



Report From the International Turfgrass Research Conference

PERFORMANCE OF ESTABLISHED COOL-SEASON GRASS SPECIES UNDER SIMULATED TRAFFIC CONDITIONS

Traffic tolerant turfgrass species are required if natural grass surfaces are going to compete with synthetic turf systems. This research was conducted to determine which of six cool season grass species were the most tolerant to wear traffic stress. The species and cultivars evaluated in this study were:

- “Unique” Kentucky bluegrass
- “Catalina” perennial ryegrass
- “Millennium” tall fescue
- “Penncross” creeping bentgrass
- “Cindy” strong creeping red fescue
- “Supra” Supina bluegrass

Overview

The study took place at the University of Iowa Horticulture Research Farm from 2001 to 2003. It was conducted on mature stands of each of the above named species. Overseeding was done by hand, broadcasting seed on five different dates in 2001. This was done to simulate the practice of seeding before games to allow for the cleating-in of seed. In other words, the traffic of the athlete’s cleats was used to establish good seed to soil contact and press the seed into the seed bed. No overseeding was done in 2002 or 2003. Traffic stress was applied using a GA-SCW wear simulator with cleated rollers and differential slip action. There were two levels of traffic applied, low and high. Low traffic received two passes with the wear

simulator three days a week (Monday, Wednesday and Friday). The high traffic plots received four passes with the wear simulator three days a week. Traffic was applied from April 20 to May 15 and August 20 to October 26, 2001. In 2002, traffic was applied from August 19 to October 28.

Plots were rated for visual quality on a scale of 1-10 with 10 being the best and

species other than the species that was seeded and weeds) and exposed soil.

Results

Species differences were observed on 4 of the 5 observation dates over the two years of the study. The ranking of the species for their tolerance of wear was the same for both the high and low trafficked plots, however the differences were greater



turfgrass cover was recorded as a percentage from 0-100% on five dates throughout the duration of the experiment. Each plot was also rated for % of original grass species, percent invader species (grass

for the high trafficked plots.

The relative ranking of turfgrass traffic tolerance from best to worst was: Kentucky bluegrass = perennial ryegrass > tall fescue = supine bluegrass > creeping



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bentgrass > fine fescue. This ranking does not agree with Beard who gave the following relative traffic tolerance rating of: tall fescue > perennial ryegrass = Kentucky bluegrass = fine fescue > creeping bentgrass. Dr. Beard did not rank supine bluegrass in his book.

The percent of plot showing original species vs. invader species vs. bare soil was a good indication of both wear stress tolerance and recuperative potential combined. There were no significant differences between Kentucky bluegrass and perennial ryegrass at the high and low traffic treatments. These two species had greater than 90% of the original species at the end of the study with a very small percentage of weeds and bare soil.

Fine fescue had more exposed soil and invasive species than other species indicating that fine fescue would require continual overseeding to stand up to high or low traffic.

Supina bluegrass at the low and high traffic rate was equal to creeping bentgrass at the low traffic rate. At the high traffic

rate, creeping bentgrass had approximately 20% bare soil.

Tall fescue and supine bluegrass performed the same for turfgrass cover, invasive species and exposed soil under high traffic. Supina bluegrass had more exposed soil than tall fescue under low traffic. Tall fescue has good wear tolerance because it has high total cell wall content based on percent area, but it has poor recuperative potential because it is a bunch type grass. Supina bluegrass has good wear tolerance, but its strength is its aggressive recuperative potential after traffic. These two species give the same traffic rating but the response mechanism is different for each species.

Based on this research the best species for wear tolerance are Kentucky bluegrass and perennial ryegrass.

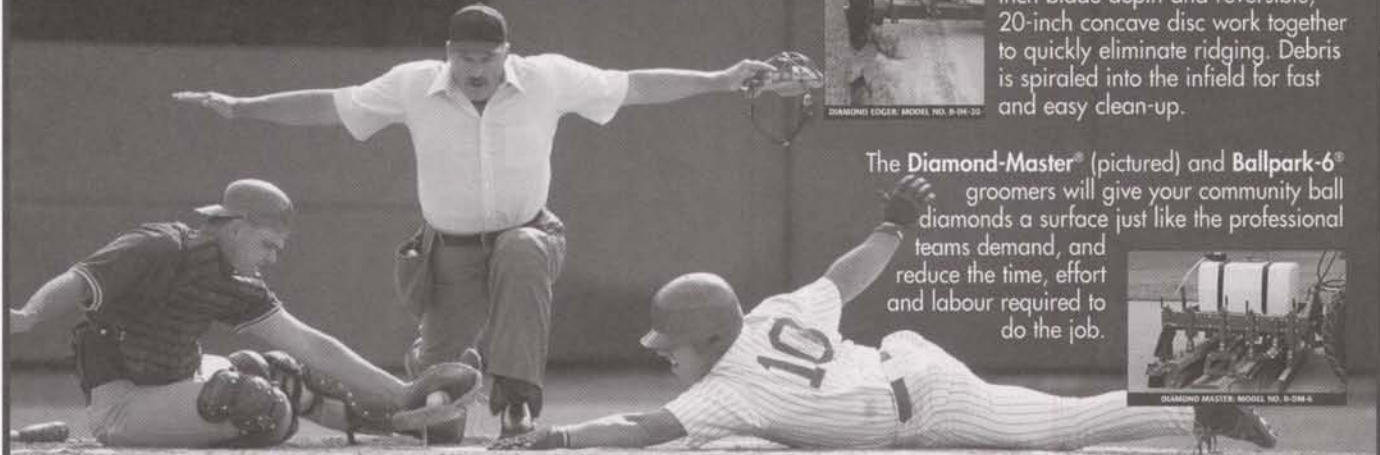
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— D.D. Minner and F.J. Valverde, Summarized by Pam Charbonneau, OMAFRA

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