

Evaluation of Turfgrass Species for Use on Putting Greens

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Summary

Eleven bentgrasses (*Agrostis palustris* Huds.) and four annual bluegrasses (*Poa annua* L.) were established at the Red Deer Golf and Country Club in August, 1999. These grasses were evaluated for their overall quality ratings while being maintained at putting green mowing heights. There are cultivars in the trial that consistently outperform the industry standard, Penncross, including Penn A-4, Penn A-1, Lofts L-93, and Penn G-6. The annual bluegrasses overall have a tendency towards lower quality ratings, the exception being spring green-up values.

Introduction

Penncross creeping bentgrass (*Agrostis palustris* Huds.) has been the most commonly used turfgrass cultivar on putting greens within the Prairie Provinces. However, this cultivar has its weaknesses, including poor competition with annual bluegrass and mottled colouration in the spring and fall. Breeders have continued to work with bentgrasses to improve quality characteristics over Penncross. This trial was established to evaluate new cultivars of creeping bentgrass in the prairie climate.

Another turf species commonly found encroaching on bentgrass greens or in some cases completely dominating the sward is annual bluegrass. Many turf professionals are now managing for annual bluegrass, because of its competitive nature. Researchers have been studying annual bluegrass and are now in the process of conducting seed multiplications to ensure that the seed is commercially available in the future. Four biotypes of annual bluegrass have been included in this study to evaluate their performance under green maintenance conditions.

Materials and Methods

Eleven cultivars of creeping bentgrass and four biotypes of annual bluegrass were established on the bentgrass nursery at the Red Deer Golf and Country Club on August 19, 1999. The data presented is the first full year of evaluations and is considered establishment data.

Plots are replicated four times in a Randomized Complete Block Design (RCBD). The plots measure 1.5m by 2m and the rootzone is a sand/peat mixture. The plots are maintained at a height of 0.150" and are fertilized at a rate of 0.5kg N/100m² (0.5lb N/1000ft²) per growing month. The area was irrigated to avoid physiological drought stress to the turf. A preventative snow mould fungicide program was applied in the fall of 2000.

Evaluations of colour and area cover were conducted monthly throughout the growing season. Density ratings commenced in August 2000 once the plots had completely established. The ratings are based on the National Turfgrass Evaluation Program (NTEP) rating system where 1 is poor, 5 is acceptable and 9 is superior quality turfgrass.

Results and Discussion

In Table 1 the colour ratings for the 2000 growing season are presented. The annual bluegrass biotypes outperformed the bentgrasses in the spring green-up (May) evaluation. This trend did not continue in subsequent monthly ratings. Quilt I-15 had the best colour rating of the annual bluegrasses with the exception of the first spring rating.

Table 1. Colour Ratings Putting Green Trial 2000, Red Deer Golf & Country Club

Species	Cultivar	May 3	June 14	July 13	August 15	Sept 15	Oct 20
Bentgrass	Penncross	5.0	5.3	6.3	5.3	6.5	5.0
Bentgrass	18 th Green	3.5	4.0	5.5	6.0	7.0	4.8
Bentgrass	Lofts L-93	5.3	6.3	7.0	7.0	6.5	5.5
Bentgrass	Imperial	3.8	5.8	6.8	6.5	6.5	4.8
Bentgrass	Penn A-4	5.5	6.8	7.0	7.0	7.3	5.8
Bentgrass	Cato	4.5	6.3	7.0	6.5	7.3	6.0
Bentgrass	Penn A-1	5.3	6.0	7.0	7.3	7.3	6.0
Bentgrass	Penn G-2	5.3	6.5	6.5	6.5	7.0	6.3
Bentgrass	Penn G-6	4.5	6.3	7.0	6.5	7.0	5.8
Bentgrass	Southshore	4.5	5.8	6.8	6.0	7.3	5.8
Bentgrass	Seaside II	4.3	5.5	6.3	4.8	6.0	5.0
Ann Blue ²	PCB ¹	6.0	4.3	3.3	2.8	4.5	4.5
Ann Blue ²	97 Quilt I-15	5.8	4.8	4.0	4.3	5.3	4.8
Ann Blue ²	97 Quilt I-25	6.0	4.8	4.0	4.5	4.8	4.0
Ann Blue ²	97 Quilt I-12	6.0	3.8	2.5	3.3	4.5	3.5
LSD (0.05)		0.76	0.76	0.64	0.96	0.83	1.0

¹ – PCB Peterson's Creeping Bluegrass, ² - Ann Blue Annual Bluegrass

The bentgrasses had superior colour ratings compared to the annual bluegrasses excluding the May evaluation. The cultivar that demonstrated consistently high colour ratings was Penn A-4. Other cultivars with very good colouration in 2000 included, Lofts L-93, Cato, Penn A-1, Penn G-6 and Southshore. For July through September evaluations all bentgrasses were at a colour rating above 5 considered acceptable by NTEP. Interestingly enough the industry standard Penncross was at the lower end of the colour evaluations this season.

Area cover is a measure of the ground cover provided by the specific cultivar or biotype. Once again the bentgrasses generally demonstrated better area cover than the annual bluegrasses (Table 2). Penn A-4 was consistently the highest rated bentgrass in area cover. Later in the season (September) a number of the bentgrass plots had an area cover rating of 9, superior by NTEP standards, 18th Green, Imperial, Penn A-4, Cato, Penn A-1 and Southshore. The only bentgrass that was significantly different from the rating of 9 in September was Penncross with a value of 8.3, which is considered very good. Within the annual bluegrasses the Quilt biotypes had better area cover ratings in comparison to Peterson's Creeping Bluegrass.

Table 2. Area Cover Ratings Putting Green Trial 2000, Red Deer Golf & Country Club

Species	Cultivar	May 3	June 14	July 13	August 15	Sept 15	Oct 20
Bentgrass	Penncross	5.8	6.5	7.3	7.3	8.3	7.3
Bentgrass	18 th Green	4.5	4.8	7.3	6.8	9.0	7.8
Bentgrass	Lofts L-93	5.8	6.5	8.5	8.3	8.5	8.3
Bentgrass	Imperial	5.8	6.8	8.5	8.0	9.0	8.3
Bentgrass	Penn A-4	6.5	7.3	8.5	8.5	9.0	8.5
Bentgrass	Cato	6.0	6.8	8.3	7.5	9.0	8.3
Bentgrass	Penn A-1	6.3	7.3	8.3	8.5	9.0	8.3
Bentgrass	Penn G-2	6.5	6.5	8.0	7.5	8.8	8.3
Bentgrass	Penn G-6	6.0	6.5	8.0	7.8	8.8	8.0
Bentgrass	Southshore	5.8	6.5	8.3	7.8	9.0	8.0
Bentgrass	Seaside II	5.8	6.3	7.8	7.0	8.8	7.8
Ann Blue ²	PCB ¹	4.3	5.0	5.8	4.3	7.3	5.5
Ann Blue ²	97 Quilt I-15	4.8	5.5	6.8	5.8	8.3	6.8
Ann Blue ²	97 Quilt I-25	4.5	5.3	7.0	6.3	8.5	6.8
Ann Blue ²	97 Quilt I-12	5.3	6.3	7.0	4.5	7.3	5.0
LSD (0.05)		0.97	0.68	0.70	0.96	0.64	0.79

¹ – PCB Peterson’s Creeping Bluegrass, ² - Ann Blue Annual Bluegrass

Density (a measure of the number of shoots per unit area) ratings of the trial did not begin until the plots were completely established in August. Generally the bentgrasses expressed better density ratings compared to the annual bluegrasses (Table 3). Again Penn A-4 was one of the top cultivars in this category. All of the density ratings for the bentgrasses were above the acceptable level of 5. Of the annual bluegrasses only Quilt I-15 and Quilt I-25 had ratings of above 5 at some point during the August to October rating period. 2001 will present more accurate density data, as this variable will be collected at every evaluation

Table 3. Density Ratings Putting Green Trial 2000, Red Deer Golf & Country Club

Species	Cultivar	August 15	Sept 15	Oct 20
Bentgrass	Penncross	6.5	6.0	5.3
Bentgrass	18 th Green	6.0	7.0	5.3
Bentgrass	Lofts L-93	6.8	6.5	6.0
Bentgrass	Imperial	7.3	7.5	5.3
Bentgrass	Penn A-4	7.5	7.8	6.3
Bentgrass	Cato	7.0	7.0	6.5
Bentgrass	Penn A-1	7.3	7.0	6.3
Bentgrass	Penn G-2	6.5	6.8	6.8
Bentgrass	Penn G-6	6.8	7.0	6.3
Bentgrass	Southshore	6.3	6.8	5.8
Bentgrass	Seaside II	5.5	6.3	5.5
Ann Blue ²	PCB ¹	3.3	4.0	4.8
Ann Blue ²	97 Quilt I-15	4.8	6.0	5.5
Ann Blue ²	97 Quilt I-25	5.5	5.8	4.5
Ann Blue ²	97 Quilt I-12	4.0	4.3	3.8
LSD (0.05)		0.91	0.76	0.98

¹ – PCB Peterson’s Creeping Bluegrass, ² - Ann Blue Annual Bluegrass

Collection of quality data on this trial will continue and will evaluate the performance of the cultivars and biotypes over time under putting green maintenance conditions.

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