

Is tall fescue right for your field?

SHOULD YOU CONSIDER OVERSEEDING TURF-TYPE TALL FESCUE (TTTF) on high school fields during the slower play summer months? We know it can handle heat and drought better than Kentucky bluegrass or perennial ryegrass, but we've seen it get clumpy after being exposed to traffic. The other question is how long does it take before it becomes more traffic tolerant than perennial ryegrass? Are the few summer months of establishment long enough?

We conducted a 2-year research project at Penn State to try to answer some of these questions.

On sports fields, tall fescue has been traditionally thought of as an aesthetically and sometimes functionally inferior turfgrass species compared to perennial ryegrass and Kentucky bluegrass. However, advances in breeding have resulted in new TTTF cultivars with improved characteristics compared to older cultivars. TTTF cultivars have a medium leaf texture (similar to perennial ryegrass), dense canopy, and dark green color. These aesthetic improvements have allowed TTTF to gain popularity in the lawn industry, especially in and around the transition zone. TTTF provides home owners a lawn that is typically both visually pleasing and functionally superior to other cool-season species in hotter and drier regions of the country. So why hasn't this "buzz" been as popular in the sports turf industry? Especially when high-use, low-budget athletic fields could benefit from a turfgrass that requires less irrigation, fertilizer, and other inputs?

One of the main concerns about TTTF is its unknown traffic tolerance shortly after seeding. Although tall fescue has been touted as being traffic tolerant, this traffic tolerance has been observed in turfgrass stands that have been established for at least 1 year. Most practitioners suggest field use should be delayed 6-12 months after seeding. In most high school athletic scenarios, fields are used continuously during the spring and fall. Major renovations must take place when fields are in the lowest demand: between the late spring and end of summer. This limited time frame has made seeding with perennial ryegrass a logical choice. Perennial ryegrass germinates in 5-7 days and can provide a playable athletic field 2 months after seeding. How does TTTF compare when established during a similar period?

TRAFFIC-TOLERANT ALTERNATIVE?

At Penn State's Center for Sports Surface Research (ssrc.psu.edu), we wanted to evaluate if TTTF cultivars could provide a traffic tolerant alternative to summer renovation using perennial ryegrass. Specifically, could TTTF be seeded late in the spring and be ready for play by the beginning of fall? We conducted two experiments. The first evaluated the traffic toler-

Cultivar	10-Week Establishment	14-Week Establishment
	% Ground Cover	
Fiesta IV (Prye)	64.0	63.3
Turbo	39.7	68.7
Pembrandt	28.3	63.3
Rebel IV	27.3	58.7
RK4	26.7	63.0
ATF 1376	25.7	58.7
Justice	25.0	56.7
Falcon V	24.3	61.3
Sherandoahl	24.3	60.7
Firecracker LS	22.0	53.3
Faith	21.7	57.3
K-31	9.3	30.0
LSD (0.05)	9.1	9.1

>> **PERCENT GROUND COVER RATINGS** for 10- and 14-week establishment periods: TTTF cultivars and perennial ryegrass (Nov. 17, 2010)



>> **Left: KENTUCKY-31** tall fescue: Coarse-textured, light-green leaf blades.
>> **Right: TTTF:** Dense canopy with medium-texture, dark-green leaf blades.



>> **TTTF:** Visual ground cover. 14-week establishment period (left) resulted in higher ground cover than 10-week establishment (right) (Nov. 17, 2010)

ance of 10 TTTF cultivars, Kentucky-31 tall fescue, and ‘Fiesta IV’ perennial ryegrass. The TTTF cultivars included RK4, ‘Falcon V’, ‘Rebel IV’, ATF 1376, ‘Turbo’, ‘Shenandoah III’, ‘Justice’, ‘Firecracker LS’, ‘Rembrandt’, and ‘Faith’

Both experiments were established from seed in late spring. We compared two establishment time periods: 10 weeks and 14 weeks. We wanted to see if there was any difference in traffic tolerance between these two establishment time periods. The difference we constructed somewhat mimicked starting traffic during high school pre-season or waiting until a week or so into the season before allowing play. Once the establishment periods ended, simulated field use began using the Brinkman Traffic Simulator (BTS). We trafficked the plots 3 times per week with 4 passes of the BTS per day. We measured traffic tolerance by assessing percent ground cover in late November. It’s important to remember that on this date, plots established for 10 weeks received 4 additional weeks of traffic simulation compared to the plots established for 14 weeks.

In Experiment I, our late-November ratings showed traffic tolerance differences between perennial ryegrass and TTTF. When the two species were given only 10 weeks to establish prior to simulated field use, perennial ryegrass exhibited greater traffic tolerance than all TTTF cultivars. However, when species were allowed to establish for 14 weeks before traffic simulation, all TTTF cultivars had at least equal to, and at times, superior traffic tolerance to ‘Fiesta IV’ perennial ryegrass. Thus we are suggesting that **TTTF can be successfully used as an alternative to perennial ryegrass for summer renovation of sports fields if you can restrict play for at least 14 weeks.** If you can only restrict use for 10 weeks or less after seeding perennial ryegrass will likely perform better.

Of the TTTF cultivars we tested, Turbo, Rembrandt, Falcon V, and Rebel IV consistently performed better than the other cultivars tested. However, the separation between the best and worst TTTF cultivars was not large in either year. Kentucky-31, which is widely regarded as a utility turfgrass, always had the lowest traffic tolerance.

SEEDING RATES AND N FERTILITY

In Experiment II, we wanted to evaluate how seeding rates and nitrogen fertility affect fall traffic tolerance of TTTF after spring establishment. We looked at four seeding rates: 6, 10, 14, and 18 lb/1000 ft.2. We also looked at the following nitrogen rates: 2.0, 4.5, and 7.0 lb of N /1000 ft.2. Our goal was to determine an optimum seeding rate and nitrogen fertility that would maximize traffic tolerance.

Multiple researchers have shown that when traffic is initiated shortly after seeding, it’s beneficial to seed perennial ryegrass at very high seeding rates. However, our results indicate that no differences exist when seeding TTTF at rates between 6 and 18 lb/1000 ft.2 if traffic is delayed for at least 10 weeks after seeding. Thus 6 lb/1000 ft.2 is adequate. Although seeding rate had little effect, our nitrogen regimes appeared to significantly influence traffic tolerance, but the results might not be what you would expect. Regardless of the establishment time, traffic toler-



>> **Left: TTTF:** 7 lb N/1000 ft.2 treatment after traffic simulation (Nov. 8, 2010)



>> **Right: TTTF:** 2 lb N/1000 ft.2 treatment after traffic simulation (Nov. 8, 2010)



>> **Left: PERENNIAL RYEGRASS:** 10-week establishment after traffic simulation (Nov. 17, 2010)



>> **Right: TTTF:** 10-week establishment after traffic simulation (Nov. 17, 2010)



>> **Left: PERENNIAL RYEGRASS:** 14-week establishment after traffic simulation (Nov. 17, 2010)



>> **Right: TTTF:** 14-week establishment after traffic simulation (Nov. 17, 2010)

ance was affected similarly by nitrogen fertility. The lowest N regime (2.0 lb/1000 ft.2) applied all at once at seeding, resulted in the highest traffic tolerance during both years of the study.

Let's get back to our big question: is tall fescue a viable alternative to perennial ryegrass during summer establishment of an athletic field? Our research shows that if you can restrict use for at least 14 weeks after seeding, TTTF would be an acceptable alternative to perennial ryegrass for late spring/summer establishment. To maximize ground cover at the end of the fall playing season, TTTF should be seeded using at least 6 lb/1000 ft.2 and that you should apply 2.0 lb N/1000 ft.2. We recommend that the 2.0 lb N/1000 ft.2 should be applied with a slow release nitrogen fertilizer (about 30% water insoluble nitrogen) early in the grow-in to speed establishment, but inputs should be backed off during the season. During both years of our study additional nitrogen inputs during the establishment and/or fall traffic period resulted in lower percent ground cover in November.

If adequate time does not exist to grow-in your athletic field before field use in the fall, perennial ryegrass may be the better option. Perennial ryegrass establishes and matures quicker than tall fescue and appears to better tolerate traffic stress when play begins 10 weeks after seeding.

Before beginning a summer reestablishment with TTTF, a few important considerations should be made. Irrigation should be accessible for at least the first 2-3 weeks to allow the turfgrass plants to germinate and mature enough to tolerate the summer heat. We applied adequate but not excessive irrigation throughout the establishment period in order to avoid significant drought stress.

Also, precautions should be taken to monitor brown patch (a common disease of tall fescue that can be exacerbated by excessive nitrogen fertilization during hot, moist weather) although the same issue exists when establishing perennial ryegrass during the summer.

Lastly, maintenance of these fields will be just as important as the renovation process. Continual overseeding will be just as necessary as before to assist in divot recovery.

In the past, tall fescue use on athletic fields was limited. Tall fescue had a tendency to form clumps, was aesthetically unappealing, and established from seed slower than perennial ryegrass. These obstacles often influenced field managers to choose perennial ryegrass over tall fescue. In lower maintenance situations, tall fescue can outperform perennial ryegrass because it is more tolerant of summer heat, drought, and to some degree disease outbreaks.

The use of newer TTTF cultivars may be appropriate for athletic fields established during a short time period in the summer. When given at least 14 weeks to establish, prior to play, our research at Penn State has shown that TTTF appears to form a traffic tolerant canopy that is comparable to perennial ryegrass. ■

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