Seeding Rates versus Various Levels of Simulated Football Traffic

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Introduction

The purpose of this study was to determine the optimal seeding rates for turfgrass species under various simulated traffic levels.

Materials and Methods

This study was conducted at Iowa State University's football practice facility in Ames, Iowa, during fall 2005. Three turfgrass species, Kentucky bluegrass (*Poa pratensis* Unique) (KB), tall fescue (*Festuca arundinacea* Millennium II) (TF), and perennial ryegrass (*Lolium perenne* Catalina) (PR) were evaluated for seeding rates. For each species, eight seeding rates were evaluated and a total of six traffic levels were applied to each seeding rate (Table 1). This study was replicated three times.

Seeding was done on September 2. Seeds were sown by a broadcast method into a stand of mature Kentucky bluegrass, which had been killed with Roundup prior to seeding. Immediately after seeding, eight passes of simulated traffic were applied to all seeding treatments. Each subsequent week, for 10 weeks, concentrated traffic was applied at the various traffic levels. The last application of traffic occurred on November 11. Percent of turfgrass cover data was recorded each week directly before applying the traffic treatments.

Results and Discussion

Throughout the duration of this study, PR consistently provided more turfgrass cover than KB or TF. Because of the low-traffic tolerance and slow germination rate of KB, it failed to stand up well to traffic, especially with treatments of 8, 12, 16, and 20 passes/week. Most likely, PR outperformed TF because of its quick germination rate and high-traffic tolerance. Tall fescue, despite having a higher-traffic tolerance than PR, probably did not perform as well because of its slightly slower germination rate. On the final day of traffic, KB had the lowest amount of turfgrass cover as compared with TF and PR, with PR having the highest. As expected for all species, as the level of traffic increased, turfgrass cover decreased. However, by increasing the seeding rate, we were able to increase turfgrass cover in most traffic treatments (Table 1).

Analysis of variance and regression will be performed on the data in order to predict the highest seeding rate that will produce a measurable increment on turfgrass coverage. This study will conclude in June 2006 when final turfgrass cover percentage data will be recorded.

Table 1. Turfgrass cover percentage data from November 11, 2005, and seeding rates and traffic treatments from replication 1.

Seed Rate[1]	Traffic Level[2]					
	2	4	8	12	16	20
KB	KB % Cover					
1	5	1	1	0	0	0
3	10	5	3	1	0	0
6	20	5	3	1	0	0
9	25	5	3	1	0	0
12	25	7	3	1	0	0
15	25	10	3	1	0	0
30	30	10	5	1	0	0
45	25	15	5	1	1	0
TF	TF % Cover					
5	25	5	3	1	1	0
10	20	10	5	1	1	0
15	25	10	5	2	1	0
30	75	20	5	3	2	0
45	90	25	5	3	2	1
60	85	40	5	1	2	1
90	95	75	5	3	1	1
120	100	85	5	3	2	1
PR	PR % Cover					
5	25	15	5	3	1	0
10	60	25	10	5	1	0
15	60	25	10	5	1	1
30	80	60	15	5	3	2
45	90	70	15	5	2	2
60	100	70	20	6	5	3
120	100	90	30	15	10	3
200	100	90	35	15	10	5

[1]Pounds of seed/1,000 ft^2.
[2]Passes of traffic simulator every Friday.