Traffic tolerance of cool season seedling turf under simulated football traffic - Single seeding.

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Objective

To determine a grass species ability to establish from a single seeding during simulated traffic.

Methods

This study was conducted at the Horticulture Research Farm in Ames, Iowa. This trial was established in September 2002. The species evaluated in this study were Kentucky bluegrass (*Poa pratensis*) KB, perennial ryegrass (*Lolium perenne*) PR, tall fescue (*Festuca arundinacea*) TF, fine fescue (*Festuca sp*.) FF, creeping bentgrass (*Agrostis palustris*) CB, colonial bentgrass (*Agrostis capillaris*) Col, velvet bentgrass (*Agrostis canina*) VE and *Poa supina* PS. Each trial followed a split plot design with 4 replications, 8 treatments (species) and 2 levels of traffic simulation.

The seeding rate (lb/1000sq.ft) and the number of times that each plot was seeded appear in Table 1. The trial was seeded on September 4, 2002.

Table 1. Species and seeding rates used in the establishment trials.

Turf species	Rate lb/1000ft^2	Seeding times
Kentucky bluegrass	2	1
Perennial ryegrass	10	1
Tall fescue	10	1
Fine fescue	10	1
Poa supina	2	1
Creeping bentgrass	2	1
Velvet bentgrass	2	1
Colonial bentgrass	2	1

Traffic stress was applied with a GA-SWC traffic simulator (Carrow et al. 2001). Each species received two levels of traffic (split plot) as indicated in table 2. Traffic started on September 11, 2002 and ended on November 8.

Table 2. Traffic schedule followed on Kentucky bluegrass during summer and fall 2002.

Number of passes/week	Number of passes per day				
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
6 Concentrated	0	0	0	0	6
6 Dispersed	2	0	2	0	2

Evaluation of percent ground coverage was done during and at the end of the growing season. Percent turf was also measured for the fall trial at the end of spring season. During spring, no traffic was applied to the fall trials. Biomass production was determined at the end of each trial (data not shown).

Results

All species germinated within 4 to 14 days after seeding. However, there was a clear difference in the speed of germination. Ryegrass and all bentgrasses germinated well within a week. In contrast very few plants of Kentucky bluegrass and Poa supina were visible 2 weeks after planting.

Table 3 shows the evolution on turf coverage in plots seeded only one time. Low germination and the overall poor performance of most species is due to the traffic that was applied almost immediately after seeding.

Table 3. Observed turf coverage in turfgrass species seeded one time in fall under 2 levels of simulated traffic.

	Traffic			Recovery	
	Sep-13	**Oct-23**	**Nov-8**	**May-29**	**Jul-3**
Turf species			**Turf cover (%)**		
Kentucky bluegrass	0.0	2.9	1.1	29	58
Perennial ryegrass	45.0	75.0	86.3	88	97
Tall fescue	6.3	24.0	43.1	72	86
Fine fescue	7.5	10.1	5.8	72	85
Poa supina	0.0	2.1	4.0	37	57
Creeping bentgrass	25.0	5.1	3.4	63	70
Velvet bentgrass	43.8	6.6	2.1	29	52
Colonial bentgrass	32.5	6.5	2.3	32	53
LSD $_{0.05}$	8.15	5.91	6.09	11.65	10.01
Traffic intensity					
Concentrated	n.d.	15	18	58	73
Dispersed	n.d.	18	19	47	66
LSD $_{0.05}$	NS	2.95	NS	5.82	5.00

Tall fescue was the only species that showed a slow beginning but was able to reach almost half of the area by the end of the first growing season. Fine fescue did not establish well while traffic was applied but it did establish well after traffic stopped. Traffic intensity (concentrated vs. dispersed) did not produce any constant result. As of April 2004, a second year of this study is being conducted.

Literature cited

Carrow, R.N. , R.R. Duncan, J.E. Worley and R.C. Shearman. 2001 Turfgrass traffic (soil compaction plus wear) simulator response of Paspalum vaginatum and Cynodon spp. P. 253-258. *In* K .Carey (ed.) Int. Turf Soc. Research J. vol. 9.