

TURFGRASS TRENDS

■ TRANSITION ISSUES

Exploring the Ecology Behind Springtime Turfgrass Transition

Impact of annual and perennial ryegrass examined in process *By Charles Fontanier and Kurt Steinke*

In order to provide prime playing conditions throughout the winter, golf courses and sports fields in the southern United States frequently overseed warm-season turf with cool-season species such as annual and perennial ryegrass.

During late spring, the ryegrass is expected to transition out while the warm-season turf greens up (Horgan and Yelverton 2001). However, newer cultivars of ryegrass are more heat, drought and traffic tolerant. As a result, newer ryegrass cultivars compete with warm-season turf longer into summer than previous selections. The competition for light and nutrients during late spring and early summer can inhibit warm-season turf regrowth. For many Southern turf managers, the inhibition of warm-season turf growth has increased the management difficulties involved during spring transition (Richardson 2004).

Cultural practices that disrupt the playing surface such as scalping and vertical mowing have traditionally been used to speed up spring transition, but these practices can be labor intensive and often cause additional harm to the already stressed warm-season turf (Mazur and Wagner 1987). Superintendents have also resorted to utilizing transitional-aid herbicides to hasten the removal of ryegrass in the spring. However, tight budgets and the move to lower-input, sustainable turfgrass systems has reduced the viability of using transitional-aid herbicides over large turf acreages in some cases.

To combat poor spring transition of cool-season turfgrasses, seed companies have developed overseeding mixes, which utilize both perennial ryegrass and improved turf-type cultivars of annual ryegrass (S.O.S. Program, Barenbrug USA, 2008). Annual ryegrasses have been used for Southern overseeding in the past, but were generally too coarse and upright for high-quality turf.

In addition, annual ryegrasses were prone to transitioning before the warm-season turf had sufficient time to regrow. Improved annual ryegrasses are more prostrate and persist longer into the spring season than older annual ryegrass selections. Despite the lengthened lifespan, improved annual ryegrasses continue to transition out sooner than the new perennial ryegrasses.

The improved annual ryegrass cultivars are more heat, drought, and traffic tolerant than older cultivars. But due to the nature of an annual lifecycle, they're destined to transition by the end of the cool season. Mixing both improved annual

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and perennial ryegrasses together is thought to provide the benefits of rapid germination and establishment (from annual ryegrass) while still allowing for superior quality and spring persistence (from perennial ryegrass). The mixes are designed to allow for optimum spring transition that can be manipulated according to the climatic zone.

In theory, as annual ryegrass begins to transition out during spring, small voids are created in the overseeded turf canopy which allow increased light penetration and space for warm-season turfgrass regrowth. During this same time period, perennial ryegrass may provide a continuous green turfgrass canopy until the warm-season turf can resume as the dominant canopy species.

By varying seed ratios, a turf manager may be able to customize the speed of transition while minimizing additional inputs. Little research is available evaluating improved turf-type annual ryegrasses for winter overseeding and spring transition into warm-season turfgrasses.

A field study was conducted to test newly available overseeding mixtures on bermudagrass, fine-textured zoysiagrass and seashore paspalum. The overseeding treatments included annual ryegrass (100 percent Panterra), perennial ryegrass (100 percent Premier II), and a 50-50 mix of annual (Panterra) and perennial (Peak/Premier II) ryegrass.

Results demonstrated excellent establishment rates and turf quality across overseeding mixes. Annual ryegrass quality peaked in late February while perennial ryegrass quality peaked in late April. Turfgrass quality of the 50-50 mixture of annual to perennial ryegrass peaked during mid-March.

Turf quality was acceptable throughout April across overseeding treatments. Although all overseeding mixes reduced the shoot density of warm-season turf, spring recovery was most rapid among treatments containing annual ryegrass. Rapid recovery was most noticeable in zoysiagrass plots,

Figure 1. Zoysiagrass Shoot Density

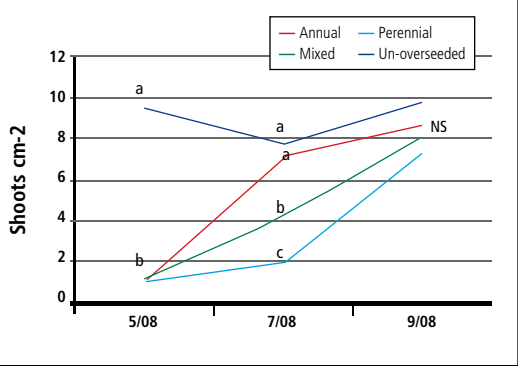
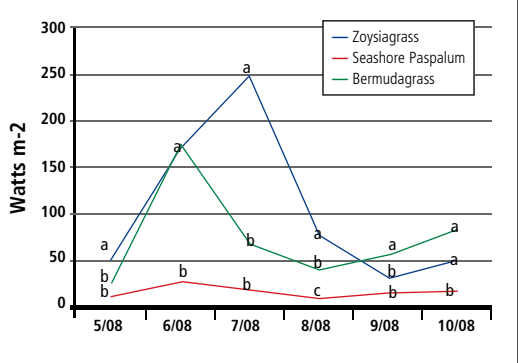


Figure 2. Light Entering Canopy




which contained the greatest shoot density in annual and non-overseeded plots. The annual and perennial ryegrass mixture had the next-greatest density, followed by the perennial ryegrass plots (Figure 1).

Despite a lack of ryegrass presence in July, overseeding continued to impact warm-season turf as bermudagrass clippings were reduced by 61.6 percent, seashore paspalum clippings declined by 31.7 percent and zoysiagrass clippings declined by 76.3 percent compared to control plots.

Seashore paspalum easily transitioned into the growing season. By early summer, turf quality, shoot density and growth rate displayed minimal impacts from ryegrass overseeding treatments.

Seashore paspalum blended well with both annual and perennial ryegrasses throughout the spring transitional period. Bermudagrass transitioned well but not as quickly as seashore paspalum and was



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QUICK TIP

It's hard to ignore a disease on your course that can span up to 20 feet in diameter and be even more difficult to control if not taken care of early. When large patch invades zoysiagrass, damaged areas are slow to recover and weeds invade the thinned areas of patch. Not treating it can open the door to many more issues. Bayer has two large patch fungicides — Triton FLO® and Prostar — that prevent infection of the disease before the problem becomes, well, a large one. Your early-fall applications will not only avoid infection this season, but can also suppress or delay spring symptoms — another check in the easy column. Visit BackedByBayer.com for more information.



The improved annual ryegrass cultivars are more heat, drought and traffic tolerant than older cultivars.

affected by overseeding mixture.

Overseeding combinations containing annual ryegrass allowed for a more rapid transition than perennial ryegrass, but differences in color and texture between bermudagrass and annual ryegrass reduced turf quality during periods of active growth.

Zoysiagrass poorly transitioned across all overseeding treatments and summer turf quality was greatly reduced by winter overseeding. Although winter overseeding provided excellent turf quality under the moderate temperatures of early spring, plots displayed substantial browning during late spring and early summer. During this late-spring and early-summer period, zoysiagrass did not penetrate through the ryegrass turf canopy. Due to poor regrowth, zoysiagrass was not able to mask the discoloration of the dying ryegrass canopy.

Perennial ryegrass maintained good color and quality into June, but a lack of zoysiagrass regrowth caused bare soil to be present throughout July and parts of August. Figure 2 illustrates the transition rates seen in different warm-season turfgrass canopies as measured by light penetration beneath the turfgrass canopy. As the warm-season turfgrass recovers during the growing season and the ryegrass simultaneously transitions out, voids in the turfgrass canopy initially allow additional light penetration for warm-season turf regrowth. The spaces created in the canopy are eventually filled in with the growing warm-season turf as demonstrated by light penetration returning to typical early-season penetration levels.

Annual ryegrasses provided acceptable turf quality for winter overseeding. The mix

of annual and perennial ryegrasses improved color and texture compared with annual ryegrass alone. Due to a more rapid decline in spring, improved annual ryegrasses show promise for further developing transitional spring overseeding programs without additional inputs.

Seashore paspalum provided the most efficient spring transition and wasn't substantially impacted by overseeding. Due to its poor winter color, seashore paspalum may be a good candidate for overseeding using either annual or perennial ryegrasses. Bermudagrass transitioned acceptably well under all treatments but blended poorly with annual ryegrass while both were actively growing. Although quality was acceptable in annual ryegrass plots, mixed and perennial ryegrasses may be preferable for overseeding bermudagrass turf areas. Zoysiagrass can be overseeded successfully, but summer quality was severely reduced by both annual and perennial ryegrasses.

Overseeding is not recommended for zoysiagrass, but if it's a necessity annual ryegrass may prove to be the best option.

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