

Adaptation and Management of Fine Fescues for Golf Course Fairways



Eric Watkins and Brian Horgan
University of Minnesota

Turfgrass and Environmental Research Online
Volume 12, Number 1 | January 2013.

Objectives:

1. *Determine if the plant growth regulator trinexapac-ethyl improves performance and divot recovery of fine fescue species and mixtures on low-input golf course fairways.*
2. *Determine if fine fescues can survive when managed as fairways under acute drought*
3. *Determine if fine fescue fairways require fungicides at currently-recommended application rates to survive winter snow mold pressure.*

In the cool-season region of the United States, golf courses traditionally grow grasses that require high inputs of pesticides, fertilizers and water on fairways. Local, state and national restrictions are limiting use of chemical and water inputs on managed turf areas. We believe that future restrictions will impact golf course management in a very significant way and that the solution to the problem of inputs on golf course fairways will not be changes in management practices to traditionally-utilized fairway grasses such as creeping bentgrass and Kentucky bluegrass. Grass species exist that could be more sustainable than those currently being used for golf course fairway turf; low-input fine fescue species should be able to withstand the pressure from typical turfgrass disease and stresses while producing acceptable turf and excellent playing quality with fewer overall inputs of pesticides, water, and fertilizer.

Based on input from some industry stakeholders, it is clear that golf course superintendents have been hesitant to use these species. We aim to conduct research that will assist superintendents in making decision about using these species on golf course fairways. The body of knowledge in this area of research that has developed over the last several years is lacking in a few key

areas. Although we know that these species can perform well under controlled research conditions, we do not know if performance will be adequate under severe summer stress, such as acute drought, and whether these species are adequately resistant to snow mold diseases when grown under fairway conditions. It is also unclear how these grasses should be properly managed in a way that reduces vertical growth rate and

Figure 1. Fine fescue fairway mixtures during summer establishment period. (photo credit: Andrew Hollman)



Golf car traffic simulator that will be used in Objective 1. (photo credit: Andrew Hollman)



increases divot recovery under high-play, high-traffic conditions. This project is addressing these research questions in three objectives.

Objective 1: Twenty-five mixtures of single cultivars representing the five fine fescue species ('Radar' Chewings, 'Beacon' hard, 'Navigator II' strong creeping red, 'Shoreline' slender creeping red, and 'Quatro' sheep) were established in summer 2012 and arranged as a split-split plot design with three replications. Plant growth regulator treatments (trinexapac-ethyl) and traffic treatments will be initiated in June of each testing year (2013 and 2014) and conclude on August 31 of each year. Plots will receive traffic using a customized golf cart traffic simulator that consists of two 454 kg traffic units on an axle containing five golf cart tires (Fig. 2). Data collected will include

disease incidence, clipping yield, turfgrass quality, color, turf density, and divot recovery.

Objective 2: The same species and mixtures as in Objective 1 will be evaluated under acute drought for 60 d period the year after establishment. Data collection will include drought stress, recovery from drought, disease incidence, turfgrass quality, species composition, genetic color, and divot recovery.

Objective 3: The same fine fescue species and mixtures as in Objective 1 will be evaluated for resistance to snow mold on golf course fairways in Minnesota. Plots were seeded in fall 2012 at Northland Country Club (Duluth, MN); The Cragun's Legacy Courses (Brainerd, MN); and Theodore Wirth Golf Club (Minneapolis, MN). All fine fescue species and mixtures will be evaluated with and without with a commonly-used fungicide treatment. Data will be collected throughout the study including snow mold severity and recovery, turfgrass quality, species composition, spring green-up, weed pressure, and turf density.

Summary Points

- Fine fescues have shown potential as a golf course fairway grass in Minnesota.
- This study will evaluate mixtures of fine fescues for fairway performance.
- Results should assist in developing optimized mixtures for use on golf courses in the northern United States.