

Evaluation of Kentucky Bluegrass and Fine Leaf Fescue At Various Mowing Heights

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Summary

This trial was seeded in May 2004 in order to evaluate Kentucky bluegrass and fine leaf fescue at two mowing heights. In the first season of the trial Fults alkaligrass showed very good establishment as it developed a dense turf quite rapidly. *Poa supina* was also quick to become established, but lost quality points due to its light green colouration. The Kentucky bluegrass cultivars were slower to germinate but improved steadily over the course of the 2004 growing season and were generally better in quality than the fine leaf fescues. The top Kentucky bluegrass cultivars for overall quality were Rugby II, Quantum Leap, NuGlade, Tsunami, Total Eclipse, New Destiny, SR2284, Allure, Avalanche, Unique, Moon Shadow, Odyssey, Midnight, Langara, Limousine, and Alpine. The mowing height regimen is expected to be instituted in 2005.

Introduction

Many new cultivars of Kentucky bluegrass have been developed over the last number of years that can withstand a close mowing. These dwarf type grasses have been specifically bred to perform well at these mowing heights, but some research has shown that grasses that perform well at these low mowing heights are not necessarily the best grasses when mowed at a typical lawn height of 5 cm. As a result, this trial was established to evaluate the performance of new Kentucky bluegrass and fescue varieties at two mowing heights.

Materials and Methods

Twenty-eight cultivars of Kentucky bluegrass (*Poa pratensis*) along with seven other grasses were selected from the many submissions received from local, national and international turf seed suppliers (Table 1).

The plot area was prepared at the Prairie Turfgrass Research Centre in the late summer of 2003. The existing sod was removed and a firm seed bed was prepared. The site was chemically fallowed once in the fall and once in the spring prior to seeding the trial.

Plots that measured 1 by 5 meters were arranged in a Randomized Complete Block Design (RCBD) and replicated four times. The plots were seeded by hand on May 26, 2004 using a small holed shaker bottle to uniformly distribute the seed over the plots. The Kentucky bluegrasses were seeded at the rate of 0.5kg/100m², while the rate of 1.6kg/100m² was used for the fescue species. The very small seeded alkali grass required only 0.2 kg/100m² to meet the recommended plant density of 2.3 plants/cm² (15 plants/inch²). After seeding, each plot was lightly raked to slightly bury the seed and to ensure good contact with the soil. The trial was regularly irrigated to maintain an adequate soil moisture level to maximize the germination of the seed. The plots were fertilized at a rate of 0.5kg N/100m² (1 lb N/1000ft²) per growing month. Thirty-five days after seeding, regular mowing commenced at a height of 1.8cm. The second mowing height of 5 cm will likely be initiated in 2005.

Table 1. Treatment List

Grass Species	Cultivar
1. Kentucky Bluegrass	Rambo
2. Kentucky Bluegrass	Touchdown
3. Kentucky Bluegrass	Award
4. Kentucky Bluegrass	Rugby II
5. Kentucky Bluegrass	Nuglade
6. Kentucky Bluegrass	Alpine
7. Kentucky Bluegrass	Odyssey
8. Kentucky Bluegrass	Liberator
9. Kentucky Bluegrass	Absolute
10. Kentucky Bluegrass	Allure
11. Kentucky Bluegrass	Chateau
12. Kentucky Bluegrass	Brilliant
13. Kentucky Bluegrass	Unique
14. Kentucky Bluegrass	Blackburg II
15. Kentucky Bluegrass	North Star
16. Kentucky Bluegrass	Alvalanche
17. Kentucky Bluegrass	Midnight
18. Kentucky Bluegrass	Tsunami
19. Kentucky Bluegrass	Limousine
20. Kentucky Bluegrass	Impact
21. Kentucky Bluegrass	Quantum Leap
22. Kentucky Bluegrass	Washington
23. Kentucky Bluegrass	Langara
24. Kentucky Bluegrass	New Destiny
25. Kentucky Bluegrass	Moon Shadow
26. Kentucky Bluegrass	SR2884
27. Kentucky Bluegrass	Total Eclipse
28. Kentucky Bluegrass	P-105
29. Poa supina	Sp.
30. Sheep Fescue	Covar
31. Creeping Red Fescue	Boreal
32. Chewings Fescue	Treasure
33. Creeping Red Rescue	Badger
34. Chewings Fescue	Victory
35. Puccinellia distans	Fults Alkali Grass

The turf quality of each plot was visually evaluated twice over the course of the 2004 growing season. The first assessment occurred thirty-five days after seeding and assessed the initial establishment of the grasses by evaluating the area cover. The second turf quality rating occurred seventy days after seeding, this time following National Turfgrass Evaluation Program (NTEP) protocols. Three turf quality factors were visually evaluated for area cover, density and genetic colour. Each plot received a numeric value ranging from 1 to 9 where a score of 1 signified poor turf quality and a high score of 9 signified turf with superior quality.

The area cover rating assessed the effectiveness of the originally planted turf as a ground cover. The presence of weeds or voids in the turf would significantly reduce the area

cover score of the turf plot. Area cover scores ranged from a score of 1 for a plot completely void of turf to a score of 9 for a plot area being completely covered with the desired turf.

Turf density rating was a visual estimate of living plants or tillers per unit area. Turf density scores ranged from a score of 1 for a thin stand of turf to a score of 9 for a very dense tight-knit uniform stand.

The final quality factor was genetic turf colour. Scores ranged from a 1 for turf with inherent light green coloration to a score of 9 for turf with inherent dark green coloration. Visual assessments were made when the turf was actively growing to assure that the turf colour was representative of its genetic potential and not as a result of an environmental stress on the turf.

The overall turf quality scores were generated by calculating the combined means of the three quality scores for each of the grasses.

Results and Discussion

When it comes to evaluating turf solely based on turf quality the general rule is that comparing ratings within species is relative, while comparing ratings between species is not. It was not the intended purpose of this trial to make comparisons between the different turf species. Each species has attributes and weaknesses which the turf manager must consider when selecting the best combination of grasses for each specific application. However with little else to report at this juncture, a discussion comparing the effectiveness of each of the grass species to establish an acceptable stand of turf may prove interesting.

The initial rating at 35 days after seeding revealed there was a significant difference in establishment of the grasses. Fults alkali grass (*Puccinellia distans*) and *Poa supina* established the best stand of turf and were scored the highest. The area cover ratings of the fescues, even though they scored lower, were not significantly different than the area ratings for the alkali grass or *Poa supina*. The Kentucky bluegrass cultivars, except for the cultivars Absolute and Washington, generally grew in more slowly and had significantly lower area cover ratings than either Fults alkali grass or *Poa supina* (Table 2).

By mid summer, *Poa annua* had become a well established grassy weed in the plots. It was suspected that the annual bluegrass seed which lay dormant in the thatch of the existing turf was stimulated to germinate during the renovation of the site. Its light coloured foliage was very noticeable amongst the darker green colour of the Kentucky bluegrasses, while almost non detectable in the *Poa supina* and fescue plots. Extra care was needed when the plots were rated in order to properly assess the primary grass sown into each plot.

By the 70th day after seeding, all of the grasses had become better established. Fults alkali grass and *Poa supina* had significantly higher area cover ratings than the Kentucky bluegrasses and the fine leaf fescues. However, the slower germinating Kentucky bluegrasses improved dramatically from the previous rating period (Table 2).

Table 2 Establishment Data 2004

Kentucky Bluegrasses	Days after Seeding				
	35 Days	70 Days			
	Area Cover	Area Cover	Density	Colour	Overall Quality
Rugby II	2.0 D	5.0 B	5.0 BC	7.0A	5.70ABC
Quantum Leap	2.3 CD	4.8 BC	5.0 BC	7.0A	5.60ABCD
Nuglade	2.0 D	4.8 BC	5.0 BC	7.0A	5.60ABCD
Tsumani	2.0 D	4.8 BC	5.0 BC	7.0A	5.60ABCD
Total Eclipse	2.3 CD	4.8 BC	5.0 BC	7.0A	5.60ABCD
New Destiny	2.3 CD	5.0 B	5.3 B	6.5ABC	5.60ABCD
SR2284	2.3 CD	5.0 B	5.0 BC	6.5ABC	5.53ABCDE
Allure	2.3 CD	4.8 BC	5.3 B	6.5ABC	5.50ABCDE
Avalanche	2.5 BCD	4.8 BC	5.0 BC	6.5ABC	5.43ABCDEF
Unique	2.5 BCD	4.8 BC	4.5 CD	7.0A	5.43ABCDEF
Moon Shadow	2.3 CD	4.5 BCD	4.8 BCD	7.0A	5.43ABCDEF
Odyssey	2.0 D	4.5 BCD	4.8 BCD	7.0A	5.43ABCDEF
Midnight	2.0 D	4.8 BC	5.0 BC	6.5ABC	5.43ABCDEF
Langara	2.3 CD	5.0 B	5.0 BC	6.3ABCD	5.43ABCDEF
Limousine	2.3 CD	4.8 BC	5.0 BC	6.5ABC	5.40ABCDEFG
Alpine	2.3 CD	5.0 B	5.0 BC	6.3ABCD	5.40ABCDEFG
Rambo	2.0 D	4.5 BCD	5.0 BC	6.5ABC	5.35 BCDEFG
P-105	2.3 CD	4.5 BCD	4.8 BCD	6.8AB	5.33 BCDEFG
Touchdown	2.0 D	5.0 B	5.0 BC	6.0 BCDE	5.30 BCDEFG
North star	2.3 CD	4.5 BCD	4.8 BCD	6.5ABC	5.25 CDEFGH
Brilliant	2.3 CD	4.8 BC	4.5 CD	6.5ABC	5.25 CDEFGH
Absolute	3.0 AB	4.8 BC	4.8 BCD	6.3ABCD	5.23 CDEFGH
Award	2.3 CD	4.5 BCD	4.8 BCD	6.3ABCD	5.18 DEFGH
Liberator	2.3 CD	4.5 BCD	5.0 BC	6.0 BCDE	5.15 DEFGH
Chateau	2.3 CD	4.3 CD	4.8 BCD	6.5ABC	5.15 DEFGH
Washington	2.8 ABC	4.8 BC	5.0 BC	5.5 DE	5.08 FGHI
Impact	2.5 BCD	4.5 BCD	4.3 D	6.3ABCD	5.00 FGHI
Blacksburg II	2.0 D	4.3 CD	4.5 CD	6.3ABCD	5.00 FGHI

Other Grasses

Fults Alkali Grass	3.3 A	6.0A	6.0A	5.5 DE	5.85A
Poa supina	3.3 A	5.8A	6.3A	5.3 E	5.75AB
Treasure	3.0 AB	4.8 BC	4.8 BCD	5.8 CDE	5.10 EFGH
Badger	3.2 A	4.5 BCD	4.8 BCD	5.8 CDE	5.00 FGHI
Boreal	3.0 AB	4.5 BCD	4.8 BCD	5.5 DE	4.95 GHI
Victory	3.0 AB	4.5 BCD	4.5 CD	5.5 DE	4.85 HI
Covar	3.2 A	4.0 D	4.3 D	5.3 E	4.50 I
LSD _{0.05} =	0.58	0.73	0.65	0.75	0.47

Even though this was the second quality evaluation for the trial, this was the first time turf density was assessed. *Poa supina* and Fults alkaligrass displayed the best density ratings in the trial, while the remaining grasses had not yet reached a satisfactory density level to score well. As for the Kentucky Bluegrasses, the cultivars New Destiny and Allure scored the highest, while the cultivar Impact was the lowest (Table 2).

While the area cover and density ratings were very similar between the grasses, the Kentucky bluegrass species clearly dominated in the colour category. With dark green foliage the bluegrasses were ranked significantly higher than the other grasses. *Poa supina*, which had scored well for area cover and density, fell short of the other grasses in colour. Its distinctive light green appearance was scored lower than the darker green hues of many of the other grasses in the trial (Table 2).

When the means of the three turf quality factors was generated, Fults alkaligrass received the highest overall rating. *Poa supina* and several of the Kentucky bluegrass cultivars were statistically equal to Fults alkaligrass in overall quality (Table 2).

Conclusion

In the first season of the trial, Fults alkaligrass preformed the best at establishing a dense tight knit turf. *Poa supina* was also quick to become established but lost quality points due to its light green appearance. The Kentucky bluegrass cultivars were slower to germinate but improved steadily over the course of the season. The top Kentucky bluegrass cultivars for overall quality were Rugby II, Quantum Leap, NuGlade, Tsunami, Total Eclipse, New Destiny, SR2284, Allure, Avalance, Unique, Moon Shadow, Odyssey, Midnight, Langara, Limousine, and Alpine.

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