



Bayer Solutions: Conditions Favoring Disease Development and Suggested Action Thresholds for Common Diseases of Cool Season Turfgrass
 Information based on a combination of the *Compendium of Turfgrass Diseases* (Smiley, Dernoeden and Clarke, APS Press 2005), *Diseases of Turfgrasses* (Couch, Kreiger Press 1995), published research and observations.

DISEASE	SCIENTIFIC NAME	AIR TEMP. °F*			SOIL TEMP. °F**			FACTORS CONTRIBUTING TO DISEASE DEVELOPMENT	ACTION THRESHOLD	ADDITIONAL CONDITIONS REQUIRED
		low	opt	hi	low	opt	hi			
Anthracnose (Basal)	<i>Colletotrichum cereale</i>	<60	-	75	-	-	-	favored by low N-fertility & high compaction; cold weather and poor growing conditions are associated with basal rot outbreaks in late fall - early spring	spray preventively before stress	fall - spring; low plant growth potential
Anthracnose (Foliar)	<i>Colletotrichum cereale</i>	85	-	<95	-	>68	-	favored by low N-fertility & high compaction; summer stress and high heat are associated with summer outbreaks; foliar blight may progress to basal rot	start preventive practices when avg. soil T >65-68°F	spring, summer & fall; reduced plant growth potential
Bacterial Decline	<i>Acidovorax</i> spp.	-	?	-	-	?	-	stressed creeping bentgrass; associated with high wear and low mowing heights; may display abnormal physiological growth	exact triggers unknown, most common under summer stress	low plant growth potential, summer stress
Bacterial Wilt	<i>Xanthomonas translucens</i>	-	86	-	-	-	-	annual bluegrass only	exact triggers unknown, can be present from Apr - Oct in the northeast US	low plant growth potential, summer stress
Brown Patch	<i>Rhizoctonia solani</i>	60	88	>100	-	-	-	high air temp in conjunction with extended periods of leaf wetness (>10 hours), more severe with high N-fertility	low T >60°F with extended leaf wetness	esp. when low T >68°F
Curvularia Blight & Leaf Spot	<i>Curvularia</i> spp.	85	-	>95	-	-	-	primarily a stress pathogen that attacks plants weakened by low fertility and heat	not predictable based on weather	low plant growth potential
Cyanobacteria/Algae	<i>Oscillatoria</i> spp.	-	60-85	-	-	-	-	favored by high soil moisture or high organic matter; poor drainage a factor	not predictable based on weather	low plant growth potential
Dollar Spot	<i>Sclerotinia homoeocarpa</i>	60	-	90	-	-	-	leaf wetness and humidity contribute to disease development; more severe on low N-fertility turf; resistance to certain fungicide groups (e.g., benzimidazole) is a concern	start early preventive when avg. soil T >55°F; foliar programs when max air T 70-90°F	spring, summer & fall; certain bentgrass varieties can be highly susceptible
Fairy Ring	Various basidiomycete spp.	-	-	-	<50	-	-	fungal activity starts when soil T is >50-55°F; hydrophobic areas and symptoms may be seen through the summer-fall	start preventive practices when avg. soil T >55-60°F	cultural practices often used to increase fungicide efficacy
Gray Leaf Spot	<i>Pyricularia grisea</i>	70	-	90	-	-	-	long periods of leaf wetness; high N-fertility favor disease	max T + min RH >140; or 80-90°F weather plus moisture	perennial ryegrass only
Gray Snow Mold	<i>Typhula incarnata</i> , <i>T. ishikariensis</i>	-	-	-	-	-	-	disease develops on turf under snow cover; sclerotia begin to germinate at 50-65°F in the fall; disease develops under snow cover at optimal temps of 35°F	apply fungicides prior to lasting snow cover	>80 days of avg. snow cover
Leaf and Sheath Spot	<i>Rhizoctonia zeae</i> , <i>R. oryzae</i>	80	-	>95	-	-	-	disease is also called hot weather brown patch, not affected by benzimidazole containing fungicides	>85°F avg daytime T	worse under summer stress
Leaf Spot	<i>Bipolaris</i> spp.	68	-	95	-	-	-	infections occur during warm, wet weather but symptoms (esp. root rot) can be exacerbated by dry, hot conditions	treat preventively when max T is between 70-90°F and wet conditions are present	summer stress
Leaf Spot, Melting-Out & Net Blotch	<i>Dreschlera</i> , <i>Marielliotia</i> , <i>Bipolaris</i> & <i>Exserohilum</i> spp	38	58-64	80	-	-	-	infections occur during cool, wet weather	treat preventively when max T is between 60-65°F and wet conditions are present	primarily on cool-season fairways and roughs
Microdochium Patch	<i>Microdochium nivale</i>	32	-	65	-	-	-	disease severity increases at soil pH greater than 6.5; it needs high canopy moisture, and is more severe with high N-fertility; can develop at a wide range of temps when >3-5 days of cloudy or wet weather	40-65°F daytime T	wet, cloudy weather

* Average maximum daytime temperature where disease activity is most likely.

** Average soil temperature at a 2-4 inch depth where disease activity is most likely. Manage diseases according to local conditions; suggested action thresholds may not apply under abnormal environmental conditions that promote disease.

DISEASE	SCIENTIFIC NAME	AIR TEMP. °F*			SOIL TEMP. °F**			SPECIAL CONDITIONS	ACTION THRESHOLD	ADDITIONAL CONDITIONS REQUIRED
		low	opt	hi	low	opt	hi			
Necrotic Ring Spot	<i>Ophiosphaerella korrae</i>	-	-	-	50	-	77	roots are infected in the fall - spring when soil temps >50°F; symptoms may show in cool wet weather or under heat stress	apply fungicides when soil temps are 55-60°F in the spring	primarily on Kentucky bluegrass and to a lesser degree on some fescues
Pink Snow Mold	<i>Microdochium nivale</i>	32	-	50	-	-	-	disease develops on turf under snow cover; sclerotia begin to germinate at 50-65°F in the fall; disease develops under snow cover at optimal temps of 35°F	apply fungicides preventively before first, lasting snow cover	most prevalent with <60 days snow cover; seen in comb. with gray snow mold at 60-150 days snow cover
Pythium Blight	<i>Pythium aphanidermatum</i>	68	85-95	100+	-	-	-	severe outbreaks when day T is >86°F and night T >68°F or greater, with wet conditions or relative humidity of 90% or higher; favored by high N fertility	>68°F nighttime low temp	wet conditions, water saturated soils
Pythium Root Dysfunction	<i>Pythium volutum</i>	-	-	-	50	-	75	infections occur in the spring - fall, but symptoms may not be seen until plants are stressed	apply fungicides preventively between 50-75°F soil temp	low fertility, drought and low soil oxygen enhance symptoms
Pythium Root Rot (warm temp. species)	<i>Pythium</i> spp.	86	-	-	-	-	-	high soil moisture levels needed; warm temperature root rot is made worse by salt stress	not predictable based on weather	low plant growth potential
Pythium Root Rot (cool temp. species)	<i>Pythium</i> spp.	55	-	70	-	-	-	disease is most severe with high soil moisture and low plant growth potential	not predictable based on weather	low plant growth potential
Rapid Blight	<i>Labyrinthula terrestris</i>	68	75-81	86	-	-	-	outbreaks associated with dry periods in the fall and spring; dry weather increases soluble salts in the soil and plants, increasing the susceptibility of cool-season turfgrasses to infection and symptom expression, TDS-4 meter >0.4	70-85°F daytime T	TDS-4 ≥ 0.5 (2.4 dS/m)
Red Thread	<i>Laetisaria fuciformis</i>	59	-	77	-	-	-	disease is favored by long periods of leaf wetness, low N-fertility	60-75°F daytime T	pair preventive apps with dollar spot or other foliar disease programs; curative apps as needed
Rust (Crown)	<i>Puccinia graminis</i>	68	-	86	-	-	-	disease likely when night temps are between 70-75°F with high atmospheric humidity; a slow drying of leaf surfaces during the day fuels disease development; low N-fertility is typically associated with rust	not predictable based on weather; tie into other disease control programs and N fertility management	
Rust (Stem)	<i>Puccinia coronata</i>	50	-	68	-	-	-	disease is most likely in cool, wet weather; low N-fertility is typically associated with rust	not predictable based on weather; tie into other disease control programs and N fertility management	low plant growth potential
Southern Blight	<i>Sclerotium rolfsii</i>	75	-	95	-	-	-	moist, but not excessively wet, thatch is needed; low soil pH favors disease	80-95°F daytime T	sporadic in spring, summer & fall; depends on local soil conditions and disease history
Summer Patch	<i>Magnaporthe poae</i>	-	>82	-	-	>68	-	turfgrasses with restricted root systems are more prone to severe outbreaks; severity is usually greater at high soil moisture levels	start preventive practices when soil temps >65-68°F	spring, summer & fall; reduced plant growth potential
Take-All Patch	<i>Gaeumannomyces graminis var avenae</i>	-	-	-	50	-	65	infection may occur during the early spring or late fall, but severe damage and death may not develop until hot, dry weather; more severe when pH of the top inch of soil is above 6.5; disease worse with low Mn fertility	apply as avg. soil T drop below 65°F; 50-60°F is typical for spring preventive applications	
Waitea (Brown Ring) Patch	<i>Waitea circinata var circinata</i>	65	-	85	-	-	-	typically develops on lower fertility and water stressed turf; thiophanate methyl can increase development	begin preventive spring applications when soil temps 55-60°F	winter - summer disease; typically does not develop in the fall
Yellow Patch	<i>Rhizoctonia cerealis</i>	45	50-65	75	-	-	-	foliar blighting will occur with periods of extended rainfall and temperatures in the optimal range	apply as needed at daytime T of 40-65°F	low plant growth potential

