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BASF

Diseases of warm-season turfgrasses

by Leon T. Lucas, Ph.D.
North Carolina State Univ.

■ Diseases of warm-season turfgrasses usually occur either in the spring and fall, or in the summer.

Spring dead spot—Spring dead spot and winter damage are the first problems observed in the spring in the northern range of adaptation of bermudagrass. Spring dead spot appears as circular dead spots from six inches to several feet in diameter in highly-maintained bermudagrass three to four years after planting. Winter damage and spring dead spot can be confused. However, winter damage usually occurs in large areas and is often associated with winter shade or north-facing slopes.

Several different fungi have been associated with spring dead spot.

Gaeumannomyces graminis causes a root and stolon rot during the fall and winter that results in circular dead spots in the spring. The bermudagrass grows over the spots slowly during the summer, and the spots are often invaded by weeds that also reduce the spread of the grass into the spots.

Lower levels of nitrogen and good aeration programs will help reduce the severity of this disease. Some research has indicated that ammonium-type nitrogen fertilizers with sufficient potassium will help reduce damage.

Once the disease is present, fungicides are not effective in the spring. Rubigan fungicide has a label for spring dead spot control; it should be applied in September or October to help control the disease the following spring.

Areas with spring dead spot in the spring should be mapped and treated with the fungicide in the fall.

Brown patch—Brown patch is usually seen in the spring during—or soon after—green-up, especially in cool-wet springs. It is caused by the fungus *Rhizoctonia solani*, and probably is the most serious disease of warm-season turfgrasses.

Symptoms are circular brown patches as large as 20 feet. Some live leaves usually remain in the patches. The infected shoots at the edge of the patches turn yellow and

are easily pulled from the stolons. Symptoms will be evident throughout the winter and the following spring. These patches may be the first to show symptoms of the disease becoming active the next spring.

Heavy fertilization with nitrogen and wetter environments increase the severity of brown patch. Moderate fertilization with nitrogen, proper irrigation, and good air circulation will help reduce the severity of brown patch. The grass should be irrigated enough to wet the soil 6 to 8 inches at one time and not irrigated again until several days later when drought symptoms become evident.

Removing trees, shrubs or fences can help manage this disease. Drying of the leaves can be increased by growing the grasses in more open areas with good sunlight and air circulation.

A number of fungicides are labelled for brown patch, but it has been difficult to control once symptoms become severe. Fungicides should be applied when early symptoms are seen or preventive fungicide applications may be needed where there is a history of brown patch. Fall applications may be best.

Fairy rings—Symptoms of fairy rings include green rings of grass, dead rings of grass, rings of mushrooms or puffballs, or a combination of signs.

The rings may be from several feet to hundreds of feet in diameter. They enlarge each year and often persist for many years.

Many different mushroom and puffball-type fungi are known to cause fairy rings.

Sources of organic matter such as stumps should be removed before planting. Once fairy rings are present, aeration and heavy irrigation may help to overcome turf damage. Renovation or soil fumigation can control fairy rings.

Some fungicides may help to control the rings. But control may not be warranted because of the expense and the fact that symptoms may be masked with fertilizer in some cases.

Leaf spot—*Helminthosporium* leaf spots are often a problem on bermudagrass and zoysia during wet weather in middle to late summer. The fungi that cause *Helminthosporium* are divided into three genera: *Bipolaris*, *Drechslera* or

Exserohilum. Symptoms vary by genera; they can range from brownish-black to light tan lesions on the leaves to crown and root rot.

Gray leaf spot, caused by *Pyricularia grisea*, occurs primarily on St. Augustinegrass. The disease begins as tiny brown lesions that enlarge to large tan lesions with purple to brown borders. The spots may be covered with a gray fungus during warm-moist weather. It is more severe in recently sprigged plantings.

Proper amounts of fertilizer and irrigation practices that reduce the length of leaf wetness periods will help reduce the damage from gray leaf spot. In extreme cases, fungicides can be used.

Pythium diseases—*Pythium* species cause crown and root rot diseases, usually in very wet soils. Most that are severe on cool-season grasses are not severe on warm-season grasses.

The best controls are good management practices and avoiding poorly drained soil. Some *pythium*-specific fungicides can be used.

Dollar spot—Dollar spot often occurs on bermudagrass, centipedegrass and zoysiagrass with low levels of fertility during late summer. Light tan leaf lesions with dark margins first appear on leaves. Small tan patches from 2 to 3 inches in diameter develop. The patches on zoysia may be darker and up to 6 inches in diameter. Applications of fertilizer with nitrogen will usually give adequate control; fungicides should not be needed.

Centipede decline—This complex may involve a number of factors: cold damage, soil pH, nutritional deficiencies, improper fertilization, herbicides, diseases and ground pearls among them.

Centipede grows best at a 5.5 pH; iron deficiency that causes the centipede to turn yellow and become weak often develops at higher pHs. Nutrients like sulfur and potassium should be used according to soil test results designed specifically for centipedegrass. Also, low levels of nitrogen (not more than 1 lb. N/1000 sq.ft./yr.) has helped to avoid the decline.

Some broadleaf weed herbicides have been associated with centipede decline. Label directions should be followed carefully.

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fully. Diseases such as fairy rings and brown patch may contribute to the decline of centipedegrass. Where ground pearls are present, another type of turf, such as bermuda, may grow better.

Nematodes—The selection of the best adapted grasses and good management must be used to manage nematode damage. The few remaining nematicides are labelled only for golf course and commercial turf use, and not on residential lawns.

Good fertilization and irrigation programs will help overcome some nematode

damage. Some products that contain crab and shrimp shells may help control nematodes, as will incorporating organic matter in the soil at the time of planting and as topdressing.

Rusts—Rust diseases usually occur in late summer or fall. These diseases cause yellow to orange pustules. Zoysiagrasses are most severely damaged by rust, particularly in shaded areas without adequate fertilization.

This disease can be managed by using good turf management practices. Some of

the newer systemic fungicides have also given very good control.

St. Augustine decline—This disease is caused by a virus. The symptom resembles a nutrient deficiency or damage from some types of insects. The chlorosis slowly spreads until the infected lawn appears uniformly chlorotic and becomes thin. Entire lawns may be killed by this virus disease as early as three years after its first symptoms appear.

The best control is to use new varieties that are resistant to the virus.

DISEASE CONTROL, WARM-SEASON GRASSES

Disease	Fungicide, formulation	Oz./1000 sq.ft.	Interval/days	
Brown patch	Banner 14.3%EC	2 to 4	10 to 21	
	Bayleton 25WP	1 to 2	15 to 30	
	Chipco 26019 50WP, 23.3%	1.5 to 2, 3 to 4	14 to 21	
	Cleary's 3336 50WP	1 to 2	7 to 10	
	Curalan DF	1 to 2 or 1.75 to 6.5	14 to 28	
	Daconil 2787 F40.4%, 75WP, 90WDG	3 to 11 or 2 to 8	5 to 14	
	Dusan 75WP	4 to 6	10 to 14	
	Dyrene 4F	4 to 8	5 to 10	
	Fore 80WP or Dithane M-45	4	5 to 14	
	Fungo 50WP	2	7 to 14	
	Proturf Fluid Fungicide 39.3F	1.3 to 2.6	7 to 14	
	Rubigan AS	1.5	5 to 14	
	Tersan 1991 50DF	2	7 to 10	
	Two Some F	3 to 6	14 to 28	
Centipede decline	Touché F	1 to 2		
	None known effective			
	Banner 14.3%EC	0.5 to 2	7 to 28	
	Bayleton 25WP	1 to 2	30 to 60	
	Chipco 26019 50WP, Flo 23.3%	1.5 to 2, 3 to 4, 1.75 to 6.5	14 to 21	
	Cleary's 3336 50WP	1 to 2	7 to 10	
	Curalan DF	1 to 2	14 to 28	
	Daconil 2787 F40.4%, 75WP or 90WDG	3 to 11, 2 to 8	7 to 14	
	Dusan 75WP	3	5 to 14	
	Fore 80WP or Dithane M-45	6 to 8	7 to 14	
	Fungo 50WP	1 to 2	10 to 14	
	Proturf Fluid Fungicide 39.3F	1.3 to 2.6	7 to 14	
	Rubigan AS	0.75 to 1.5	10 to 28	
	Tersan 1991 50DF	1	10 to 14	
Dollar spot	Vorlan 50WP, Flo 41.3%	1 to 2	14 to 28	
	Daconil 2787 F40.4%, 75WP, 90WDG	3 to 11	7 to 10	
	Banner 14.3%EC	2, 2 to 8, 1.75 to 6.5	14	
	Chipco 26019 50WP, Flo 23.2%	1.5 to 2, 4 to 8	14 to 21	
	Daconil 2787 F40.4%, 75WP, 90WDG	3 to 11, 2 to 8	7 to 14	
	Dusan 75WP	4 to 6	5 to 7	
	Fore 80WP or Dithane M-45	4	7 to 14	
	Manzate 200DF	3 to 4	7 to 12	
	Proturf Fluid Fungicide 39.3F	1.3 to 2.6	7 to 14	
	Tersan LSR 80WP	3 to 6	5 to 10	
	Banner 14.3%EC	1 to 2	14 to 28	
	Bayleton 25WP	1 to 2	15 to 30	
	Daconil 2787 F40.4%, 75WP, 90WDG	6 to 11, 4 to 8, 3.75 to 6.5	7 to 14	
	Dusan 75WP	4 to 6	5 to 14	
Gray leaf spot	Dyrene 4F	4 to 8	7 to 14	
	Fore 80WP	4	7 to 14	
	Tersan LSR 80WP	3 to 4	7 to 10	
	Tersan 1991 50WP	6 to 8	Oct.-Nov.	
	Rubigan AS	4 to 6	Sept.-Nov.	
	Leaf spots			
Rust				
Spring dead spot				

Source: Dr. Leon T. Lucas, N.C. State Univ.

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STRICTLY GOLF

Drainage, chemical controls are the key, says Carolina Country Club super Bob Rogers.

■ Back in 1987, members at the Carolina Country Club could tee off almost any time, particularly during summer. Play dropped off dramatically as rainfall and sunshine took their annual toll on the course's aging bermuda/bentgrass greens.

"When the greens would start regressing, rounds would drop way off," says Bob Rogers, who became the course's superintendent that year. "The better players wouldn't even play here. They'd just go somewhere else."

Rogers says that it didn't take a scientist to recognize the thinning turf and slimy



Bob Rogers used fungicide applications to solve algae problems on his greens.

dark circles caused by algal scum, a key problem on the greens.

"I've often joked that many golfers can't distinguish between one strain of grass and another," he says, "but everyone knows the difference between grass and dirt."

The deteriorating condition of the club's aging greens led to a dramatic renovation of the 92-year-old course.

Working from a design by course architect John LaFoy, Rogers rebuilt the aging greens to updated specifications, using a sand/peat/topsoil mixture of 83:12:5, instead of a typical 90:10 or 80:20 mix.

"The new greens perc at 14.5 inches per hour," Rogers says, adding that the five percent topsoil component improves cation exchange capacity and reduced nutrient leaching.

The improved percolation rates are a major help in coping with the longstanding

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ROGERS, from page 48

algal scum problem, Rogers says.

"On our old greens, we had perc rates as low as 0.1 inches per hour. So, under periods of heavy rainfall, together with the heat we get here in North Carolina, the greens would tend to start thinning out. As the sunlight hit the soil surface, algae would begin to form."

Although completion of the new greens in the fall of 1990 virtually solved the

drainage problem, Rogers says that even the new greens tend to thin out during extremely warm, wet summer periods, opening the way for algal scum outbreaks.

Experimenting—"Since algae was a major problem here, I did a lot of experimenting," says Rogers. He tried a mancozeb fungicide, and then hydrated lime as a curative, at rates of 1 lb./1000 sq.ft.

"Spraying hydrated lime is very tricky," he says. "If you overlap, if your calibration

is off, or if you fail to water it in properly, lime can cause a lot of damage. It will actually burn the bentgrass. That's what made me look into alternatives."

Following the 1990 season, he first improved air circulation on several greens where severe mounding and undulations caused air to stagnate, and he began a chemical control program.

"In a trade journal article, I learned that some superintendents found that applications of Daconil 2787 at higher label rates had the side benefit of preventing algae on greens. In 1992, I decided to try it," Rogers notes.

The program began with weekly applications in May, at a rate of 8 oz./1000 sq.ft., which were reduced to 6 oz./1000 sq.ft. by summer's end.

"The results were that we had virtually no algae formation on any of the greens last summer," he notes. "We did have some greens thin out, as we expect every year, but no algae was forming on them. The greens stayed in good shape."

In addition, there was virtually no disease.

"In the past, I had used fungicides on a preventive basis, usually with lower rate applications every 10 to 14 days," he explains. "We used a rotation to avoid any resistance problems, but we still had brown patch cropping up. We found this year that by upping the rates of Daconil 2787, we seem to have solved both problems."

"In 1992, we felt that we had the best greens in the city, and some of the best in the state. Not a single green had any serious problems."

Total rounds went from 16,000 in 1987 to 37,000 in 1992, without a change in the club's membership.



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