

# WARM-SEASON TURF DISEASES

For best disease control, your fungicides need to be supplemented by proper fertilization and appropriate cultural practices.

by Don Blasingame, Mississippi State University



Slime molds occur during wet weather throughout the spring, summer and fall. They disappear rapidly as soon as it becomes dry. Chemical control is usually not necessary.



Nematodes will cause almost any type of symptom that can be caused by an inadequate root system. Generally, a yellowing or off-color of the foliage is the first symptom.

**T**he Sun Belt is blessed with a wide range of choices when it comes to turfgrass varieties. The dominant turf species used in this region is Bermudagrass. However, five other warm-season grasses are used extensively for turf purposes: St. Augustinegrass, zoysiagrass, centipedegrass, carpetgrass and bahiagrass.

Although most southern turf diseases are caused by fungi, agents such as bacteria, viruses and nematodes can cause serious problems to certain grasses.

Southern turf managers can't depend solely on fungicides for disease control. Good variety selection, proper fertilization and appropriate cultural practices are also very impor-

tant in disease control. No amount of fungicide will compensate for poor fertility and cultural practices.

Knowing when the most common diseases occur also will aid managers in scheduling fungicide applications (see chart). Also, environmental conditions can induce disease occurrence and severity.

Many of the agents that cause plant disease are normally in the turf (mainly in the thatch area) waiting for the right environmental conditions to develop. In general, the ideal condition for disease development would be high temperature and moisture and heavy thatch.

Fertilizers also affect disease occurrence and severity. For example,

- Low nitrogen levels increase

warm-season grasses' susceptibility to dollar spot;

- Low potash increases the severity of many turfgrass diseases, for example, Bermudagrass melting out;

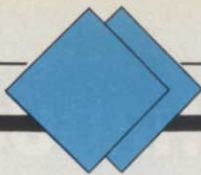
- Low soil pH increases the severity of brown patch;

- Very high nitrogen levels increase the level of most of the fungal diseases of warm-season turf.

## Brown patch

Brown patch is the most common turf disease in the Southeast. Although St. Augustinegrass and zoysiagrass are the most susceptible species, even the more tolerant centipedegrass, Bermudagrass and ryegrass are frequently damaged by this fungus.

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Common Name	Some Trade Names**	Brown Patch	Dollar Spot	Gray Leaf Spot	Melting Out	Pythium Blight	Ruets	Spring Dead Spot
Anilazine	Dyrene, ProTurf fungicide III		•		•		•	
Benomyl	Benlate, Tersan 1991	•	•					•
Chloroneb	Terraneb SP, ProTurf Fungicide II					•		
Chlorothalonil	Daconil 2787 ProTurf 101V	•	•	•	•		•	
Ethazole	Koban 30, Terrazole					•		
Fenarimol	Rubigan	•	•					•
Iprodione	Chipco 26019 ProTurf, Fungicide VI	•	•		•			
Mancozeb	Fore, Tersan LSR Many Others	•			•		•	
Metalaxyl	Subdue					•		
PCNB (quintozene)	Terraclor Turfcide	•	•		•		•	
Propamocarb	Banol					•		
Propiconazole	Banner	•	•				•	•
Thiophanate-ethyl	Cleary 3336	•	•		•			
Thiophanate-methyl	Fungo 50, Proturf Systemic Fungicide	•	•					
Thiophanate-methyl + Mancozeb	Duosan	•	•		•		•	
Thiram	Thiram, Tersan 75	•	•					
Triadimefon	Bayleton, ProTurf Fungicide 7	•	•				•	
Vinclozolin	Vorlan		•		•			

\* Label approved only in selected states.  
 \*\* Combination of fungicide + fertilizer are not included.  
 No endorsement of named products by author is intended, nor is criticism implied for products not mentioned.

**Source:** Dr. Blasingame

Brown patch is favored by warm, moist weather combined with cool nighttime temperatures. Therefore, in certain areas of the South, brown patch can and does occur any month of the year.

In the South's upper regions, the most favorable conditions for brown patch development occur from late April through mid-October.

Symptoms of brown patch on warm-season grasses are different than the symptoms of the disease on cool-season turf. Even though the grass is usually killed in a circular pattern, many times the smoke ring is not seen on southern turf.

Under certain conditions the fungus may cause a gradual thinning of the turf over a rather large area

instead of killing in a circular pattern.

Several factors tend to make the grass more susceptible to brown patch. One is applying too much nitrogen fertilizer. The resulting lush growth is readily attacked. Delay nitrogen applications when disease conditions are favorable.

Another is watering late in the afternoon and allowing the grass to remain wet for a long time. Excessive thatch accumulation also creates a favorable environment for the development of brown patch and many other diseases.

Fungicides are best used on a preventive schedule (see Fungicide Guide). Once symptoms develop, control can be difficult.

Dollar spot is common on Bermu-

dagrass, zoysiagrass and annual and perennial bluegrasses. Symptoms of dollar spot are different on certain warm-season grasses than on cool-season grasses.

On finer textured grasses such as Bermudagrass and zoysiagrass, the disease kills grass in small patches two to three inches in diameter. Under severe conditions, these patches may coalesce so that the turf has a mottled appearance. Blades of grass at the outer edges of the infected area develop tan spots with reddish-brown margins.

On coarser warm-season grasses, turf is killed in larger patches ranging up to a foot in diameter.

Dollar spot is prevalent during mild weather in the spring and fall. Unlike brown patch, dollar spot is retarded by high nitrogen levels. Still, turf managers should consider the impact of high nitrogen on brown patch and other diseases. You should water only in the early morning so the foliage can dry quickly. Fungicides can be used to help bring the disease under control once it gets established.

## Leaf spot

A number of fungi cause leaf spots on many southern grasses. Regardless of the causal agent, leaf spots and their control on southern grasses are similar.

Melting out (*Bipolaris* spp.) — Bermudagrass and ryegrass are more severely affected by these infections, although the fungus can survive on centipedegrass and St. Augustinegrass.

Infection can occur over a wide range of temperature, but usually is more severe at 70 to 95° F. Milder temperatures in the spring and fall are more favorable for infection.

Melting out causes small, dark-colored spots or flecks on the leaves and sheaths. Leaf spots are usually more numerous near the collar of the leaf blades.

Severely affected leaves wither and die, and the turf frequently becomes brown and thin.

Symptoms on overseeded ryegrass are altogether different. Although leaf spots may occur, this same melting out can cause severe crown rot. This causes a yellowing and discoloration of the grass and a general thinning of the turf.

Fertilize with adequate levels of nitrogen and potassium if melting out diseases become a problem. With careful management, apply fungicides recommended for melting out blight control.

Gray leaf spots: St. Augustinegrass is the primary host for gray leaf spot.

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grasses.

Susceptibility depends on the variety. Fungus infection is favored by minimum and maximum temperatures of 50 to 70°F, respectively. For this reason, the disease does not usually cause severe damage over an extended period. It is likely to be more severe in shaded areas during rainy, humid weather. Affected turf will appear unthrifty and begin to thin.

The disease is characterized by the presence of pustules on the leaf blades. These pustules range from bright orange to cinnamon-brown in color, depending upon the species of fungus present.

Certain varieties of ryegrass are extremely susceptible to rust, and sometimes severe damage can occur. Zoysiagrass, especially Meyer and Emerald, are most severely infected by rust.

Fertilize to stimulate grass growth, mow on a four- to five-day schedule and catch clippings. If necessary, a fungicide may be applied to help reduce the amount of disease present. Triadimefon, chlorothalonil and mancozeb are effective in controlling rust.

### **Spring dead spot**

Spring dead spot is a serious disease of Bermudagrass in certain parts of the upper sunbelt. It is found generally on Bermudagrass or zoysiagrass under high maintenance.

Damage to the turf apparently occurs during the dormant season. When green-up occurs in the spring, areas a few inches to several feet in diameter appear where the sod is completely dead.

Spring dead spot's causal agent has not been identified. The only control procedures recommended are good cultural practices and limiting the use of nitrogen fertilizer, especially late in the growing season.

Research has shown that fungicides can limit the damage. However, at the present time only benomyl and Rubigan are labeled, and these may be of limited use in certain states.

### **St. Augustinegrass decline**

St. Augustinegrass decline (SAD) is caused by a virus. The symptoms are a mosaic-type chlorosis of the leaf blades that resemble nutrient deficiency or mite feeding. Evidently there are several strains of the virus since there is a great range in damage to St. Augustinegrass.

To this point, the disease has only been recorded in Arkansas, Texas, Louisiana and Mississippi. No chemicals are available for the control of

SAD.

Several varieties of St. Augustinegrass, however, are resistant to the virus. These can be planted in areas where the disease is a potential problem. Floratam was the first variety released with resistance to SAD. It is also resistant to chinch bugs. It has poor cold tolerance and should be used only in the lower South. Seville is resistant to SAD and is more shade tolerant than common St. Augustinegrass. Raleigh has both SAD resistance and good winter hardiness.

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### **Downy mildew**

Downy mildew of St. Augustinegrass was first described on common St. Augustinegrass in Texas in 1969. Since then the disease has spread and has been identified in Arkansas, Louisiana and Mississippi.

Downy mildew appears as white, raised, linear streaks that develop parallel to the mid-veins of the leaf. Streaks appear in the spring and remain throughout the summer, giving the leaves a yellow appearance with some death toward the tips. Severe disease occurs in grass grown in flood plains or poorly drained areas.

The white-streak symptom is easily confused with the virus disease, SAD. However, the virus symptoms are more yellow in color and more mottled than striped. Downy mildew has been difficult to control with most common turf fungicides. Good drainage is recommended for cultural control.

### **Fairy rings**

Fairy rings generally appear in lawns and other turf areas as circles or arcs of dark green, fast-growing grass during the spring and early summer. A ring of thin dead grass may develop on one or both sides of this circle.

The disease is caused by one of several soil-inhabiting fungi that commonly produce mushrooms. Mushrooms that sometime appear in the ring are the fruiting bodies of these fungi. Stimulation of the grass is due to release of nutrients from the organic breakdown of the thatch by the growing fungus.

No chemicals are labeled for the control of fairy ring. Two general approaches may be considered: removal and suppression. Although relatively impractical, removing infected soil and grass to a depth of 12 inches or more in a band several feet on each side of the infected area and replacement with clean soil is one solution.

Another approach is to suppress the disease. For low-maintenance grass areas, increase the water and fertilization program to stimulate the declining grass inside the ring. Symptoms of fairy ring can be masked by pumping large quantities of water into this area.

### **Slime molds**

Slime molds are a group of organisms that cover above-ground plant parts with a dusty gray-black or dirty yellow mass.

When you look closely at this growth, you see small round balls scattered over the plant. If you rub these between your fingers, a sooty powder emerges. This consists of spores of the fungus.

Slime molds do not feed on living plants. They only use them to assist distributing spores during reproduction. Slime molds occur during wet weather throughout the spring, summer and fall. They disappear rapidly as soon as it becomes dry. Chemical control is usually not necessary.

### **Nematodes**

Although nematology is a fairly new field, it has seen rapid development in the past 10 years. Nematodes, small eel worms, belong to a group of microorganisms which scientists call obligate plant parasites. This term simply means that the organism lives and obtains its food only from living plants. This fact is both good and bad. On the good side, the nematodes very rarely kill the plants that they are feeding on. On the other hand, nematodes feed on the roots of the grass and take the nutrients that would normally be used by the grass. Also, this feeding activity destroys a portion of the root system and makes them much more susceptible to other disease organisms.

In many cases, increased fertilization and water will offset some of the symptoms of a light infestation of nematodes. However, this usually

simply postpones the problem. Eventually a point is reached where no amount of water or fertilizer will substitute for the lack of a root system, and other steps must be taken to remedy the problem.

Normally, favorable conditions for turf development are also favorable for nematode development. This is particularly true in areas where highly maintained turf has a long growing season.

Heavy nematode infestation comes from an inadequate root system. Generally a yellowing or off-color of the foliage is the first symptom. This is followed by a general stunting and thinning out of the grass. Also, the turf frequently will wilt during the hot periods of the day and will respond little to fertilizer or water.

The only positive way to diagnose a nematode problem is to assay the soil around the root system of a plant. Laboratory techniques and assay procedures have been developed over the years to accurately detect not only the number of nematodes present but also the types of nematodes that are causing the problems.

A large number of different nematodes damage turfgrasses. Of course, some are more damaging than

others and at different population levels. Usually in a random soil sample from a golf course or home lawn, several different types of plant parasitic nematodes may be present. For example, the single most damaging type of nematode found on Bermudagrass is known as the sting nematode (*Belonolaimus*). This very large nematode causes a great deal of mechanical damage to the root system, making it more susceptible to other types of problems.

The lance nematode (*Hoplolaimus*) is also very potent in its damage of turfgrass. The root-knot nematode (*Meloidogyne*) causes considerable damage to turfgrass. This nematode is probably best known on field crops, vegetables and on ornamentals. It causes galls and swelling of the root system, making it very easy to recognize. The lesion nematode and stubby root nematodes are also found frequently parasitizing grasses.

Ring nematodes have been found in well over 50 percent of the turf samples from the Southeast assayed by our laboratory. Other nematodes that are found in association with the unhealthy turf samples include stunt, dagger, and spiral nematodes. All of these are forms of parasitic nematodes

that feed on turfgrass and probably cause some type of damage to the turf. However, they are not as economically damaging as are the first five mentioned.

Nematodes very seldom occur in an area as a single species but rather appear as mixed populations. Mixed populations normally compound the problem since each type contributes its share toward weakening the plant. Some guidelines can be set as to the amount of individual damage by nematode species; however, it is diffi-

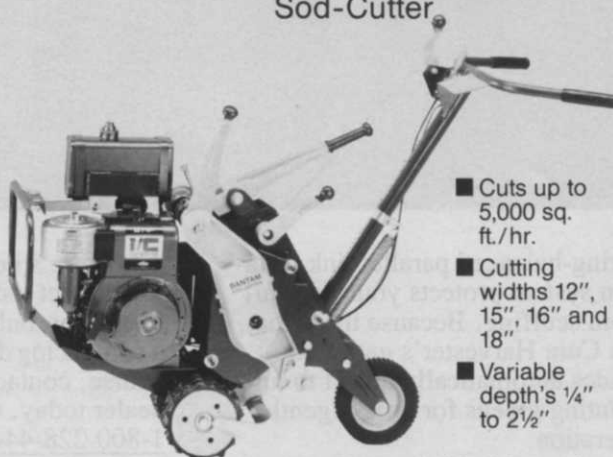
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cult to say how much damage occurs in these populations. This then becomes a matter of judgement.

What can be done to combat the high nematode population in turf? Several things can be done. First of all, grass should not be planted in areas where high nematode populations are already present. In other words, if high nematode populations are present in an area where you plan to plant grass, then they must be eradicated prior to seeding or sodding. This can be done by applying a soil fumigant or a nematicide. Also, turfgrass management personnel should insist upon nematode-free planting material.

As with any other type disease, prevention is much better than cure. However, measures can be taken if nematodes are present in established turf: apply a nematicide. A number of nematicides once used in turf are no longer available. All remaining nematicides have been placed on the "restricted pesticide" list and must be applied by a licensed applicator. These materials may be applied in a liquid or granular form, normally either in late spring or early fall.

Be sure to have soil analyzed for nematodes and get professional help before using a soil sterilant or nematicide. **LM**

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