

Red Thread

[*Laetisaria fuciformis*]



SYMPTOMS

Red thread develops in circular or irregular patches from 4 inches to 2 feet in diameter. Affected leaves within these patches are tan or bleached-white in color. From a distance, the patches usually have a reddish appearance, due to the presence of thick, red strands of fungal growth emanating from the affected leaves. It is through production of these “red threads” that the fungus spreads to healthy plants and survives unfavorable conditions. Small tufts of pink, fuzzy mycelium may also be present in or around the patches when the leaves are wet or humidity is high. After prolonged periods of disease development, the patches may merge to produce large irregularly shaped areas of damaged turf.

Pink patch is a different turf disease that produces very similar symptoms to those caused by red thread. The only visible difference is that the pink patch pathogen, *Limonomyces roseipellis*, does not produce the “red threads” as described above. These two diseases often develop together and respond identically to fungicides and other management practices, so a precise diagnosis is not essential.



red thread sclerotia

Characteristic	Description
Host Grass Species	Kentucky bluegrass, tall fescue, fine fescue, perennial ryegrass
Month(s) with symptoms	March to June, September to December
Stand Symptoms	spots, circles, patches (4 to 12 inches)
Foliar Symptoms - Location/Shape	dieback from leaf tip, blighting of entire leaves
Foliar Symptoms - Color	red, pink, tan
Root/Crown Symptoms	none
Fungal Signs	thread-like sclerotia

Note: Still not sure if this is the right disease? The [Turfgrass Disease Identification](#) program may be helpful. Or consult the experts at the [Turf Diagnostics Lab](#). Check the TurfFiles [glossary](#) for definitions of unfamiliar terms.

FACTORS AFFECTING DISEASE DEVELOPMENT

The red thread fungus is able to cause disease at temperatures ranging from 40 to 80°F, but develops most rapidly at approximately 70°F. Red thread affects grass that is growing slowly for any reason: inadequate fertilization, drought stress, cool weather, low light intensity, excessive traffic, or many other pest or environmental stresses.

Red thread is most severe in the spring and fall, when extended periods of cool, wet, and overcast weather slow growth of the turf and favor growth of the pathogen. Because of its wide temperature range, red thread can develop at any time of year when a slow-growing host and sufficient leaf wetness are available.

CULTURAL CONTROL

Fertilize to meet the nutritional needs of the turf and maintain vigorous growth. Submit a soil sample for nutrient analysis regularly, and apply recommended amounts of phosphorus, potassium, and lime. Apply nitrogen based on University recommendations to prevent weak, thin turf; however, avoid overstimulation and the development of lush, succulent turf.

Irrigation should be performed between midnight and 6 AM to prevent prolonged periods of leaf wetness. Never irrigate in the late afternoon or early evening. Apply a sufficient amount of water to wet the entire root zone, then reapply when the turf first starts to show signs of drought stress. Use the [Turf Irrigation Management System](#) available on TurfFiles to schedule irrigation based on weather conditions and turf needs. Prune or remove trees, shrubs, or other barriers to increase air movement and sunlight penetration. Remove clippings from affected areas when the disease is active to reduce spread of the disease, and wash infected clippings from equipment before entering uninfected areas.

CHEMICAL CONTROL

Fungicides are available for control of red thread, but are usually not necessary if proper cultural practices are implemented.

Fungicide	Efficacy ⁽¹⁾	Resistance Risk ⁽²⁾	Class ⁽³⁾	Products ⁽⁴⁾
iprodione + thiophanate-methyl**	++++	3	benzimidazole	26/36, Dovetail, Fluid Fungicide
flutolanil + thiophanate-methyl	++++	3	benzimidazole + carboxamide	SysStar
flutolanil	++++	2	carboxamide	ProStar
iprodione**	++++	2	dicarboxamide	26GT, IPro, Iprodione Pro, Raven
azoxystrobin + propiconazole	++++	3	DMI + QoI	Headway
azoxystrobin	++++	3	QoI	Heritage
fluoxastrobin	++++	3	QoI	Disarm, Disarm G
pyraclostrobin	++++	3	QoI	Insignia
chlorothalonil + thiophanate-methyl**	+++	2	benzimidazole + nitrile	Spectro, ConSyst, Peregrine, Tee-1-Up, TM/C
propiconazole	+++	2	DMI	Banner MAXX, Kestrel, Kestrel MEX, ProPensity, Propiconazole, Propiconazole G-Pro, Propiconazole Pro, Savvi, Spectator, Strider
chlorothalonil + propiconazole**	+++	2	DMI + nitrile	Concert
chlorothalonil + propiconazole + fludioxonil**	+++	2	DMI + nitrile + phenylpyrrole	Instrata
triadimefon + trifloxystrobin	+++	3	DMI + QoI	Armada, Tartan
chlorothalonil**	+++	1	nitrile	Daconil, Chlorostar, Chlorothalonil, Echo, Legend, Manicure, Pegasus
vinclozolin**	++	2	dicarboxamide	Curalan, Touche

Fungicide	Efficacy ⁽¹⁾	Resistance Risk ⁽²⁾	Class ⁽³⁾	Products ⁽⁴⁾
mancozeb**	++	1	dithiocarbamate	Fore, 4 Flowable Mancozeb, Dithane, Mancozeb DG, Pentathlon, Protect, Wingman
mancozeb + myclobutanil**	++	2	dithiocarbamate + DMI	Manhandle
mancozeb + copper hydroxide**	++	1	dithiocarbamate + inorganic	Junction
fenarimol**	++	2	DMI	Rubigan
myclobutanil	++	2	DMI	Eagle, Myclobutanil
triadimefon	++	2	DMI	Bayleton, Granular Turf Fungicide, Systemic Fungicide
trifloxystrobin	++	3	QoI	Compass
thiophanate-methyl	+	3	benzimidazole	3336, Fungo, Systec, T-Bird, T-Storm, Tee-Off, TM
metconazole	?	2	DMI	Tourney
tebuconazole**	?	2	DMI	Torque
triticonazole	?	2	DMI	Trinity, Triton
polyoxin D	?	2	polyoxins	Endorse, Affirm

** Not for application to residential lawns.

Footnotes:

(1) **Efficacy Codes:**

++++	excellent control when conditions are highly favorable for disease development
+++	good control when disease pressure is high, or excellent control when disease pressure is moderate
++	good control when disease pressure is moderate, excellent control when disease pressure is low
+	good control when disease pressure is low
0	does not provide adequate control under any conditions
?	cannot be rated due to insufficient data

(2) **Resistance Risk:**

- 1 Rotating and tank-mixing not necessary, but recommended to avoid potential side effects from continuous use of same chemical class.
- 2 Rotate to different chemical class after 3-4 applications; tank-mixing not necessary.
- 3 Rotate to different chemical class after 2-3 applications; tank-mixing not necessary.
- 4 Rotate to different chemical class after 1-2 applications; tank-mixing not necessary.
- 6 Rotate to different chemical class after 1-2 applications; tank-mixing with low or moderate risk product recommended.
- 9 Rotate to different chemical class after EVERY application; tank-mix with low or moderate risk product for EVERY application.

(3) Continual use of fungicides with similar control mechanisms (modes of action) can result in fungi that are resistant to some chemicals. Poor or ineffective disease control can be expected when this occurs. Managers can reduce the chances of this happening by mixing or alternating fungicides belonging to different chemical classes.

(4) Recommendations of specific chemicals are based upon information on the manufacturer's label and performance in a limited number of trials. Because environmental conditions and methods of

application may vary widely, performance of the chemical will not always conform to the safety and pest control standards indicated by experimental data. When more than one brand name exists for an agricultural chemical, the name of brand that first came onto the market is listed first. Otherwise, brand names are listed in alphabetical order. The order in which brand names are given is not an indication of a recommendation or criticism.

Recommendations for the use of agricultural chemicals are included in this publication as a convenience to the reader. The use of brand names and any mention or listing of commercial products or services does not imply endorsement by North Carolina State University or discrimination against similar products or services not mentioned. Other brand names may be labeled for use on turfgrasses. Individuals who use agricultural chemicals are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Be sure to obtain current information about usage regulations and examine a current product label before applying any chemical. For assistance, contact your county's Cooperative Extension agent.

Useful links:

Glossary: <http://www.turffiles.ncsu.edu/Glossary.aspx>

Turf Diagnostics Lab: <http://ncstateturfdiagnostics.com/TDL/Home.html>

Turfgrass Disease Identification Program: <http://www.turffiles.ncsu.edu/diseaseID/>

Turfgrass Disease Management Program: <http://www.turffiles.ncsu.edu/diseasemgmt/>

Turf Irrigation Management System: <http://www.turffiles.ncsu.edu/tims/>

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