Low Input Sustainable Turf - 2000 Results

Clark Throssell and Dan Weisenberger

Objective

Our objective was to determine the effect on turf quality by mixing legume species with tall fescue and sheep fescue.

Rationale

Low input sustainable turf is an area that will receive minimal attention but not be totally neglected. Even though it is low input or low maintenance it is still desirable for the area to be somewhat uniform, have few weeds, and be persistent over time. From previous studies it has been determined that tall fescue and sheep fescue are the best choices for grass species under these conditions, and a mowing height of 3.5 inches with a frequency of every other week is most desirable. This study was designed to go one step farther and see if mixtures of species could improve results without adding inputs.

How It Was Done

A seedbed was prepared at the William H. Daniel Turfgrass and Diagnostic Center. A starter fertilizer was applied to the area at the rate 0.2 lbs N, 1.0 lbs P_2O_5, and 0.2 lbs K_2O/1000 ft^2. The plots were seeded 29 Aug-97 and watered that fall to insure uniform establishment. No irrigation was applied after establishment. The plots were mowed every other week at 3.5 inches with clippings returned. One lb N/1000 ft^2, using sulfur-coated urea, was applied toward the end of Sep each year. No pesticides were applied during this study. Data collected was percent of the plot covered by desired species fall 1997, spring and fall 1998. Visual quality of plot was recorded spring, summer, and fall each year. Visual quality was rated on a scale of 1 - 9 with 1 = no living turf, 5 = acceptable turf, and 9 = ideal turf. Percent of the plot covered by broadleaf weeds spring, summer, and fall each year. Percent of plot covered by desired legume summer and fall 1999 and 2000.

Results

- There were statistical differences in visual quality on some dates but from a practical standpoint, all treatments were better than acceptable (Table 1).
- There are texture differences when mixing sheep fescue and tall fescue, and when adding the legumes to the grasses.
- Birdsfoot trefoil persisted best of the three legumes (Table 2).
- Birdsfoot trefoil adds color from its yellow blossoms three or four months of the year.
- If legumes are added to the mixture herbicides cannot be used with out damaging the legumes.
- All treatments had low weed populations (Table 3).

Table 1. Visual quality ratings of Low Input Sustainable Turf for 1998, 1999, and 2000.

Treatment[a]	Apr 98	July 98	Oct 98	Apr 99	June 99	Oct 99	May 00	July 00	Oct 00
SF[a]	2.0[b]	5.0	4.7	6.7	6.0	5.7	6.7	6.0	7.0
TF	3.0	5.7	6.7	6.7	6.7	7.0	6.7	6.3	6.3
SF+ TF	3.0	5.7	7.0	7.0	6.7	6.3	7.0	5.7	6.3
SF+ TF+ KB	3.3	6.0	7.0	6.7	7.0	6.7	6.3	6.3	6.0
SF+ SC	3.0	5.7	4.7	6.7	6.7	6.0	6.7	6.0	6.7
SF+ RC	3.0	6.0	6.3	6.3	6.0	6.0	7.0	5.7	7.3
SF+ BT	2.7	6.0	7.0	6.3	6.7	7.3	7.0	7.0	7.7
TF+ SC	3.7	6.0	6.7	6.7	6.3	6.3	6.0	7.0	6.0
TF+ RC	4.0	6.0	6.7	7.0	6.7	6.0	6.7	6.3	6.0
TF+ BT	3.3	6.0	6.7	7.0	6.7	6.7	6.3	6.3	6.0
SF+ TF+ SC	3.3	6.0	7.0	6.7	6.7	6.3	6.3	6.0	6.0
SF+ TF+ RC	3.7	5.3	6.3	7.0	6.0	6.3	6.7	5.7	6.3
SF+ TF+ BT	3.3	5.7	6.7	7.0	7.0	6.7	7.0	6.0	6.0
TF+ CRF + BT + PR	4.3	5.7	6.3	7.0	6.7	6.3	7.0	6.0	6.7
LSD (0.05)	0.7	NS	0.8	NS	NS	0.7	NS	0.7	1.0

[a] SF = sheep fescue, TF = tall fescue, KB = Kentucky blue grass, SC = white flowering sweet clover, RC = red clover, BT = birdsfoot trefoil, CRF = creeping red fescue, and PR = perennial ryegrass.

[b] Visual quality ratings were taken using a scale of 1 - 9 with 1 = no living turf, 5 = acceptable turf, and 9 = ideal turf.

Table 2. Percent of Low Input Sustainable Turf plot area covered by the desired legume.

Treatment[a]	Jun 99	Oct 99	May 00	July 00	Oct 00
			%		
SF[a]	0.0[b]	0.0	0.0	0.0	0.0
TF	0.0	0.0	0.0	0.0	0.0
SF+ TF	0.0	0.0	0.0	0.0	0.0
SF+ TF+ KB	0.0	0.0	0.0	0.0	0.0
SF+ SC	0.3	0.3	0.7	0.3	0.7
SF+ RC	18.3	16.7	6.7	2.0	3.0
SF+ BT	40.0	26.7	26.7	31.7	38.3
TF+ SC	0.0	0.0	0.7	0.0	0.0
TF+ RC	30.0	5.7	5.7	1.7	1.3
TF+ BT	31.7	7.0	23.3	16.7	11.7
SF+ TF+ SC	0.0	0.3	0.3	0.0	0.0
SF+ TF+ RC	21.7	7.3	5.7	1.3	2.7
SF+ TF+ BT	33.3	13.3	23.3	21.7	20.0
TF+ CRF + BT + PR	36.7	11.7	20.0	20.0	18.3
LSD (0.05)	7.5	3.8	4.4	4.5	5.5

[a] SF = sheep fescue, TF = tall fescue, KB = Kentucky blue grass, SC = white flowering sweet clover, RC = red clover, BT = birdsfoot trefoil, CRF = creeping red fescue, and PR = perennial ryegrass.

[b] Percent of plot area covered by desired legume.

Table 3. Percent of Low Input Sustainable Turf plot area covered by broadleaf weeds.

Treatment[a]	Apr 98	Oct 98	Apr 99	Jun 99	Oct 99	May 00	July 00	Oct 00
	%							
SF[a]	55.0[b]	9.7	6.0	6.3	4.7	3.3	2.7	4.0
TF	36.7	1.3	2.7	3.7	2.0	3.7	2.3	2.3
SF+ TF	30.0	2.0	1.3	3.3	1.3	2.3	2.3	2.7
SF+ TF+ KB	28.3	1.7	1.0	1.3	0.0	1.3	1.3	2.7
SF+ SC	43.3	6.3	5.7	3.3	2.0	3.3	2.3	3.7
SF+ RC	30.0	2.3	3.0	3.7	3.0	3.0	2.7	3.7
SF+ BT	35.0	2.3	1.7	1.3	1.0	1.7	1.3	1.3
TF+ SC	20.0	2.3	2.7	8.0	2.7	3.0	2.3	2.3
TF+ RC	21.7	0.3	2.0	1.7	0.7	1.3	1.3	1.3
TF+ BT	26.7	1.7	2.0	1.3	0.3	1.7	0.7	1.0
SF+ TF+ SC	26.7	1.7	1.7	3.0	2.0	2.3	2.3	2.3
SF+ TF+ RC	21.7	0.0	0.3	0.3	0.7	1.0	1.7	2.3
SF+ TF+ BT	21.7	1.0	2.0	2.0	0.0	1.0	1.0	1.7
TF+ CRF + BT + PR	15.0	2.0	2.0	1.0	0.7	0.7	1.7	1.3
LSD (0.05)	17.2	3.1	2.9	NS	1.4	1.4	NS	NS

[a] SF = sheep fescue, TF = tall fescue, KB = Kentucky blue grass, SC = white flowering sweet clover, RC = red clover, BT = birdsfoot trefoil, CRF = creeping red fescue, and PR = perennial ryegrass.

[b] Percent of plot area covered by broadleaf weeds.