



Solution Sheet

Large Patch – Warm Season

The Problem

Large patch is one of the major fungal diseases of warm-season turf and is caused by the soilborne fungus *Rhizoctonia solani* AG 2-2 LP. It is the primary disease of zoysiagrass in the transition zone and is commonly referred to as ‘zoysia patch’. However, large patch can also affect other warm-season turf species, such as seashore paspalum, kikuyugrass and bermudagrass. It attacks slowly-growing, warm-season turfgrass in cool, wet weather. It 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. Damage can persist through cool, wet conditions, and often lasts until warmer spring or summer conditions allow for recovery and active regrowth of warm-season turfgrass.

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 color. A useful diagnostic feature in the field is “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, during green-up in the transition zone or during cool weather when turf is semi-dormant in southern locations. In summer, turf recovers because the disease is not active at warm temperatures (> 86°F).

The Solution

Cultural practices are the first step in reducing large patch.

- Improve drainage whenever possible, as saturated soil conditions exacerbate large patch
- Regular aeration in summer will reduce compaction and risk of water-logged soils
- Maintain total nitrogen (N) to less than 2 lbs. per 1,000 sq. ft. for zoysiagrass during summer

Armada can provide excellent control of large patch when timed correctly; the first fall fungicide application is most important.

- Time the first fall application when the average thatch temperature is 70°F, or when the average soil temperature at a 2-inch depth is 72-75°F
- A second fall application is recommended to extend protection through cool, wet weather
- Time spring fungicide applications when turf green-up reaches 50%
- Early timing just after initial turf green-up is better than later timing
- Apply at 2 gallons of spray volume (per 1,000 sq. ft.) to aid penetration to crowns and stolons, at lower spray volumes, a light watering-in (approximately ¼ inch) is necessary

Solution ¹	Rate (per 1,000 sq. ft.)	Application Intervals ²
Armada® 50 WDG ³	1.2 - 1.5 oz.	14 - 28 days

¹Please see the Backed By Envu large patch program for how to use products in a seasonal program. ²For specific interval information, refer to product labels on large patch. ³Do not exceed 207.1 oz. of Armada 50 WDG/A/year.



Close-up of fairway infection by *R. solani* AG 2-2 LP. Note water-soaked infection advances up from the crown/stolon, otherwise signs do not appear on the leaf blades. (Envu)



Large patch symptoms after green-up in spring. (Envu)



Large patch on a kikuyugrass fairway in California showing characteristic orange margins. Note that cool-season turf in the center of patches remains unaffected. (Envu)



Large patch on centipedegrass in a residential lawn. (Envu)