Survival of Fine Fescue Under Fairway Conditions

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Fine fescues aren't very common in Wisconsin golf course fairways, and perhaps for good reason. While fine fescues have a reputation of being a low maintenance grass, they come with substantial challenges: they lack heat and traffic tolerance, they are prone to thatch accumulation, they won't fill in divots as well as bluegrass or bentgrass, and they seem to thrive only in well drained soils. Overlook those flaws, and fine fescue is the perfect grass! Jokes aside, some of our most famous golf courses have fine fescue fairways and there certainly are places and situations in Wisconsin where fine fescue might be the best choice. Like all grasses, substantial variability exists within and among the fine fescue species, and choosing the proper species and cultivar is a very important decision.

We recently finished up a four year evaluation of several species and cultivars of fine fescue under simulated fairway conditions. The grasses were established at the O.J Noer Turfgrass and Research Facility in fall of 2008 by Dr. John Stier. The plots were mowed two to three times weekly at 7/8th of an inch, and annual fertilization was limited to 1.5 – 2.0 lbs of nitrogen per thousand square feet. The study was conducted on a silt loam soil with good internal and surface drainage. The plots were trafficked three times a week over the five year study period using a simulator composed of four axels of free spinning golf cart wheels loaded with approximately 500 lbs. Irrigation was applied weekly to replace 80% of estimated evapotranspiration.

We evaluated 25 fine fescues: 12 Chewings fescue cultivars, 7 strong creeping red fescue cultivars, and 6 hard fescue cultivars. Performance data was collected monthly for the five year period, but for this article we will only focus on two key indicators: percent of fescue cover one year after establishment, and percent fescue cover at the end of the trial (Table 1).

Fescue Cover

Fescue Species	1 Yr After Seeding	4 Yrs After Seeding	Difference
Chewings	86% A	73% A	-16%
Strong Creeping Red	85% A	60% B	-29%
Hard	60% B	35% C	-40%

Table 1. Percent of the plot covered with fescue at 1 and 4 years after seeding. Different letters within columns indicate statistically significant differences (alpha = 0.05).

Left: The fast and firm fescue covered tenth fairway on the tenth fairway at Erin Hills Golf Club during the USGA United States Amateur Championship.
Right: A close-up of the same fairway.

From Table 1, we see that the Chewings and strong creeping red fescues established more successfully than the hard fescue cultivars. However, by the end of year 4, we see that the Chewings fine fescues were much better at maintaining plot cover, with the strong creeping red and the hard fescues falling off. The "Difference" column in Table 1 shows the relative decrease in plot cover from year 1 to year 4. The most common weeds in the plot were annual bluegrass, crabgrass, and clover, with other assorted broadleaf weeds.

In year 4, the top four grasses ranged from 83-89% fescue cover, and all four were Chewings fescues. Among these, the only named cultivar was 'Intrigue 2, the others were experimental. The bottom four cultivars ranged from 15 – 29% fescue cover and three were hard fescues with one strong creeping red fescue. These trends were similar after year 1, with three of the top four being Chewings fescues and the bottom four were all hard fescues.

These results indicate that (at least for the grasses tested) Chewings fescue is probably your best choice for fairway conditions in Wisconsin. Overall they, established well, and maintained high plot cover during the duration of the trial.

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However, we observed considerable variation within the species. For example the worst performing Chewings had 38% fescue cover by the end of the trial while the best performing hard fescue had 51% fescue cover ('Spartan II'), so one needs to pay attention to the cultivar in addition to the species. Strong creeping red fescues didn't live up to their name, as they established well but lost cover during the study and did so at a greater rate than the Chewings fescue. But again, we observed a large amount of variability within the red fescues with two experimental strong creeping red fescues with over 80% cover and 'Boreal' strong creeping red fescue at second to last in plot cover at 22% after year 4.

Overall, these results are encouraging. In conversations with other scientists, I've learned that similar trials conducted in the late 1990s and early 2000s produced few if any cultivars that would persist in these conditions after four of five years. Having a handful of cultivars at over 80% fescue cover is a dramatic improvement in genetics. I see no reason not to expect continued improvement of fine fescues in years to come. As always, feel free to contact me for more information or a plot tour sometime this summer.