

TABLE 2

Generic & Trade Names of Common Turfgrass Fungicides

Generic Names	Contact (C) or Systemic (S)	Common Trade Names ¹
Anilazine	C	Dyrene
Benomyl	S	Tersan 1991, Lesco Benomyl, Lebanon Benomyl
Chloroneb	C	Tersan SP, Teremec SP, Proturf Fungicide II
Chlorothalonil	C	Daconil 2787
Ethazol (etridiazole)	C	Koban, Terrazole
Fenarimol	S	Rubigan
Fosetyl-AI	S	Aliette
Iprodione	S	Chipco 26019, Proturf Fungicide VI
Mancozeb	C	Fore, Formec, Dithane F-45, Lesco Mancozeb, Manzate 200 DF
Maneb	C	Dithane M-22
Maneb + zinc sulfate	C + C	Tersan LSR, Dithane M-22 w/Zinc, Lesco 4 F w/Zinc
Mercury chloride	C	Calo-Clor, Calo-Gran
Metalaxyl	S	Subdue, Proturf Pythium Control
Metalaxyl + mancozeb	S + C	Pace
Pentachloronitrobenzene (quintozene)	C	Terraclor, Turfcide, Proturf FF II, Lesco PCNB
Phenylmercuric acetate	C	PMAS
Phenylmercuric acetate + thiram	C + C	Proturf Broad Spectrum Fungicide
Propamocarb	S	Banol
Propiconazole	S	Banner
Thiophanate-ethyl + thiram	S + C	Bromosan
Thiophanate-methyl	S	Fungo 50, Spot-Kleen, Clearys 3336, Topsin M, Proturf Systemic Fungicide
Thiophanate-methyl + mancozeb	S + C	Duosan
Thiophanate-methyl + iprodione	S + C	Proturf Fluid Fungicide
Thiram	C	Tersan 75, Spotrete, Thiramad, Lesco Thiram
Triadimefon	S	Bayleton, Proturf Fungicide VII, Lebanon Turf Fungicide
Triadimefon + metalaxyl	S + S	Proturf Fluid Fungicide II
Triadimefon + thiram	S + C	Proturf Fluid Fungicide III
Vinclozolin	S	Vorlan

¹ Products may be available only through specialized dealers or only in large quantity. Some products can be purchased and applied only by licensed pesticide applicators. This list is presented for information only. No endorsement is intended for products mentioned, or is criticism meant for products not mentioned.

Source: Dr. Landschoot

Biologicals: the new frontier

Biological control is the reduction of disease-producing activities of a pathogen by another organism.

Biological control is a natural occurrence in turf and is a primary reason why diseases do not destroy all of our lawns, grounds and golf courses.

Organisms that limit the disease-producing activities of a pathogen are referred to as antagonists. Antagonists are usually microorganisms (fungi, bacteria, viruses, nematodes, or actinomycetes) that interfere with the growth and spread of the pathogen. Antagonists may be introduced by artificial means or they may already be present in the turfgrass ecosystem.

Antagonists produce compounds that inhibit the pathogen—antibiotics, for example—or more directly, parasitize the pathogen. The direct application of antagonists is likely to result in failure unless provisions are made for it to successfully compete in turf. Direct application of an antagonist that is not adapted to the turf ecosystem is like sending a soldier into battle without a rifle. The pathogen and the other resident microorganisms are usually well equipped to outcompete and fend-off the introduced antagonist.

Another method of biological control that has yielded success with some turf pathogens is the use of pathogen-suppressive soils. Suppressive soils are those in which the pathogen does not establish or persist in populations great enough to cause severe disease damage. Suppressive soils have been implicated as a factor responsible for the absence or decline of take-all patch of bentgrass turf. Take-all patch usually develops on recently-sterilized soils or on golf courses that were formerly woodland or wetland sites and do not have large populations of resident antagonists.

Over three to five years, the disease begins to disappear from these sites, a phenomenon known as "take-all decline." Studies have shown that the transfer of a small amount of soil from sites where take-all decline has occurred to areas in which the disease is active, resulted in suppression of the disease. Studies in Australia have revealed that suppressive soils can be developed in the laboratory and used as a top dressing to control take-all patch. Suppressive soils have also been reported for other pathogens including various species of fusarium, pythium, and rhizoctonia. To my knowledge, there are no companies

that are marketing pathogen-suppressive soils for use on turf.

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CALENDAR

COMMON DISEASES OF COOL-SEASON TURF

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
			Anthracnose									
					Brown Patch							
				Dollar Spot								
			Leaf Spot/Melting Out									
		Necrotic Ring Spot						Necrotic Ring Spot				
						Pythium Blight						
			Red Thread/Pink Patch									
							Rust					
Snow Molds										Snow Molds		
					Stripe Smut							
					Summer Patch							

Biologicals:

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Organics an alternative?

Most of the current interest in biological control of turf pathogens is centered around the use of natural organic fertilizers or organic soil amendments. This practice has been successfully employed with other crops and some success has been achieved in controlling turfgrass diseases. Research at Cornell University has shown that some organic amendments suppressed dollar spot and brown patch diseases when applied as a topdressing to a bentgrass putting green.

Similar results have been obtained by researchers from Michigan State University and The University of Rhode Island for the suppression of necrotic ring spot. Although we do not understand the exact mechanisms involved, there is some evidence to suggest that these products stimulate populations of resident antagonists to levels that will suppress some turf diseases. They may also aid in disease control by providing additional nitrogen to the plant.

LM

—Dr. Landschoot

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