

Cantigny Experimental Green Update

Variety Trial

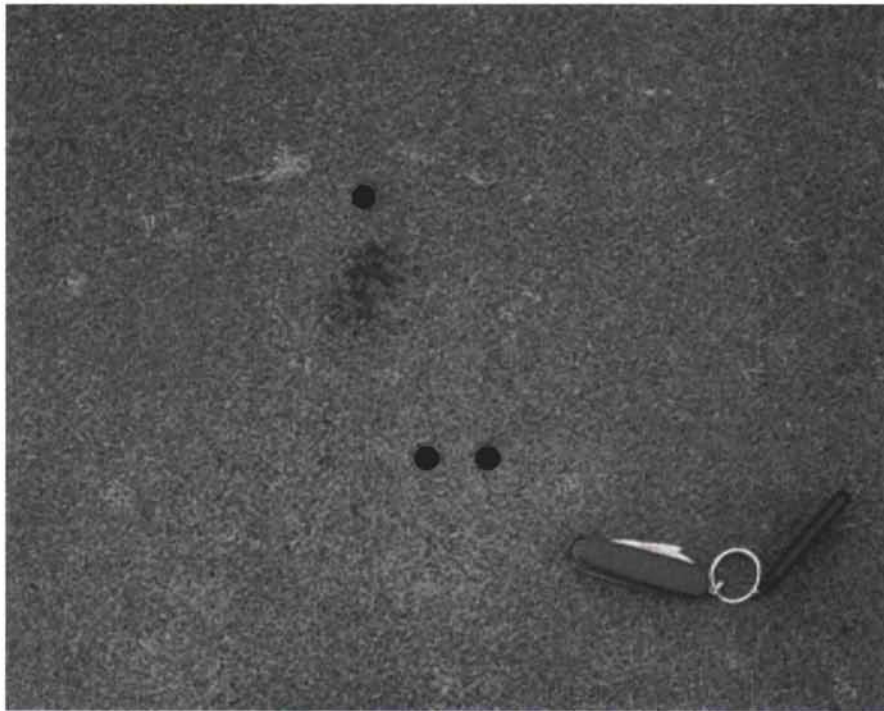
Summary,

Diseases

and Other Notes



A 8,000-square-foot experimental green at Cantigny Golf Club was constructed in 1993-94, with most of the seeding finished by fall of '94. The southeast quarter of the green (2,000 square feet) was set aside for a variety trial. Most of the trial was seeded by mid-September of '94, but several plots were added in June of '95. Since the summer of '95 was extremely hot, the grow-in proceeded slowly and no meaningful data was collected until spring of '96. We now have four full years (1996-99) of spring green-up, turf quality, disease and other data for the selected varieties.



Moss suppression with Dawn Ultra after two weeks. Moss patch below single black paint dot was left untreated; a similar moss-infested area below two dots was treated with a 4 oz./gallon rate of Dawn Ultra soap.

Twenty creeping bentgrass varieties were selected for seeding on our plot at Cantigny; 16 of these also were entered in the 1993 NTEP greens-height bent trial. NTEP (National Turfgrass Evaluation Program) bentgrass trials are typically conducted at university test sites, and may have as many as 25-30 bentgrass varieties and experimental lines.

The closest NTEP sites to Chicago are Urbana-Champaign (U of I), and Madison, WI (UW). Since the Chicago environment can be quite different from that in these cities, we wanted to have an NTEP-type variety trial in the Chicago suburbs—especially a trial on a sand-based rootzone under high maintenance. It is noteworthy that NTEP now has two new bentgrass (green-height) variety trials out: the 1998 NTEP trial (29 entries with 15 new experimental creepers) and the 1997 “on-site” trial at North Shore C.C. (18 entries—mostly named varieties), which is cosponsored by the USGA and GCSAA.

Every attempt was made to maintain the experimental green to the same quality (cutting height, topdressing, fertility) as the other 29 greens on the Cantigny course. Typical cutting heights were between 0.125”-0.140” for most of the study (we fought a scalping problem), and the average annual fertility was around 4-5 pounds of N per 1,000 square feet. I believe this N rate was a little low for a sand rootzone green, but it made for some excellent dollar spot symptoms.

Typical green speeds for the variety trial were 8.5-9 feet. A major ingredient we were lacking (which weakens the significance of the results somewhat) was TRAF-FIC. No one walked on the green, except for a few golfers trying to retrieve the occasional wayward tee shot, which left an occasional ballmark, and believe it or not, an occasional divot!

This is (more or less) a “wrap-up” article on the Cantigny test plots, although we may con-

tinue to maintain the plots and collect more data. As the CDGA moves forward with the Midwest Golf House project and probable move to Lemont, we hope to establish new test plots at Cog Hill in conjunction with the University of Illinois turf science program.

Spring Color and Quality Ratings

One concern about introducing new bentgrass varieties into northern Illinois is their winter hardiness and spring green-up rates. This is of special concern for certain new varieties that were developed in the south and screened for heat stress and drought tolerance. We need to know if these varieties have less winter hardiness or are slow to green up in spring, because of their selection criteria. Varieties included in the Cantigny trial that were specifically selected to be heat-tolerant in the south are Cato, Century, Crenshaw, SR 1020 and Imperial. Also, the Penn A and G series grasses had progenitors that

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originated in the south (Georgia), so these plants were under high-temperature selection pressure, but not much low-temperature selection pressure.

Table 1 below is a summary of the April spring quality ratings for the Cantigny variety trial from 1996-99. For most varieties, these averaged results are representative of what happened each year. A few

1020. Crenshaw displays a noticeable purpling and thinning after the first hard frost in autumn. Most of the newer varieties had much better spring color in this test than the old standby Penncross. This variety was not included in the replicated trial proper, but 4,000 square feet of the Cantigny green was seeded to Penncross, and the spring color differences were obvious.

ness), disease and insect resistance, traffic tolerance, rapid recovery from injury and competitiveness against *Poa annua*.

The overall average of ratings made during May to September for the last four years of the study are presented in Table 2. To this table I have added the final nationwide ranks for varieties included in the 1993 NTEP trial. My favorite grasses in this study were Penn A2, G2, and Loft's L-93, which rated #1, #2 and #4 in my overall rankings. These grasses get consistent high marks for density, growth habit, color and disease resistance. Penn A4 and G6 are comparable to the other Penn A/G series, but A4 seemed a little disease-prone, while G6 had a funny light green color at certain times. Century, Imperial and Crenshaw also have a dense, upright growth habit, but are very susceptible to dollar spot. My over-

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Table 1.
Spring color and density ratings of creeping bentgrass varieties averaged over collection dates of 4/19/1996, 4/18/97, 4/17/98 and 4/30/99.

RANK	VARIETY	RATING*
1.	Penn G2	6.83
2.	Penn G6	6.67
3.	Loft's L-93	6.54
4.	Penn A2	6.50
5.	Century	6.33
5.	Imperial	6.33
7.	Penn A4	6.29
7.	Providence	6.29
9.	Southshore	6.25
10.	Cato	6.21
11.	Pennlinks	6.17
12.	ProCup	6.13
12.	Crenshaw	6.13
14.	Regent	6.08
15.	Viper	6.05
16.	SR 1020	6.04
16.	Cobra	6.04
18.	Putter	5.96
19.	Lopez	5.71
20.	18th Green	5.63

*Color and quality ratings were made on a 1-9 scale, 9 = best color.

cases existed, however, where a variety performed poorly one out of the four years, thus bringing down the overall rating. It is interesting to note that the Penn As and Gs, Century and Imperial all had very good spring color and quality, despite their southern origin.

The poorest spring performers among the more heat-tolerant varieties were Crenshaw and SR

Summer Ratings

Perhaps of more immediate interest are the turf quality ratings taken during the prime golf months of May through September. How did I rate quality of creeping bentgrass for putting greens? The main factors I looked for are dark green color, fine leaf texture and an upright growth habit that promotes higher shoot densities. Other traits that can often be included in a general rating are tolerance to low cutting heights (no scalping, puffi-

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all quality ratings for 1996-99 compare favorably with the final national rankings of the 1993 NTEP "Bentgrass for Putting Greens" trial. I believe this confirms the value of the NTEP trials to give good, general information over a wide range of environments—either that, or the Chicago environment is pretty close to the national average environment for testing bentgrasses . . . think about it! Unfortunately, my favorite bent (Penn A2) was not included in the '93 NTEP trial, or in the 1997 "on-site" test green at North Shore C.C. and other clubs around the country. However, Penn A1 and G1 are included, and are probably similar to A2—and worth a look.

Disease Observations

As noted previously, several of the newer creeping bentgrass varieties are very susceptible to dollar spot, especially in our conducive environment. Most of these varieties were selected for heat tolerance and are intended for use in warmer climates (e.g., the Carolinas through Georgia, and over into Texas). The most susceptible varieties were 18th Green, Crenshaw, Century, Imperial and SR 1020. Seed Research

released SR 1020 in the latter half of the 1980s, and it was the first creeping bent developed specifically to be heat-tolerant. Several of the newer heat-tolerant bents share some of the genetic background of SR 1020, and presumably also share the same genetic weakness when it comes to dollar spot infections.

Of the 20 varieties in the Cantigny trial, five or six appear to have some resistance to dollar spot. These varieties include Putter, Providence, L-93, Viper, A2 and (believe it or not) Pennlinks. All of these varieties were invaded by dollar spot fungi, but looked pretty resistant when compared to the more susceptible varieties. One heat-tolerant variety exists that gets little dollar spot, and that is Cato.

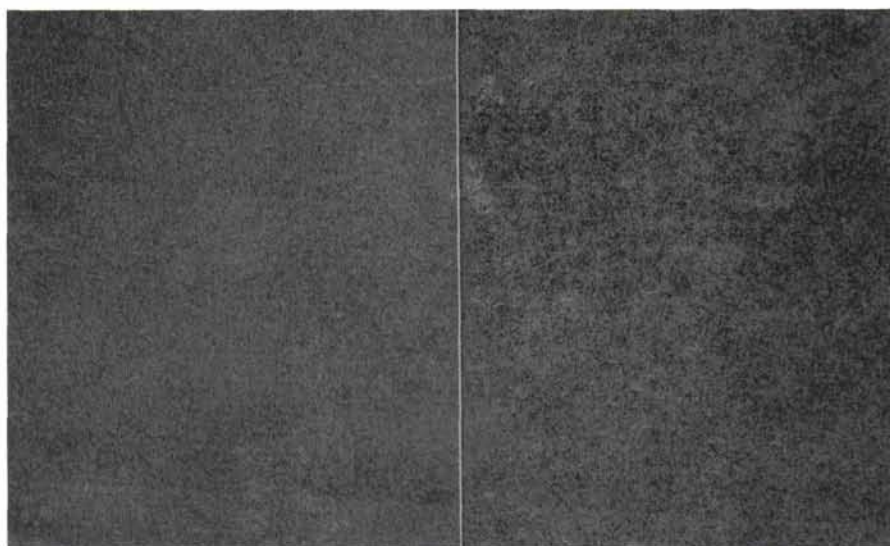
The Cantigny plots were also periodically invaded by *Rhizoctonia* brown patch, although this disease rarely caused significant injury or long-lasting symptoms. I did notice that some of the more heat-tolerant varieties also appeared to have some brown-patch resistance. Century, Crenshaw and 18th Green were rarely tarnished by brown patch,

RK	VARIETY	RATING*	NTEP RANKS**
1.	Penn A2	7.74	NE
2.	Penn G2	7.62	5
3.	Penn G6	7.57	7
4.	Loft's L-93	7.56	1
5.	Penn A4	7.28	2
6.	Century	7.26	9
7.	Imperial	7.11	10
8.	Providence	7.05	4
9.	Crenshaw	6.91	11
10.	Southshore	6.90	8
11.	Cato	6.87	6
12.	SR 1020	6.79	12
13.	Pennlinks	6.77	14
14.	Regent	6.72	18
15.	ProCup	6.71	20
16.	18th Green	6.69	23
17.	Cobra	6.67	NE
18.	Putter	6.58	NE
19.	Viper	6.51	NE
20.	Lopez	6.46	22

* Color and quality ratings were made on a 1-9 scale, 9 = best texture, density.
** Final ranking of included varieties in the 1993 NTEP Trial (out of 28 entries); NE = not entered in trial.

and L-93 and Providence could be included in this group as well. Varieties that were hit pretty hard by brown patch included Regent, Cobra, Southshore, Pennlinks, Putter, and Penns A4, G2 and G6.

Over the last few years, I have seen increasing incidence of summer leaf spot of creeping bent caused by *Bipolaris sorokiniana*. Originally, I saw this disease only on Penneagle greens, but have now found it on Pennlinks and Penn A4, as well as segregating clones on older mixed bent/*Poa* greens. The A4 plots at Cantigny were hit pretty hard by this leaf spot during the heat stress crisis of July '99.



Effects of fungicides on algae infestation on a green: Left of string was treated with Daconil Ultrex on a 14-day schedule (no algae); right of string was treated with a DMI-type fungicide on the same schedule (increased algae).

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Other Notable Observations

Speaking of heat stress, the difficult weather we experienced in late June through early August of last year definitely took a toll on many of the bents in this trial. By the end of August, much of the damage was still evident, despite an improvement in the weather. On August 31, I took notes on the amount of injury that remained,

In general, I have noticed that if you expose the new Penn varieties to excessive heat or drought stress (especially if the grasses go into a wilt condition), the damage can be severe and permanent. That is "permanent" as in "dead," as opposed to "temporary" as in "dormant" (with some hope of recovery). Do not let those new grasses wilt!!!

tank mix. A mixture I have tried with some success is ProStar (flutolanil) plus the wetting agent Primer. I suspect that suppression of chronic fairy rings will have to be undertaken fairly early in the season, before the fungus is well established and a hydrophobic layer develops in the thatch.

Moss and algae are also recurring problems on the Cantigny experimental green. Moss can be controlled in some cases by using Dawn Ultra dish washing detergent, mixed at 4 ounces soap/gallon of water, and applied by hand directly to the moss. It may take several days or weeks to completely eliminate the moss, and retreatment may be necessary. Also, the dish detergent can cause a tip burn on bentgrass leaves, so care must be taken during application.

Algae have been much
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Another disease that is becoming troublesome in the Upper Midwest (and especially troublesome at the Cantigny research green) is fairy ring. Fairy rings are caused by a number of fungi, including "puff ball" mushrooms in the genus *Lycoperdon*. Many puff ball-type fairy rings also appear to cause localized dry spots (LDS). I have heard of some success in controlling these types of fairy rings and LDS when fungicides were used with one of the new soil-wetting agents in a

Table 3

Recovery from summer heat stress as measured on August 31, 1999

Rank	Variety	HSRR*
1.	Lopez	1.0
1.	Putter	1.0
3.	Crenshaw	1.3
3.	18th Green	1.3
3.	Loft's L-93	1.3
3.	Viper	1.3
3.	Penn G2	1.3
3.	Cobra	1.3
3.	Pennlinks	1.3
10.	Providence	1.7
10.	SR 1020	1.7
10.	Cato	1.7
10.	Century	1.7
10.	Imperial	1.7
10.	ProCup	1.7
16.	Regent	2.0
16.	Southshore	2.0
16.	Penn A2	2.0
19.	Penn G6	2.3
20.	Penn A4	3.0

*HSRR = heat stress recovery rating, based on a 1-5 scale where 1= complete recovery (no symptoms), and 5=no recovery (severe symptoms remain).


and developed a "recovery from heat stress" rating, which appears in Table 3. Most of the varieties that were developed to be heat-stress-tolerant came through last summer in good shape, and rank high for recovery. Putter, Lopez and L-93 also showed little lasting damage from the heat. Of the Penn varieties, only G2 appeared to have some level of heat tolerance or recoverability.

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harder to control at Cantigny. A dollar spot fungicide trial that was conducted on the Pennlinks portion of the green in 1999 showed how certain fungicides could increase or decrease algae infestations. The plot was part of the annual fungicide tests conducted by Dr. Hank Wilkinson from the U of I, and his able assistant Shelby Henning. In short, it was apparent that frequent treatment with DMI fungicides can gradually increase the amount of algae on treated turf, while applications of chlorothalonil containing fungicides (e.g., Daconil Ultrex) can suppress algae significantly. In

this study, application of 3.8 ounces/1,000 square feet of Daconil Ultrex 82.5 DF and 3.5 ounces/1,000 of Echo 90 DF on a 14-day schedule significantly reduced algae (and dollar spot).

To conclude, here is a note on L-93. Although I stated that Penn A2 is my favorite variety in this trial, when pressed I have to admit that L-93 is probably the best all-around variety. L-93 is not quite as fine-leaved and dense as the Penn series, but has superior resistance to dollar spot, good resistance to brown patch, no evidence of other major disease

problems, has excellent heat tolerance and a nice dark green color to boot. That is probably why L-93 was the #1 ranked variety in the 1993 NTEP trial that concluded in 1997 (data published 1998).

Acknowledgements

I would like to thank the MAGCS, Cantigny Golf and the CDGA Foundation for their several years of support for this work, including financial aid to provide for summer internships and scholarships to deserving students.



On Course With the President (continued from page 4)

We had a great deal of discussion concerning the day-to-day operations of local affiliate chapters. The topics included education, volunteerism, participation and our executive secretary, to name a few. I must confess that I felt like the cat that ate the canary. We, as the MAGCS, are most definitely leaders in the industry. I was very proud of the fact that our foundation is strong. We are a positive example in many areas, a role model to be followed. To this end, I commend the Board of Directors, past and present.

An interesting statistic I learned is that only 60 percent of the nation's golf courses employ a superintendent who is a member of the GCSAA. We actually stand in better numbers than the PGA, but we have a lot of work ahead of us. A GCSAA program to identify the most influential golfers and employers is underway. Reaching these individuals will enable them to spread the message of our visions. This program will most likely come out in survey form. Other GCSAA statistics for your information are as follows. They have 115 full-time employees serving 20,000 members. Staff is

working with a budget of \$20 million and 101 affiliate local chapters.

Discussion of the Professional Development Initiative was lively and interesting. As we stated at Arrowhead Golf Club in January, I believe everyone needs to understand the plan individually and we will address the final version of the program before Dallas in 2001. The First Tee program was outlined as well. This involves the supply of new and used equipment and consultation on a local level. As an Association, we have taken a secondary role in the program to date. Although GCSAA is involved in all the discussions, we are not a major monetary contributor.

Currently, four strategic objectives are ongoing and are deemed the priority goals. First is the goal of enhancing our image in the industry by using the media. The thought here is this will ultimately encourage career development and compensation. Second is the environmental movement. We hope to communicate golf's positive impact on the environment and establish a reserve of goodwill for any future backlash on the industry. Third goal is to serve the members

through their chapters, strengthening the ties between GCSAA and the local chapters by using the magazine, educational opportunities and television shows. Again, this involves reaching out to influential golfers and educating them on our worth. Finally, the fourth goal involves the issue of career opportunities. At present, the average superintendent spends seven years at a particular golf course. The GCSAA is looking to discover the reasons for this tenure and identify the needs of the superintendent, while putting programs in place to help the superintendent expand his/her career opportunities if so desired.

This is a good overview of topics and conversations Luke and I pursued at headquarters. Many more issues were communicated, so please feel free to call Luke or me for further insights on this strategy meeting. I would encourage all of you to get involved on GCSAA committees or visit the GCSAA headquarters on your own to experience the magnitude of our national association. Enjoy the beginning of a new season—God bless.

