FEATURE I

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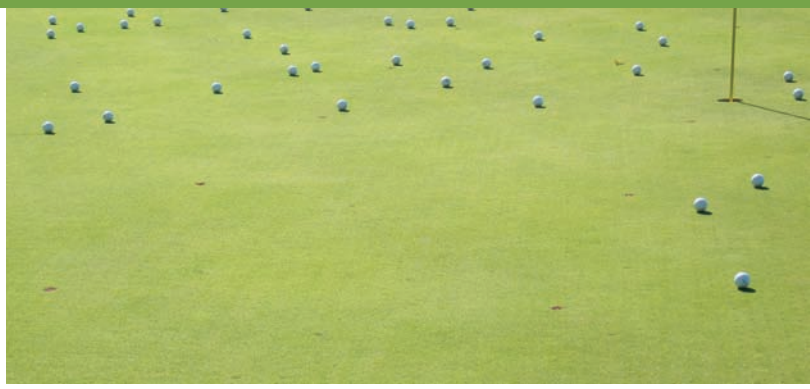
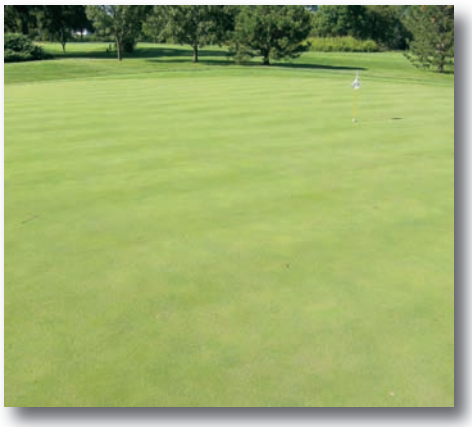


NTEP Putting Green Trials in Illinois

3 Trials in 14 Years and Still Testing

In three National Turfgrass Evaluation Program (NTEP) studies beginning in 1997, University of Illinois researchers studied creeping bentgrasses on a managed putting green in Urbana. They also worked collaboratively with Dan Dinelli in two on-site trials at North Shore Country Club in Glenview. These trials evaluate the performance of creeping bentgrasses in Illinois in order to assist golf course superintendents and designers when choosing grasses for redoing existing greens or when planting new designs. In this article, we summarize the findings from previous evaluations and provide an update of the current trial.

The creeping bentgrasses in these trials have been rated monthly through the April-October growing season for several characteristics. Quality ratings are made by combining appearance (color and genotype segregation) and important playing surface characteristics (e.g., density, leaf texture, putting surface, resistance to weed invasion, insects and diseases, and mowability). The ratings are presented on a 1-9 scale, where 1=dead turf, 9=best possible putting green quality, and 5=minimally acceptable putting green quality. Genetic color ratings are also presented using a scale of 1-9, where 1=light green and 9=dark green. Spring greenup ratings are somewhat similar also using the 1-9 scale, where 1=completely dormant bentgrass and 9=completely green. Uniformity was rated on a scale of 1-9, where 1=completely nonuniform (entire plot shows total variant segregation) and 9=completely uniform (no segregation over entire plot). Finally, density ratings are presented on a scale of 1-9, where 1=open turf of minimal density and 9=maximum density for the turf use.



1997 On-Site Trial at North Shore Country Club

On-site creeping bentgrass and/or bermudagrass trials, sponsored by the United States Golf Association (USGA), the Golf Course Superintendents Association of America (GCSAA), and NTEP were planted in 1997 at 16 U.S. locations. The North Shore Country Club site was planted on a newly-constructed short game practice facility putting green with a 90/10 Dakota reed sedge USGA rootzone. Eighteen commercially available creeping bentgrass cultivars were planted in 5' x 10' plots replicated three times. The plots were maintained at 0.125". They received irrigation and pest controls as necessary. After evaluating these plots from 1998-2002, Voigt and Dinelli (2004) summarized their findings by stating that, "Five cultivars really stood out in this study." The five that performed well were Penn A-1 and Penn A-4, Penn G-1, Penn G-6, and L-93. All of these were fine-textured, extremely dense, and produced outstanding putting surfaces under North Shore management.

After 2002, this green was used to study *Poa annua* invasion and bentgrass segregation (Voigt et al., 2005, Voigt et al., 2006). There were significant differences among the cultivars' ability to restrict *Poa annua* invasion. The top statistical group of bentgrasses had a range of 3.5% to 7.5% *Poa* coverage in 2004-05. This compares to more than 20% *Poa* coverage in the Penncross plots. Differences in bentgrass cultivar density, growth habit (upright types tended to have less *Poa* than more horizontally growing types), and growth flushes may explain the differences in *Poa* coverage. Differences in bentgrass cultivar aggressiveness – allowing more assertive types to fill in holes, ball marks, and other damage before the *Poa* has a chance to become established – may

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explain the differences in *Poa* coverage, as well. Cultivars with the least segregation and the most uniform stand, i.e., Penn A-1 and Penn A-4, had high turf-quality ratings and also had low levels of annual bluegrass invasion.

This research short-game practice green is still intact and being used by North Shore members. In 2010, the quality of the cultivars was evaluated in September and October (Table 1). While there were no significant differences among cultivars in either monthly rating, the 2010 ratings were similar to past ones. Penn A-4 received the highest mean evaluation; Penn A-1 rated near the top of the group; and Penncross received the lowest rating. The high quality ratings are a testament to turf genetics and to North Shore's management.

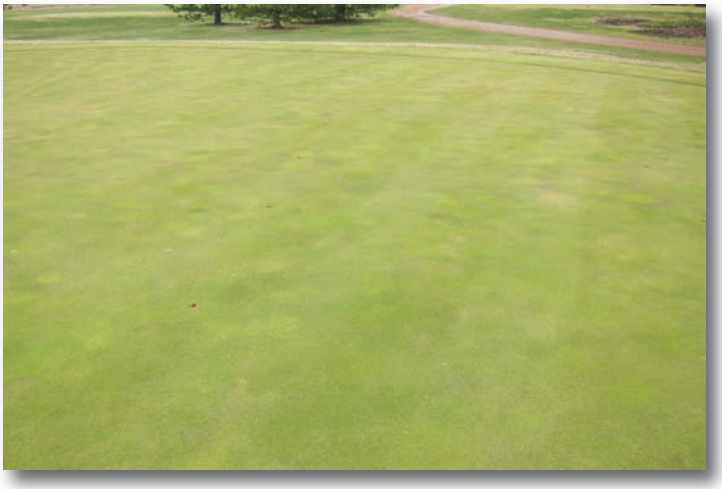

Table 1.
September and October 2010 cultivar quality ratings of 1997 on-site putting green at North Shore Country Club.

Cultivar	September	October	Mean
Penn A-4	8.0	7.7	7.8
Century	7.7	7.7	7.7
Penn G-1	8.0	7.3	7.7
Backspin	6.7	8.3	7.5
Penn A-1	7.3	7.7	7.5
Penn G-6	7.7	7.3	7.5
L-93	7.7	7.0	7.3
Cato	6.7	8.0	7.3
Crenshaw	7.0	7.7	7.3
SR 1020	7.3	7.3	7.3
Imperial	7.0	7.3	7.2
Putter	6.7	7.3	7.0
Grand Prix	6.7	7.3	7.0
Trueline	6.3	7.3	6.8
SR 1119	7.0	6.7	6.8
Viper	6.7	6.3	6.5
Penncross	6.3	6.3	6.3
Providence	5.7	7.0	6.3
LSD 0.05	NS	NS	

This green has been a great test site; it was maintained at .095" with a fixed-head Toro 1000 walking greens mower during 2009 and 2010. Diseases have routinely gone untreated. The challenging growing conditions in 2010, combined with ultra-low mowing heights and minimal inputs applied, generated unique data relative to today's demands. Soil organic matter (OM) data was also collected comparing %OM from each cultivar. Differences were found. To our surprise, cultivars with high shoot density didn't necessarily generate more OM. Rarely are turfgrass test plots in use 14 years after planting and still providing useful and interesting data!

2003 NTEP Putting Green Trial

This trial was planted in September 2003 on native soil (silty clay loam) at the University of Illinois Landscape Horticulture Research Center in Urbana, in 5' x 5' plots replicated 3 times. The cultivars were maintained at 0.125". They received irrigation and pest controls as necessary. There were 26 entries in this trial. The ratings of the 6 velvet bentgrasses are not included in Table 2, due to poor performance (the U. of I. turf program does not recommend planting velvet bentgrass in Illinois). The top statistical quality performers in this trial were Tyee, MacKenzie, 007, Shark, Cobra 2, and Declaration (Table 2). T yee and MacKenzie led this group in quality and summer density ratings, but lacked the darker green color and early spring greenup of other tested grasses (Table 2). Additional information about this trial can be found in the July 2008 issue of *On Course* (Voigt, 2008). Somewhat surprisingly, Penn A-1 did not perform well in this trial, after its high ranking in the 1997 On-Site trial.

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Table 2.
Mean quality performance, genetic color, spring greenup, and summer density (2004 – 2007) of 20 creeping bentgrasses in Urbana in the 2003 NTEP putting green trial.

Cultivar	Spring Greenup	Genetic Color	Summer Density	Quality
Tyee	5.2	6.3	8.3	7.2
MacKenzie	4.9	5.7	8.1	7.1
007	5.6	6.1	7.9	6.8
Shark	4.7	6.1	8.0	6.8
Cobra 2	4.9	6.8	7.2	6.7
Declaration	5.6	6.0	7.9	6.4
Independence	5.1	6.2	7.2	6.2
Kingpin	5.8	6.4	7.3	6.2
Authority	5.0	6.0	7.6	6.1
T-1	6.4	7.9	7.6	6.1
Bengal	5.7	6.1	7.1	6.0
Memorial	5.3	6.2	7.0	6.0
CY-2	3.9	5.7	7.9	5.9
LS-44	5.2	6.6	7.3	5.7
13-M	5.4	6.0	6.4	5.6
Alpha	5.1	6.8	6.9	5.6
Benchmark DSR	5.3	6.3	7.2	5.2
Penn A-1	5.6	6.3	7.1	5.1
Pennlinks II	5.1	6.0	5.1	5.1
Penncross	4.7	5.8	4.3	3.8
LSD 0.05	1.5	0.9	1.2	1

Table 3.
2009-10 spring greenup, color, and turf quality ratings of creeping bentgrasses in 2008 NTEP On-Site Creeping Bentgrass trial at North Shore Country Club.

Cultivar	2009 Genetic Color	2010 Genetic Color	2009-10 Mean Genetic Color	2009 Spring Greenup	2010 Spring Greenup	2009-10 Mean Spring Greenup	2009 Mean Quality	2010 Mean Quality	2009-10 Mean Quality
V8	5.7	6.3	6.0	4.3	5.7	5.0	6.7	7.1	6.9
PST-OJO	4.0	5.7	4.9	5.0	5.3	5.2	6.4	7.2	6.8
LTP-FEC	6.3	7.0	6.7	4.0	6.3	5.2	6.7	6.8	6.8
MVS-AP-101	6.0	6.3	6.2	5.3	6.0	5.7	6.2	7.1	6.7
SRP-1GMC	5.0	6.3	5.7	4.7	5.3	5.0	6.3	7.0	6.7
Declaration	6.3	6.3	6.3	4.3	6.7	5.5	6.2	6.8	6.5
Pin-Up	5.7	6.7	6.2	5.3	5.7	5.5	6.2	6.5	6.4
Authority	5.7	6.7	6.2	4.7	6.0	5.4	6.2	6.3	6.3
A08-TDN2	5.3	6.7	6.0	4.7	5.7	5.2	5.8	6.6	6.2
SRP-1BLTR3	5.0	6.3	5.7	4.3	5.0	4.7	6.0	6.1	6.1
AFM	5.0	6.0	5.5	4.7	6.0	5.4	5.5	6.5	6.0
Penn A-1	6.0	7.0	6.5	4.7	4.7	4.7	6.0	6.0	6.0
Alpha	6.3	7.0	6.7	4.3	6.0	5.2	5.5	6.1	5.8
T-1	7.3	7.3	7.3	4.0	5.7	4.9	5.3	6.2	5.8
L-93	6.7	7.0	6.9	4.7	4.0	4.4	5.1	5.7	5.4
Penn A-2	6.3	7.0	6.7	4.0	4.0	4.0	4.2	5.6	4.9
Penncross	5.7	7.0	6.4	5.7	3.7	4.7	4.6	4.5	4.6
LSD 0.05	1.4	0.9		2.7	1.3		1.1	0.6	

2008 On-Site Trial at North Shore Country Club

In September 2008, the most recent of these trials was planted at North Shore Country Club, again on a newly constructed, short-game, practice putting green with a sand-based rootzone. Due to poor growing conditions and slow bentgrass coverage, the plots were overseeded in April 2009. Nineteen bentgrasses were included in the trial. They were planted in 5' x 5' plots, replicated three times (Table 3). The plots are maintained at 0.125". Five additional high-performing bentgrasses from previous trials were added to the official NTEP test (Table 4) in order to compare their performance with the official entries. Two velvet bentgrasses are in the official trial, but are removed from Table 3 due to extremely poor performance. The trial is scheduled to end following the 2012 growing season.

After two years, most of the top performers are experimental types (Table 3). While it's too early to make recommendations, 007 and Declaration are performing well in the current study, as they did in the 2003 trial. As in the 2003 trial, Penn A-1 has dropped in rank from its previous performance in 1997. As in the past, Penncross ranks lowest in turf quality.

Table 4.
2009-10 mean spring greenup, color, and turf quality of creeping bentgrasses growing with (but not officially included in) 2008 NTEP On-Site Creeping Bentgrass trial at North Shore Country Club.

Cultivar	Spring Greenup	Color	Turf Quality
007	5.3	6.8	6.7
CY-2	4.5	5.7	5.9
Mackenzie	4.8	6.2	6.0
Penn A-4	4.7	7.2	6.2
Tyee	5.3	6.0	6.4

Final Thoughts

Using the results from these trials can guide you in selecting creeping bentgrasses for future plantings. Overall, Penn A-1 and Penn A-4 are still performing well on the 1997 green. Tyee did well in the 2003 trial and continues to perform well in the 2008 trial. This is also the case for Declaration and 007. It appears that the quality of the commercially available creeping bentgrasses continues to improve. New varieties lead in performance as new trials are developed. Thus, the future for creeping bentgrasses looks strong.

That written, we believe that the best research is local and the best way to evaluate new putting green bentgrasses is to grow them on your own site. In that way you can test performance under your management and growing environments. If at all possible, choose several of the top performers and evaluate them on a practice green prior to planting. Select the grass that meets your performance and comfort levels. **-OC**

References

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