Large Patch – Warm Season

// The Problem
Large patch is one of the major fungal diseases of warm-season turf and is caused by the soil-borne fungus *Rhizoctonia solani* AG 2-2 LP. It is the primary disease of zoysiagrass fairways and tees in the transition zone and is commonly referred to as ‘zoysia patch’. However, large patch can also affect other warm-season turf species utilized for golf, such as seashore paspalum, kikuyugrass and bermudagrass. It attacks slowly-growing, warm-season turfgrass in cool, wet weather, and is most common on turfgrass that is semi-dormant or turfgrass that is going into or emerging from dormancy. In the transition zone, the disease is most active in the fall and spring, whereas in warm climates like Florida, the disease can be continuously active fall through spring.

What To Look For
Large patch infects and rots leaf sheaths, crowns and stolons of warm-season turf, so distinct foliar lesions are absent. Disease severity is greatest in wet soils. *R. solani* AG 2-2 LP is active at 50-86°F with optimal infection occurring at 70-80°F. Large patch symptoms vary with patches ranging in diameter from 1-3 feet to over 20 feet. Patch interior becomes sunken, and injured turf appears thin with a tan, yellow or orange color. A useful diagnostic feature in the field is a brilliant “orange firing” of the expanding outer ring, which indicates active infection. Damage by large patch can be long-lasting, because infection occurs when warm-season turf growth is slow. Symptoms typically occur when turfgrass is growing slowly, e.g. prior to dormancy or during green-up in the transition zone or during cool weather when turf is semi-dormant in warmer locations. In summer, turf recovers because the disease is not active at warm temperatures (> 86°F).

// The Solution
Cultural practices to reduce large patch include improving surface and subsurface drainage; regular aerification to minimize thatch and further improve drainage; and fertilize only as needed during the summer but fertilization in spring can speed recovery.

Preventative fungicides can provide excellent control when timed correctly. The first fall application should be made when 2-inch soil temperatures are 72-75°F with a second application 28 days later. The third application should be made in spring at 50% green-up of zoysia. Recent research at the University of Tennessee suggests applications in 2 gals water/1000 sq ft moved the active ingredient to the sheath and crown where it is most effective.
Large Patch Solutions

<table>
<thead>
<tr>
<th>Solution</th>
<th>Rate (per 1,000 sq. ft.)</th>
<th>Application Interval</th>
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<tbody>
<tr>
<td>Mirage® Stressgard&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1.0 - 2.0 fl oz</td>
<td>28 days</td>
</tr>
<tr>
<td>Prostar® WG&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2.2 oz</td>
<td>28 days</td>
</tr>
<tr>
<td>Bayleton® FLO&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1.0 - 1.9 fl oz</td>
<td>Fall and spring</td>
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1Please see the Backed By Bayer large patch program for how to use products in a seasonal program. 2Do not exceed 6.5 fl. oz./1,000 sq. ft./year, except in New York state where the maximum of three 1.0 fl. oz. applications/year can be used. 3Do not apply more than 9.0 oz./1,000 sq. ft./year. 4Do not apply more than 3.8 fl. oz./1,000 sq. ft./year.

Close-up of a zoysiagrass fairway infection by R. solani AG 2-2 LP. (Bayer)

Large patch damage to zoysiagrass can approach 20 feet in diameter in a golf course fairway situation. (Megan Kennelly, Kansas State University)

Large patch on a kikuyugrass fairway in California showing characteristic orange margins. (Bayer)

Large patch affecting a zoysiagrass golf green surround during winter (late December) in Florida. Diagnostic ‘orange firing’ is associated with the advancing patch edge. (Bayer)