

Evaluation of Kentucky Bluegrass and Fine Leaf Fescue Cultivars

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Summary

A regional turfgrass variety trial was established in May of 2004 to evaluate new grass cultivars under prairie growing conditions. Twenty-eight cultivars of Kentucky bluegrass and seven other grasses were selected from submissions received. Grasses were rated for three turf quality factors: colour, density and area cover. The trial was evaluated on a monthly basis from early May through to mid October.

In the first season of the trial *Fulva* alkaligrass showed very good establishment as it rapidly developed a dense turf. *Poa supina* was also quick to become established, but lost quality points due to its light green colour. 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 Kentucky bluegrass cultivars with the best overall colour ratings were: Odyssey, Total Eclipse, Rugby II, Nuglade, Northstar and Chateau. Washington and Touchdown had the poorest colour. The three cultivars that were the highest ranked for overall turf quality were Odyssey, Chateau and Allure. For the fine leaf fescues, Victory chewing and Badger creeping red were the best two fescues for turf colour. For overall quality the best fescue was Victory chewing fescue.

For a comparison of the species, the Kentucky bluegrass showed the best colour and for overall quality, the Kentucky bluegrasses were very similar to the alkali grass and the *Poa supina*. The fescues were generally rated lower for turf quality.

Introduction

The National Turfgrass Evaluation Program evaluates turfgrasses at various sites throughout North America. However, being able to access regional turfgrass varietal data proves very valuable in identifying turf varieties that are better adapted to the prairie environment. This trial was established in 2004 to evaluate various Kentucky bluegrass in comparison to other grasses that might be used as turfgrass.

Materials and Methods

Twenty-eight cultivars of Kentucky bluegrass (*Poa pratensis*) along with seven other grasses were selected for entry into this trial from 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. Volunteer grass species were controlled with Roundup which was applied both in the fall of 2003 and again in the spring of 2004 prior to seeding.

Plots that measured 1 by 5 meters were arranged in a randomized complete block design (RCBD) and replicated four times. The trial was 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 a rate of 0.5kg/100m², while a 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 bury the seed to ensure good contact with the soil.

In year one the grasses were rated for their rate of establishment, while in year two and three, the grasses were rated for their colour and overall turf quality. The plots were mowed twice per week at a height of 1.8cm (¾ inch). The plots were fertilized at a rate of 0.5kg N/100m² (1 lb N/1000ft²) per growing month.

Table 1 – Grass species and varieties in the trial, Olds.

Grass Species	Cultivar
Kentucky bluegrass	Rambo
Kentucky bluegrass	Touchdown
Kentucky bluegrass	Award
Kentucky bluegrass	Rugby II
Kentucky bluegrass	Nuglade
Kentucky bluegrass	Alpine
Kentucky bluegrass	Odyssey
Kentucky bluegrass	Liberator
Kentucky bluegrass	Absolute
Kentucky bluegrass	Allure
Kentucky bluegrass	Chateau
Kentucky bluegrass	Brilliant
Kentucky bluegrass	Unique
Kentucky bluegrass	Blacksburg II
Kentucky bluegrass	North Star
Kentucky bluegrass	Avalanche
Kentucky bluegrass	Midnight
Kentucky bluegrass	Tsunami
Kentucky bluegrass	Limousine
Kentucky bluegrass	Impact
Kentucky bluegrass	Quantum Leap
Kentucky bluegrass	Washington
Kentucky bluegrass	Langara
Kentucky bluegrass	New Destiny
Kentucky bluegrass	Moon Shadow
Kentucky bluegrass	SR2884
Kentucky bluegrass	Total Eclipse
Kentucky bluegrass	P-105
<i>Poa supina</i>	Supranova
Sheep Fescue	Covar
Creeping Red Fescue	Boreal
Chewings Fescue	Treasure
Creeping Red Rescue	Badger
Chewings Fescue	Victory
<i>Puccinellia distans</i>	Fults Alkali Grass

The plots were evaluated on a monthly basis for three quality factors, colour density and area cover. These ratings were based on the National Turfgrass Evaluation Program (NTEP) protocols where numeric values are assigned to individual plots where 9 is best and 1 is poorest, and 6 is considered acceptable. Colour was evaluated by 1 is a brown

dormant turf and 9 is a very uniform dark green colour. Turf density, a measure of the number of shoots per unit area, was rated based on 1 is a thin, weak turf stand and 9 is a very dense tight-knit stand. The third factor rated was area cover and values ranged from a 1 for a complete absence of turf to a 9 for complete cover with the desired turf. The presence of weeds or voids in the turf reduced this rating. To compare the overall turf quality, colour, density and area cover scores for each plot were combined to give a single value. Individual rating date scores during spring, summer and fall were combined to produce a single value. In 2006, scores from both year were combined to yield a single value for colour and quality. Data was analyzed using the MSTAT analysis program.

Results and Discussion

Establishment

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 the alkali grass or *Poa supina* (Table 2).

By mid summer, it was suspected that *Poa annua* had become a well established grassy weed in the plots. An adjacent plot of *Poa annua* (Petersen's Creeping Bluegrass) had been established a number of years earlier and it was thought that seed which lay dormant in the soil or thatch of the previous 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.

By the 70th day after seeding, all of the grasses had almost completely 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 had improved dramatically from the previous rating period.

Table 2 - Establishment of the grasses, 2004.

Cultivar	Area Cover		Turf Colour	Turf Quality
	35 days after seeding	70 days after seeding	1 – 9 scale	Mean of 3 quality factors
Kentucky Bluegrass				
Rugby II	2.0d	5.0b	7.0a	5.7ab
Quantum Leap	2.3cd	4.8b	7.0a	5.6abc
Nuglade	2.0d	4.8b	7.0a	5.6abc
Tsumani	2.0d	4.8b	7.0a	5.6abc
Total Eclipse	2.3cd	4.8b	7.0a	5.6abc
New Destiny	2.3cd	5.0b	6.5abc	5.6abc
SR2284	2.3cd	5.0b	6.5abc	5.5abcd
Allure	2.3cd	4.8b	6.5abc	5.5abcd
Avalanche	2.5bd	4.8b	6.5abc	5.4abcde
Unique	2.5bd	4.8b	7.0a	5.4abcde
Moon Shadow	2.3cd	4.5bc	7.0a	5.4abcde
Odyssey	2.0d	4.5bc	7.0a	5.4abcde
Midnight	2.0d	4.8b	6.5abc	5.4abcde
Langara	2.3cd	5.0b	6.3abcd	5.4abcde
Limousine	2.3cd	4.8b	6.5abc	5.4abcde
Alpine	2.3cd	5.0b	6.3abcd	5.4abcde
Rambo	2.0d	4.5bc	6.5abc	5.3abcdef
P-105	2.3cd	4.5bc	6.8ab	5.3abcdef
Touchdown	2.0d	5.0b	6.0bcde	5.3abcdef
North star	2.3cd	4.5bc	6.5abc	5.2bcdef
Brilliant	2.3cd	4.8b	6.5abc	5.2bcdef
Absolute	3.0ab	4.8b	6.3abcd	5.2bcdef
Award	2.3cd	4.5bc	6.3abcd	5.1cdef
Liberator	2.3cd	4.5bc	6.0bcde	5.1cdef
Chateau	2.3cd	4.3bc	6.5abc	5.1cdef
Washington	2.8abc	4.8b	5.5de	5.0defg
Impact	2.5bcd	4.5bc	6.3abcd	5.0defg
Blacksburg II	2.0d	4.3bc	6.3abcd	5.0defg
Fine Leaf Fescue				
Treasure chewings	3.0ab	4.8b	5.8cde	5.1cdef
Badger creeping red	3.3a	4.5bc	5.8cde	5.0defg
Boreal creeping red	3.0ab	4.5bc	5.5de	4.9efg
Victory chewings	3.0ab	4.5bc	5.5de	4.8fg
Covar sheep	3.3a	4.0c	5.3e	4.5g
Other Grasses				
Fults Alkali Grass	3.3 a	6.0a	5.5de	5.8a
<i>Poa supina</i>	3.3 a	5.8a	5.3e	5.7ab
LSD _{0.05} =	0.6	0.7	0.8	0.5

Kentucky Bluegrass Ratings

Colour Ratings

Spring colour is a measure of colour during the transition from winter dormancy to active spring growth. The highest rated cultivars were: Odyssey, Tsunami, Total Eclipse, Rugby II, Nuglade, Impact, New Destiny and Liberator, while the cultivars: Alpine and Touchdown scored the lowest for spring greenup (Table 3).

Throughout the summer most of the Kentucky bluegrass cultivars were very similar in colour ratings. The four top rated cultivars were: North Star, Quantum Leap, Odyssey and Total Eclipse (Table 3).

The best cultivars for fall colour were: North Star, Chateau, Avalanche and Langara (Table 3). However, all cultivars were very similar in their rating and were not considered to be significantly different from each other.

The cultivars with the best overall colour ratings were: Odyssey, Total Eclipse, Rugby II, Nuglade, Northstar and Chateau (Table 3). Washington and Touchdown had the poorest colour.

Table 3 – Combined year comparison of colour for Kentucky bluegrass, 2005-2006.

Cultivar	Rating Period			Seasonal average
	Spring	Summer	Fall	
	————— 1-9 scale —————			
Odyssey	5.0a	6.3ab	6.1a	5.9
Total Eclipse	4.8ab	6.3ab	6.3a	5.9
Rugby II	4.8ab	6.1abcd	6.3a	5.8
Nuglade	4.8ab	6.0abcd	6.0a	5.8
North Star	4.6bc	6.4a	6.5a	5.8
Chateau	4.6bc	6.0abcd	6.5a	5.8
Tsunami	5.0a	6.0abcd	6.0a	5.6
Impact	4.8ab	6.1abc	6.1a	5.6
New Destiny	4.8ab	6.0abcd	6.3a	5.6
Liberator	4.8ab	5.8cd	6.0a	5.6
Quantum Leap	4.6bc	6.4a	6.0a	5.6
Moon Shadow	4.6bc	6.1abc	6.3a	5.6
Brilliant	4.6bc	6.0abcd	6.3a	5.6
Absolute	4.6bc	6.0abcd	6.1a	5.6
Midnight	4.6bc	5.9bcd	6.3a	5.6
P-105	4.5bc	6.1abc	6.1a	5.6
Rambo	4.6bc	6.0abd	6.0a	5.5
Allure	4.8ab	5.9bcd	6.0a	5.5
SR2884	4.5bc	6.1abc	6.3a	5.5
Unique	4.5bc	6.0abcd	6.3a	5.5
Award	4.5bc	6.0abcd	6.1a	5.5
Blacksburg II	4.5bc	6.0abcd	6.1a	5.5
Avalanche	4.5bc	5.9bcd	6.4a	5.5
Limousine	4.5bc	5.9bcd	5.9a	5.5
Langara	4.5bc	5.9bcd	6.4a	5.5
Alpine	4.4c	5.8cd	6.3a	5.4
Washington	4.6bc	5.6d	6.0a	5.3
Touchdown	4.4c	5.8cd	6.1a	5.3
LSD _{0.05} =	0.3	0.4	n/s	

* Values that have the same letter as a suffix are not significant from each other.

Turf Quality

The cultivars which ranked highest for spring turf quality were: Odyssey, Chateau, Allure, Tsunami and Avalanche (Table 4). Spring quality may be an indication of the cultivars overwintering capabilities. Those Kentucky bluegrass cultivars that rated highest for summer quality were: Chateau, Rugby II, New Destiny, North Star, Quantum Leap, Touchdown, P-105, Moon Shadow, Unique, and Blacksburg II (Table 4). It was interesting to note that one of the older varieties, Touchdown, which typically rates low for colour, was one of the highest ranked summer quality cultivars. The top cultivars for fall quality were: Odyssey, Chateau, Avalanche, Total Eclipse, North Star, and Quantum Leap (Table 4).

The three cultivars that were the highest ranked were Odyssey, Chateau and Allure (Table 4). It should be noted that for overall quality none of the Kentucky bluegrasses received as high as an acceptable overall quality rating. Generally, this species is higher ranked, but with the infestation of *Poa annua* the rankings were reduced.

Table 4 - Combined year comparison of turf quality for Kentucky bluegrass, 2005-2006.

Cultivar	Rating Period			Seasonal Average
	Spring	Summer	Fall	
— Mean of 3 quality factors —				
Odyssey	4.9a	5.9a	6.3a	5.9
Chateau	4.9a	6.0a	6.3a	5.8
Allure	5.0a	5.8a	6.1a	5.8
Tsunami	4.9a	5.9a	5.9a	5.6
Avalanche	4.9a	5.8a	6.3a	5.6
Rugby II	4.8a	6.0a	6.1a	5.6
New Destiny	4.8a	6.0a	6.0a	5.6
Award	4.8a	5.9a	6.1a	5.6
Absolute	4.8a	5.9a	6.1a	5.6
Midnight	4.8a	5.9a	6.0a	5.6
Total Eclipse	4.8a	5.8a	6.3a	5.6
North Star	4.6a	6.0a	6.3a	5.6
Quantum Leap	4.6a	6.0a	6.3a	5.6
Limousine	4.6a	5.9a	6.1a	5.6
Touchdown	4.8a	6.0a	5.9a	5.5
Impact	4.8a	5.8a	6.0a	5.5
Liberator	4.8a	5.8a	6.0a	5.5
Nuglade	4.8a	5.8a	5.9a	5.5
P-105	4.6a	6.0a	6.0a	5.5
Moon Shadow	4.6a	6.0a	5.9a	5.5
Alpine	4.6a	5.9a	6.1a	5.5
Rambo	4.6a	5.9a	6.0a	5.5
Unique	4.5a	6.0a	6.0a	5.3
Langara	4.5a	5.8a	6.0a	5.5
Brilliant	4.5a	5.9a	6.0a	5.4
Blacksburg II	4.4a	6.0a	6.0a	5.4
SR2884	4.4a	5.9a	6.1a	5.4
Washington	4.8a	5.7a	5.8a	5.3
LSD _{0.05} =	n/s	n/s	n/s	

* Values that have the same letter as a suffix are not significant from each other.

Fine Leaf Fescue

Colour Ratings

An analysis of the turf colour data for the spring revealed a significant colour difference between the higher scoring cultivars: Victory chewing fescue, Badger creeping red, Treasure chewings, Boreal creeping red and the lowest scoring cultivar, Covar sheep fescue (Table 4). Throughout the summer, Victory chewings and Badger creeping red scored the highest for turf colour when compared to the other fescues. The fescue cultivars showed good colour retention under the cooler and frost-prone conditions of the fall. The creeping red fescue cultivar: Badger, scored the highest with Victory and Treasure chewings fescue close behind. Overall Victory chewing and Badger creeping red were the best two fescues for turf colour.

Table 5 - Combined year comparison of turf colour for fine leaf fescue, 2005-2006.

Cultivar	Rating Period			Seasonal Average
	Spring	Summer	Fall	
	—————1-9 scale—————			
Victory	4.5a	5.6a	5.9a	5.3
Badger	4.5a	5.5a	6.0a	5.3
Treasure	4.5a	5.3a	5.8ab	5.2
Boreal	4.5a	5.3a	5.5bc	5.1
Covar	4.3b	5.3a	5.3c	5.0
LSD _{0.05} =	0.1	n/s	0.3	

* Values that have the same letter as a suffix are not significant from each other.

Turf Quality

For spring quality the industry standard entry, Boreal creeping red and Victory chewings were the best fescues (Table 6). During the summer Victory was slightly better than Badger and Covar. During the fall Badger and Covar were only slightly better than Victory. Overall the best fescue was Victory chewings.

Table 6 - Combined year comparison of turf quality for fine leaf fescues, 2005-2006.

Cultivar	Rating Period			Seasonal Average
	Spring	Summer	Fall	
	—— Mean of 3 quality factors ——			
Victory	4.8a	5.5a	5.8a	5.4
Badger	4.4a	5.4a	5.9a	5.2
Covar	4.3a	5.4a	5.9a	5.2
Treasure	4.6a	5.3a	5.5a	5.1
Boreal	4.8a	5.1a	5.4a	5.1
LSD _{0.05} =	n/s	n/s	n/s	

* Values that have the same letter as a suffix are not significant from each other.

Comparing the Grass Species

When it comes to evaluating turf solely based on colour and turf quality the general rule is that comparing cultivars within species is relative, while comparing the various species is not. This report will compare species but it should be made clear that each species will have its own merits which were not taken into account in this trial.

Turfgrass Colour

An analysis of the turf colour data for the two sampling dates revealed no significant difference in spring colour between the species (Table 7). The summer colour data indicates that there was a significant difference in turf colour between the species. The genetically darker colour of the Kentucky bluegrass cultivars consistently scored higher. Under the fall conditions the Kentucky bluegrass was significantly better than the fescues, which were better than the alkali grass, which was better than the *Poa supina*. Overall, the Kentucky bluegrass showed the best colour.

Table 7 - Combined year comparison of various species for turf colour, 2005-2006.

Cultivar	Rating Period			Seasonal Average
	Spring	Summer	Fall	
	1-9 scale			
Kentucky Bluegrasses	4.5a	6.0a	6.2a	5.5
Fescues	4.5a	5.4b	5.9b	5.1
Fults Alkali Grass	4.5a	5.1bc	5.3c	5.0
<i>Poa supina</i>	4.6a	5.0c	5.0d	5.0
LSD _{0.05} =	n/s	0.3	0.2	

* Values that have the same letter as a suffix are not significant from each other.

Turf Quality

In the spring, the alkali grass and the *Poa supina* ranked higher than the other grasses (Table 8). However, in the summer the Kentucky bluegrass had recovered and was slightly better than the alkali grass and the *Poa supina*. In the fall, the alkali grass and the *Poa supina* were once again slightly better. Overall, the Kentucky bluegrasses were very similar to the alkali grass and the *Poa supina*.

Table 8 - Combined year comparison of various species for turf quality, 2005-2006.

Cultivar	Rating Period			Seasonal Average
	Spring	Summer	Fall	
	— Mean of 3 quality factors —			
Kentucky Bluegrasses	4.6a	6.0a	6.0ab	5.6
Fults Alkali Grass	5.1a	5.8a	6.4a	5.6
<i>Poa supina</i>	4.9a	5.9a	6.1a	5.5
Fescues	4.6a	5.3b	5.6b	5.0
LSD _{0.05} =	n/s	0.4	0.4	

* Values that have the same letter as a suffix are not significant

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