

Table 2.

Scientific and trade names of turfgrass fungicides

Scientific name	Contact/Systemic	Common trade name
captan	C	Captain 80WP
chloroneb	C	Pro-Turf Fungicide V, Teremec SP, Terraneb SP
chloroneb + thiophanate methyl	C+S	Pro-Turf Fungicide IX
chlorothalonil	C	Echo, Daconil 2787, Thal-o-nil
cyproconazole	S	Sentinel
ethazol	C	Koban, Terrazole
fenarimol	S	Rubigan
fenarimol + chlorothalonil	S+C	Twosome
flutolanil	S	Prostar
fosetyl-al	S	Aliette
iprodione	S+C	Chipco 26019 Chipco Flo, Proturf Fungicide X
mancozeb	C	Dithane, Fore Fore Flo, Mancozeb
maneb	C	Maneb, Maneb Plus Zinc
metalaxyl	S	ProTurf Pythium Control, Subdue
metalaxyl + mancozeb	S+C	Pace
PCNB	C	PCNB, ProTurf FF II, Penstar, Terraclor
propamocarb	S	Banol
propiconazole	S	Banner
thiophanate-methyl	S	Cleary's 3336, Fungo, ProTurf Systemic Fungicide SysTec 1998
thiophanate-methyl+ chlorothalonil	S+C	ConSyst
thiophanate-methyl + mancozeb	S+C	Duosan
thiram	C	Spotrete, Thiram
triadimefon	S	Bayleton, Lebanon Turf Fungicide, ProTurf Fungicide
triadimefon + metalaxyl	S	ProTurf Fungicide VII
triadimefon + thiram	S+C	ProTurf Fluid Fungicide II
vinclozolin	S	ProTurf Fluid Fungicide III, Curalan, Touche, Vorlan

Not all products are available in all states. Some products available only to licensed pesticide applicators. This list is presented for information only. No endorsement is intended for products listed, nor criticism meant for products not mentioned.

Source: Dr. Schumann

Disease control in warm-season grasses

Turfgrass disease is caused by fungi, bacteria, viruses or nematodes.

Balance chemical applications with cultural controls, in the interest of efficiency and economy.

by Bruce Martin, Ph. D.,
Clemson University

■ The wide variety of warm-season turfgrass diseases makes it imperative that chemical applications be based on correct diagnosis, in the interest of efficiency and economy.

Turf managers should strive to use integrated systems of disease management compatible with good turf horticultural practices. Pesticide applications should only be used to supplement the overall integrated pest management system.

Brown patch—Caused by *Rhizoctonia* fungi, brown patch is most commonly caused by *R. solani*, although other species have been implicated. Overall, brown

patch is the most common and damaging warm-season turf disease. It attacks bermuda, St. Augustinegrass, centipede-grass and zoysia.

Its symptoms appear in spring, as the turfgrass breaks out of dormancy, or in the fall, as the turfgrass nears dormancy.

Individual patches of diseased turf may develop to 20 or more feet in diameter. Shoots along the outer border of patches usually are yellow due to rotted leaf sheaths near the soil surface.

Control practices include good drainage and judicious irrigation practices. Avoid high nitrogen fertilization at those times when the disease is likely to appear. Several labeled fungicides provide good control when applied on a preventive fall schedule when symptoms first appear.

The new fungicide, Prostar, has shown

Disease control products for warm-season grasses

DISEASE	FUNGICIDE	Oz./1000	Interval (Days)
BROWN PATCH (warm-season turf)	Daconil 2787F	3-11	7-14
	Daconil 90WDG	1.75-6.5	7-10
	Prostar 50WP	2-3	14-21
	Bayleton 25WP	1-2	15-30
	Banner 14.3 EC	2-4	10-21
	Rubigan AS	1.5	7-14
	Chipco 26019 50WP	1.5-2	14-21
	Chipco 23.3%F	3-4	14-21
	Fore 37%F	6.4	7
	Fore 80WP	4	7
	Terraclor 75WP	16	21-30
	Terraclor 10G	7.5 lb.	21-30
	Curalan DF	1-2	14-28
	Clearys 3336 50WP	2	7-10
DOLLAR SPOT	Daconil 2787F	3-11	7-14
	Daconil 90WDG	1.75-6.5	7-14
	Banner 14.3EC	0.5 to 2	7-28
	Bayleton 25WP	1-2	30
	Curalan 50 WP	1-2	21-28
	Curalan DF	1-2	21-28
	Rubigan AS	0.75-1.5	14-21
	Chipco 26019 50WP	1.5-2	14-21
	Chipco 26019 23.3% F	3-4	14-21
	Fore 80WP	6-8	7-14
	Clearys 3336 50WP	1	14-28
	Vorlan DF	1-2	14-28
	Vorlan Flo	1-2	14-28
	SPRING DEAD SPOT	Rubigan AS	4-6
GRAY LEAF SPOT	Daconil 22787F	3-11	7-10
	Daconil 90WDG	1.75-6.5	7-10
	Banner 14.3%EC	2	14
LEAF SPOT	Daconil 2787F	3-11	7-10
	Daconil 90WG	1.75-6.5	7-10
	Chipco 26019 50WP	1.5-2	14-21
	Chipco 23.3%F	2-4	14-21
	Banner 14.3%EC	1-2	14-28
	Curalan 50WP	1-2	14-28
	Curalan Flo	1-2	14-28
	Vorlan DF	1-2	14-28
	Vorlan Flo	1-2	14-28
	Fore 37%F	6.4	7-14
	Fore 80WP	4	7-14
PYTHIUM DISEASES	Aliette 80WP	4-8	14-21
	Koban 30WP	2-4.5	5-10
	Subdue 2e	1-2	10-21
	Subdue 2G	12.5-25	10-14
	Banol 6E	1.3-4	7-21
FAIRY RINGS	Prostar 50WP	6	30
NEMATODES	Mocap 10G	4.6 lb.	6 months
	Nemacur 10G	2.3 lb.	6 months
	Nemacur 3E	9.7 fl. oz.	6 months

NOTE: Oz./1000 = ounces applied per 1000 sq. ft.

Source: Dr. Martin

promise for brown patch control.

Dollar spot—Dollar spot occurs on bermudagrass, zoysiagrass and occasionally centipedegrass and St. Augustinegrass. Favored by warm, humid weather, it is more severe on nitrogen-deficient turf

with dry soil.

On closely mowed turf, patches of about one to two inches in diameter develop. On higher cut turf, patches may exceed five or more inches in diameter.

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Insect control, South

Using a variety of techniques is best for consistent control of insect pests in the southern U.S.

by Pat Cobb, Ph.D.,
Auburn University

■ The big three—grubs, mole crickets and fire ants—continue to pose the most problems for landscape managers in warm-season areas, particularly in the Southeast.

Your own most important turf insect pest depends on your location and the grasses you manage. Mole crickets are considered primary pests in Florida, south Georgia and Gulf states in the Southeast. Grubs and fire ants are of great importance in Texas; chinch bugs in Louisiana; grubs in California.

To cope with these insects and others, landscape managers are relying more on diversified control techniques. Besides the standard chemical controls, turf professionals continue to increase their efforts to culturally and biologically manage insect pests.

Insect pest management on turf in the South is a year-round job. Although actual control efforts can extend from March through November in some areas, most southern turf managers consider insect control to be a part of a total management scheme for growing grass.

Each year brings with it a unique set of conditions that contribute to the development of turf pest problems.

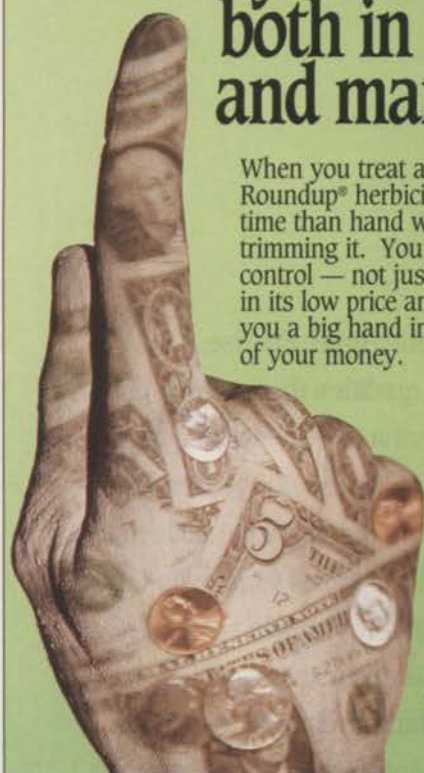
Seasonal influence—Spring rains or drought can greatly influence pest populations.

Insect eggs, such as those of soil pests, need some moisture to survive. Excess moisture, (saturated soil), however, over a period of several weeks can drown grub and mole cricket eggs and prevent hatching.

The blizzard of March 13, 1993,
continued on page 61

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DISEASE WARM from page 26

Characteristic leaf lesions are tan with distinct reddish-brown or purplish margins. Leaves may become girdled.

Practices that reduce disease severity include using balanced fertility, early morning irrigation (when needed) during periods of high humidity, and regular mowing at the correct height of cut. Several fungicides provide good control, but are generally unnecessary in lawns.

Spring dead spot—Spring dead spot occurs in transition zone areas of the United States. It is common in Piedmont and mountain areas in the Carolinas and Georgia, but rare in the coastal regions of these states. Several fungi have recently been implicated as possible causal agents of this disease.

Dead circular areas of turf two or three feet in diameter are present in the spring as the bermudagrass breaks dormancy. Patches may occur in circles with healthy grass in the center, giving a "doughnut" appearance, and may persist over the summertime. Patches of diseased turf may persist for several years.

Generally, the disease develops in three- to six-year-old turf. Excess thatch, late summer nitrogen applications, and low temperatures in winter have been implicated as predisposing factors for spring dead spot development.

Maintain a balanced fertilization program and proper thatch management and avoid high rates of late summer nitrogen applications. Some control has been obtained with Rubigan applications made in September and October.

Gray leaf spot—Gray leaf spot appears in hot, humid weather. It's more severe in newly-established turf, in shady spots with poor air flow. It is commonly found in St. Augustinegrass.

Infections occur on all above-ground plant parts and begin as small brown spots with a distinct brown to purple border surrounding the infected tissue. Lesions may become numerous and expand to completely consume leaves and girdle stolons. Prolonged disease may leave turf looking scorched.

Improve air movement and light penetration and irrigate as needed during early morning hours to promote maximum drying during the day. Avoid high nitrogen fertilization during those periods favorable for disease development.

Daconil has given good chemical control.

Leaf spot—*Bipolaris sorokiniana* causes leaf, crown and root disease of bermudagrass and zoysiagrass during warm, wet weather in mid-summer. The diseases start as leaf spots, and may progress to crown and root rots. *Exserohilum rostrata* has been reported to cause a leaf spot of St. Augustinegrass and bermudagrass. Centipedegrass infection is rare.

On bermudagrass or zoysiagrass, small brown lesions appear on leaf blades and sheaths and may expand to larger irregular straw-colored lesions. Gradual browning and thinning occurs over a period of weeks or months.

Avoid high nitrogen fertilization and watering practices that provide long periods of wet or humid conditions.

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Frequent mowing at proper heights helps reduce the leaf spot phases of this disease.

Pythium diseases—Warm-season grasses may be affected by pythium disease. Some *Pythium* species cause general decline by infection of roots. St. Augustinegrass is susceptible during prolonged warm, wet periods. Poor surface and subsurface drainage favors development of *Pythium* fungi, and encourages development of algae in areas where disease has weakened the grass.

Provide good drainage and remove tree limbs to increase air movement and light penetration. Some fungicides specifically for *Pythium* fungi have provided additional control.

Fairy rings—These appear as rings or arcs of green stimulated turf which may be accompanied by declining grass and mushroom formation. Problems develop when mushroom mycelia accumulate in the soil and cause the soil to become dry.

Fairy rings may persist and increase in diameter over the years. The fungi feed on old roots, stumps or thatch. Newly-built putting greens may develop infestation after only a few years or even months.

Control measures that have shown limited success include tilling and fumigation or irrigation to saturate the soil for several hours and over several days. It may be futile to attempt to control rings occurring around trees. In this case, consider landscaping the areas with non-turfgrass plants.

There has recently been some success with suppression

in putting greens using Prostar fungicide.

Nematodes—Turf that is heavily infested with damaging nematode species appears unthrifty; weeds invade weak or dead areas. Infested areas tend to wilt prematurely, even when adequate soil moisture is available.

Integrated management uses several methods to suppress the nematodes and maintain the turfgrass so that it can withstand some level of infestation. Although valuable, nematicides provide temporary suppression of nematode levels.

Two nematicides are available and may only be used in commercial turf areas, such as sod farms or golf courses.

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