREX	---	5 lb.	
	ECHO 90DF	---	4.5 lb.	
	ECHO 6F	---	5.5 pt.	
RED CEDAR, ARIZONA CYPRESS, AND LEYLAND CYPRESS				
Gall Rusts				
	azoxystrobin HERITAGE 50WDG		1-4 oz.	Apply May to September at 7- to 28-day intervals.
	myclobutanil EAGLE 20EW		8 fl.oz.	Apply May through September at 10- to 14-day intervals. Add a non-phytotoxic surfactant to improve spray coverage and fungicide performance.
	triadimefon BAYLETON 50	---	1-2 oz.	Apply at 2- to 4-week intervals from July through September. Remove all apple or crabapple trees in the area of red cedar.
Phomopsis Blight, Cercospora Blight, and Kabatina Blight				
	azoxystrobin HERITAGE 50WDG	---	1-4 oz.	Apply as needed every 14 to 28 days. Begin sprays in late spring or when symptoms first appear.
	copper hydroxide CUPRO 2005 T/N/O	1-3 T.	1-3 lb.	Apply at first sign of disease and reapply at 2- to 4-week intervals. See label for information on possible phytotoxicity.
	copper sulfate pentahydrate PHYTON 27	---	13-25 fl.oz.	Use sufficient volume of water to thoroughly cover the leaves and stems. Repeat applications at 7- to 14-day intervals as needed to control disease.
	mancozeb DITHANE 75DP	---	1-2 lb.	Apply at 7- to 10-day intervals as needed. Addition of a spreader-sticker to wettable powders will improve product performance.
	FORE 80W	---	1.5 lb.	
	PROTECT T/O	---	1.5 lb.	
	propiconazole BANNER MAXX	---	5-8 fl.oz.	Apply as a full-coverage spray to the point of drip when conditions favor disease. Repeat applications every 14 to 21 days.
	pyraclostrobin + boscalid PAGEANT	---	8-16 oz.	Apply as full cover spray to point of drip when conditions favor disease and before symptoms appear. Reapply at 7- to 14-day intervals.

Disease	Fungicide and Formulation	Amount to Use (Unless stated otherwise)		Comments
		Rate per Gal.	Rate per 100 Gal	
RED CEDAR, ARIZONA CYPRESS, AND LEYLAND CYPRESS (cont.)				
Phomopsis Blight, Cercospora Blight, and Kabatina Blight (cont.)				
	thiophanate-methyl 3336F	---	16-24 fl.oz.	Apply at 1- to 3-week intervals from late spring through summer. For control of Kabatina blight, apply in late summer and early fall. Shorten spray interval during periods of wet, humid weather. Add a spreader-sticker to improve performance of wettable powder (W) formulation.
	3336 50W	---	1.5 lb.	
	HALT 50W	2.5 t.	---	
	SYSTEC 1998 4.5F	---	16-24 fl.oz.	
	OHP 6672 4.5F	---	14.5-20 fl.oz.	
Phytophthora Root Rot				
	etridiazole TRUBAN 30W		3-10 oz.	DRENCH: Apply in sufficient water to thoroughly wet the leaves and stems. Repeat applications at 1- to 3-month intervals through production cycle. Do not mix with other pesticides. DRY MIX IN POTTING MEDIA: Thoroughly incorporate using mixer. Retreat as needed with drench treatment 1 to 3 months after potting.
			1.5- 3 oz./cu.yd.	
	TRUBAN 5G		6-8 lb./1000 sq. ft.	BROADCAST ON FIELD STOCK: Apply using cyclone or drop spreader. See label for spreader settings. SIDEDRESS ON FIELD STOCK: Apply in 4 to 6 inch deep furrow 8 to 10 inches from both sides of plant.
			4-6 oz./100 linear ft. of row	
	fosetyl-AI ALLETTE T/O PRODOGY 80DG		0.4 – 0.8 lb.	SOIL DRENCH: Apply enough water to thoroughly wet the media or soil in the root zone. FOLIAR SPRAY: Apply as needed to control disease at monthly intervals.
			2.5-5 lb.	
	mefenoxam SUBDUE MAXX		1.25-2.5 fl.oz./1000 sq. ft.	SOIL SURFACE SPRAY: Broadcast or band on soil surface over root zone of tree. After application, irrigate with at least 0.5 inch of water. BROADCAST ON FIELD STOCK: Apply using cyclone or drop spreader. See label for spreader settings.
	SUBDUE GR		14.8-75 oz./1000 sq. ft.	
	potassium salts of phosphorous acid ALUDE		1-2 qt.	FOLIAR SPRAY: Apply to wet the foliage and repeat every 14 to 21 days.
	dimethomorph STATURE DM		6.4-12.8 oz.	DRENCH: Apply when roots are well established, or at first sign of disease. Repeat applications at 10- to 14-day intervals throughout production cycle. Apply sufficient water to wet the root zone. FOLIAR SPRAY: Apply in sufficient water to thoroughly wet the leaves and stems. Repeat applications at 10- to 14-day intervals through production cycle.
			6.4-12.8 oz.	
	<i>Trichoderma harzianum</i> Strain KRL-AG2 ROOT SHIELD		1-1.5 lb./cu. yd.	DRY SOIL MIX IN NURSERY: Thoroughly incorporate granules during mix preparation or pot filling. See label for compatibility with other fungicides and insecticides.

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RED CEDAR, ARIZONA CYPRESS, AND LEYLAND CYPRESS (cont.)				
Seiridium Canker and Botryosphaeria Canker				
	None labeled		See Comments.	Remove all dead or diseased limbs. Disinfect pruning shears or knives with alcohol after each cut. Both diseases are a problem on Leyland cypress. See Phomopsis Blight for fungicide recommendations. Good tree vigor and irrigation is best defense against both diseases.

Christmas Trees: Disease Control prepared by Austin K. Hagan, *Extension Plant Pathologist*, Alumni Professor, Entomology and Plant Pathology, Auburn University.

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For more information, contact your county Extension office. Visit <http://www.aces.edu/counties> or look in your telephone directory under your county's name to find contact information.

Use pesticides **only** according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use pesticides on plants that are not listed on the label.

The pesticide rates in this publication are recommended **only** if they are registered with the Environmental Protection Agency or the Alabama Department of Agriculture and Industries. If a registration is changed or canceled, the rate listed here is no longer recommended. Before you apply **any** pesticide, check with your county Extension agent for the latest information.

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