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How to Diagnose and Manage Large Patch Disease in Warm-Season Turfgrass

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Large patch is a common disease of warm-season turfgrasses in the spring and fall. It is caused by the fungus *Rhizoctonia solani*.

Large patch affects most warm-season turfgrasses growing in Texas including:

- buffalograss (*Buchloë dactyloides*)
- bermudagrass (*Cynodon* spp.)
- centipedegrass (*Eremochloa ophiuroides*)
- St. Augustinegrass (*Stenotaphrum secundatum*)
- Zoysiagrass (*Zoysia* spp.)

Particularly, large patch is the most chronic and economically important disease of both St. Augustinegrass and zoysiagrass in Texas (Figures 1 and 2). This same fungus also causes brown patch in cool-season turfgrasses.

The fungus is present in the soil and thatch layer year-round, but the disease only occurs under certain conditions. The fungus survives in summer heat, but thrives in cooler temperatures when the soil is wet. The disease occurs when temperature is below 70 degrees Fahrenheit. The fungus spreads in the thatch layer and infects the grass's sheaths, stolons and roots. It is especially severe in turfgrass that is poorly drained and over-fertilized.

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FIGURE 1. Large patch symptoms caused by *Rhizoctonia solani* in St. Augustinegrass in October 2012.

FIGURE 2. Large patch symptoms caused by *Rhizoctonia solani* on the zoysia fairway in October 2012.

The first symptom of large patch is circular, discolored patches on the turf. The outer borders of the patches are orange or yellow; the orange leaves are newly infected and starting to die.

Diseased shoots pull easily from the sheath where they attach to the stolons. This is a practical method for diagnosing large patch in the field. Diseased stems and sheaths show dark brown lesions (Figure 3).

FIGURE 3. Stem infected by large patch.

Grass will recover from light disease symptoms as temperatures begin to rise in the late spring; new growth will fill in the patches during the summer. However, grass may not recover when the disease causes extensive crown and root damage. In these cases, it is often necessary to resod the damaged area.

The following conditions promote large patch infection:

- Over-fertilization late in the fall
- Locations with poor drainage
- Over-irrigation
- Low mowing height
- Excess thatch

Control and management

Large patch is hard to get rid of once the disease has been established and the disease recurs under certain environmental conditions every year. Therefore, preventing large patch is critical. Proper fertilization is an excellent way to avoid outbreaks of large patch. The ideal time to apply fertilizer is 6 weeks before the first frost and 3 weeks after green-up.

It also helps to improve drainage in areas that hold water or stay saturated for long periods. Water evenly and only when necessary.

Mowing turfgrass to appropriate heights will discourage the disease. The proper mowing heights are 2–3 inches for St. Augustinegrass and 1–2 inches for zoysiagrass.

Core aeration, raking and vertical mowing will decrease thatch, which favors plant health growth and discourages disease development.

In summary, the following cultural practices will help to prevent large patch:

- Remove thatch
- Reduce leaf wetness periods
- Ensure good soil drainage
- Water early in the morning
- Balance nitrogen fertility
- Maintain the proper mowing height
- Balance the fertility level

St. Augustinegrass and zoysiagrass are very susceptible to large patch. To ensure turf quality, you may need a fungicide application. The best protection by fungicides can be achieved when they are applied before disease symptoms appear. The best time to apply fungicides is when the soil temperature drops below 70 degrees Fahrenheit in the fall, before symptom development. Fungicide efficacy is limited once the disease symptoms have been occurred. Damaged grass will not recover until the following spring. Fungicide applications in the spring are not cost-effective.

There are many fungicides (Table 1) that control large patch effectively, but the key to successful fungicide programs in to treat turfgrass before or immediately after the disease begins in the fall (October to November) in Texas.

Table 1. Fungicides registered for control of large patch on turfgrass.

Common name	Trade name
Aromatic Hydrocarbon	
Chloroneb	Terraneb SP, Teremec SP
Etridiazol (ethazole)	Terrazole, Koban
PCNB	Turfcide 400, Turfcide 10G, PCNB 12.5G, Revere 10G Revere 4000, FF II, Terrachlor 400, Terrachlor 75WP
Benzimidazole	
Thiophanate-methyl	Fungo 50, Fungo Flo, 3336 WP, 3336 Flo, Caviler 2G Caviler 4.5F, Caviler 50WSB, 3336 Plus
Carboximide (SDHI)	
Flutolanil	ProStar 70WP
Demethylation Inhibitor	
Fenarimol*	Rubigan A.S.
Metconazole	Tourney
Myclobutanil	Eagle, Golden Eagle
Propiconazole	Banner, Banner MAXX, Spectator, Propiconazole Pro
Tebuconazole	Torque
Triadimefon*	Bayleton 25, Bayleton 50, Accost 1G
Triticonazole	Trinity, Triton
Dicarboximide	
Iprodione*	Chipco 26GT, Chipco 26019, Iprodione Pro, ProTurf Fungicide X
Vinclozolin*	Curalan, Curalan DF, Touché, Touché Flowable, Vorlan
Dithiocarbamate	
Maneb	Maneb Plus Zinc F4, Maneb 75DF
Thiram	Spotrete, Thiram
Mancozeb	Fore, Fore Flo, Dithane T/O, Dithane WF, Pentathalon LF, Pentathalon DF
Nitrile	
Chlorothalonil*	Daconil WeatherStik, Daconil Ultrex, Daconil 2787 Daconil Zn, Manicure 6 Flowable, Manicure Ultrex, Concorde, Thalonil 4L, Thalonil 90DF, Echo 720, Echo 75
Phenylpyrrole	
Fludioxonil	Medallion
Polyoxin	
Polyoxin D Zinc	Endorse
Strobilurin (QoI)	
Azoxystrobin	Heritage
Fluoxastrobin	Disarm
Pyraclostrobin	Insignia
Trifloxystrobin	Compass

*Not for residential turf or home lawn

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