LCAT STOP 8

Response of Supina bluegrass (*Poa supina* Schrad.) to fairway, athletic field, and home lawn cutting heights.

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Introduction

Athletic field managers in the cool-season turf areas of North America have long needed a suitable turf species to withstand excessive traffic during cool temperatures in the spring and autumn. Supina bluegrass (*Poa supina* Schrad.) is native to the European Alps. In Germany, where it has long been used for athletic fields, golf courses, and home lawns, its common name is *Lagerrispe*, meaning "where the cows lay". It obtained this name because it was found frequently on cattle paths in the sub-alpine regions of the mountains.

Supina bluegrass has a vigorous stoloniferous growing habit which allows it to recuperate rapidly from damage. The currently available cultivars ('Supranova', 'Supra', and coming in 1997, 'Suprafox') have a light green color which distinguishes the species from Kentucky bluegrass. Dark green ecotypes do exist, they just aren't preferred in European breeding or marketing programs.

Supina bluegrass is currently being used in several locations in North America, primarily for athletic fields. Information on appropriate management techniques is limited, however, to casual observations by growers and end-users. Several studies are underway at Michigan State University to help define the appropriate management strategies. The two studies shown today include a mowing height and a fertility study.

Mowing Height Study

Mission statement

The primary objective of this experiment was to determine the appropriate mowing height(s) for Supina bluegrass. A secondary objective was to determine the effects of simulated sports traffic at the different mowing heights.

Materials and Methods

The test area was established from seed ('Supranova') during summer 1995. Mowing treatments began 24 May, 1996 (Fig. 1.). A two-factor randomized complete block design with three replicates was used to evaluate the effects of simulated sports traffic at three mowing heights. Plots were mowed at 9/16", 1_", and 2_" heights on Mondays, Wednesdays, and Fridays. Clippings were always returned. Alleys were used between plots to provide room for mowers to turn. Traffic treatments were applied twice weekly as a strip-split plot treatment using the Brinkman Traffic Simulator. Two passes with the Brinkman Traffic Simulator simulate the amount of wear in one football game between the hashmarks at the 40 yd line. Traffic treatments began 28 May, 1996. The plots were fertilized with 0.5 lb N/M on 10 May, 24 May, and 14 June using an 18-3-18 fertilizer. On 28 June the plots were fertilized with 1 lb N/M using sulfur coated urea and with 1 lb K/M using sulfate of potash (0-0-50). The plots will continue to receive fertilizer throughout the year as this is a multi-year study. Plots were irrigated as needed to prevent moisture stress.

Color, quality, and density ratings were collected in June and July. Turfgrass shear resistance, an indicator of turf strength and rooting, was measured 23 July using an Eijkelkamp Type 1B shear apparatus.

Results and Discussion

The 1_" cutting height has provided the best turf quality to date although turf quality was acceptable at the other cutting heights (Table 1). Color and density were not affected by cutting height at the 18 July ratings. Color and density were significantly lower at the 12 June rating for the turf mowed at the 9/16" height, but this was likely due to the effects of suddenly lowering the height of cut from approximately 2 inches. The shear strength of the turf was not affected by the cutting height. Traffic treatments have caused a slight decrease in turf density but overall density is still excellent.

This study is an on-going, multi-year study. Traffic treatments and turf evaluations will continue throughout the autumn to determine the response to cold weather.

FERTILITY STUDY

Mission statement

The objective of this study is to determine the appropriate fertility regimes for Supina bluegrass on a sandy loam soil, and how fertilization affects tolerance to traffic.

Materials and methods

The test area was established from seed ('Supranova') during summer 1995. A two-factor randomized complete block design with four replicates was used to evaluate the effects of simulated sports traffic at various ratios and quantities of nitrogen:potassium. The fertilizer treatments (Table 2) were designed as the main plots. Plots were mowed with a reel mower at 1_" height three days per week beginning in April, 1996. Clippings were always returned. Traffic treatments were applied twice weekly as a strip-split plot treatment using the Brinkman Traffic Simulator. Two passes with the Brinkman Traffic Simulator simulate the amount of wear in one football game between the hashmarks at the 40 yd line. Traffic treatments began 28 May, 1996. Plots were irrigated as needed to prevent moisture stress.

Color, quality, and density ratings were collected in June and July. Turfgrass shear resistance, an indicator of turf strength and rooting, was measured 23 July using an Eijkelkamp Type 1B shear apparatus.

Results and Discussion

Preliminary results indicate Supina bluegrass is responsive to both nitrogen and potassium. The highest rates of a 1:1 nitrogen:potassium fertility program resulted in the best turf color (Table 3). Turf quality was less affected by fertility, with all fertility programs provided equivalent quality except for the lowest nitrogen:potassium treatment. Fertility treatments did not affect shear values which are an indication of rooting strength. Traffic treatments resulted in decreased turf color, density, and quality by the second rating date, but were not influenced by the fertility program (Table 3). Traffic treatments also reduced turf shear resistance, either by reducing overall turf density and/or rooting.

Table 1. Response of Supina bluegrass (*Poa supina*) to fairway, athletic field, and lawn cutting heights.

	Color †		Density (% cover)		Quality ‡		Shear value (N•m)§
Mowing height	12 June	18 July	12 June	18 July	12 June	18 July	23 July
Fairway, 9/16"	4.2	5.0	87.5	96.5	6.3	6.5	17.0
Athletic field, 1_"	5.8	6.2	99.2	98.0	9.0	8.1	19.7
Lawn, 2_"	5.8	5.5	100.0	95.5	8.2	6.3	18.6
LSD (0.05)	1.1	ns	2.3	ns	0.6	1.1	ns
Traffic¶							
None	5.2	5.4	97.2	98.1	7.8	7.1	19.3
2X weekly	5.3	5.8	93.9*		7.9	6.9	17.6*
				95.2**			
Total games simulated							

*,** Significant at the 0.05 and 0.01probabililty levels, respectively.
† Visual color was based on a scale of 1=light green/yellow, 9=dark blue-green (e.g. Nassau, Blacksburg).
‡ Visual quality was based on a scale of 1=dead turf/bare soil, 9=dense, uniform turf.
§ Shear values are in Newton meters and represent the force required to tear apart the turf/soil interface.
¶ Football games were simulated with the Brinkman Traffic Simulator.

Table 2. Fertilizer treatments and scheduling for Supina bluegrass fertility study, 1996.

Treatment No.†	Ratio of N:K	lbs. N:lbs K (total annual)	Fertilization dates
1	2:1	2:1	10 May, 10 Sept.
2	2:1	4:2	10 May, 3 June, 15 Aug., 10 Sept.
3	2:1	6:3	10 May, 3 June, 28 June, 15 Aug., 10 Sept., 11 Nov.
4	1:1	2:2	10 May, 10 Sept.
5	1:1	4:4	10 May, 3 June, 15 Aug., 10 Sept.
6	1:1	6:6	10 May, 3 June, 28 June, 15 Aug., 10 Sept., 11 Nov.

† 1 lb N and 1/2 lb K was/are scheduled for each of the application dates for treatments 1-3. For treatments 4-6, 1 lb N and 1 lb K was/are scheduled for each of the application dates. The November application dates are intended to be dormant fertilizations and the actual date may be adjusted according to the weather.