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ABOUT THE COVER

Our talented portrait artist Jennifer Samerdyke gives us a wonderful cover of a long time friend, Wayne Otto. Read about the Wee One Foundation, named in his honor, and how you can become a part of it.

...if February were not the precursor of spring, it would be the least pleasant season of the year, November not excepted. The thaws then take place; and a clammy mixture of moisture and cold succeeds which is the most disagreeable of the wintry sensations.

Leigh Hunt
"Months"

THE GRASS ROOTS

THE GRASS ROOTS is a bi-monthly publication of the Wisconsin Golf Course Superintendents Association, printed in Waunakee, Wisconsin by Kramer Printing. No part of THE GRASS ROOTS may be reprinted without expressed written permission by the editor.

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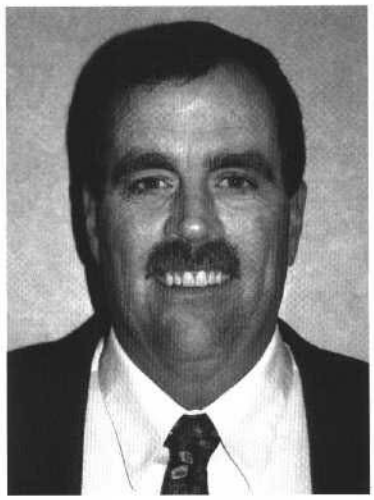
2006-2007 WGCSA OFFICERS AND DIRECTORS

Time Does Fly!!!

By Mike Lyons, *Golf Course Superintendent, Old Hickory Country Club*



As I sit down to write my first President's Message, I must begin by thanking the membership for giving me this opportunity. I can't believe it has been eight years since Mark Kienert and Mike Semler asked if I would like to serve on the board of directors. Boy, the saying is true; time does fly. I am truly honored for this opportunity.

I would also like to thank past president, Marc Davison, for his contributions and commitment to our association. It will not be easy to fill his shoes and the past men who have served as president of our association. A big thank you goes to David Brandenburg, who has just finished serving as past president. I believe David has served our association for twelve years and will continue by again volunteering his time and energy to the *Grass Roots* as business manager. He is also taking on the task of distributing the 75th anniversary book. Thanks go to Pat Sisk for serving on the board these past few years, and to the current board of directors — thank you for your continued support and the contributions each of you make to our association. Chad Harrington and Mike Werth have earned my gratitude for volunteering to serve on the board of directors. Finally, thanks to David Oberle for taking on the vendor position on the board.

This year's Symposium was one of the best I have attended. I have not attended all forty like Ray Knapp, but this one was very good. A big thank you to all the committee members and especially to Milorganite for putting on this great educational opportunity.

At this year's fall meeting, a dues increase was voted on and passed. The increase will be ten dollars and will help off set some of the cost for the 75th anniversary book. I hope by this time everyone has received their copy. Gene Haas wrote a terrific book. If you wish to purchase a copy, please contact any of the board members and we will gladly send you a copy. The cost is twenty-five dollars, which includes postage.

The WTA EXPO has past and I hope many of you attended and supported the WTA. The WTA has stepped up once again and has committed the salary for one year to the position in the Soils Department, which became open when Dr. Kussow retired last year. Without the WTA's support, the position most likely was not going to be filled for two years. With the WTA stepping up it shows the University of Wisconsin - Madison how vital this position is to all of us.

Once again the GCSAA Seminar (Preparing Your Course For A Tournament) was held in conjunction with the EXPO. Many of you know that PDI is underway this year and you will have to attain a certain amount of education and service point to keep your A or CGCS status. You can get most of these points by attending the EXPO and Symposium. There are various other ways to receive points: attend monthly meetings, writing articles, coaching, serving on the board, etc. All it will take is a little time and commitment. The GCSAA is more than willing to help you in any way possible. Take a little time and think of ways you may be able to attend more monthly meetings, the Symposium, the EXPO and all the other opportunities your association has to offer.

With that said, I would also like to ask if you have any thoughts or ideas on what the board could do for you or your facility. If so, please contact one of us and let us know. We are always looking for new ideas be it education, holding a monthly meeting or what ever else we could do for you or the association.

Well that's about it for my first message. I hope my next one isn't about the possibility of winter kill or what else the evil's of winter may bring. Take care.

A Short History of Creeping Bentgrass

By Dr. John Stier, *Department of Horticulture, University of Wisconsin-Madison*

Mankind has long had an intimate association with grasses for survival and pleasure (Casler and Duncan, 2003). Over 500 years ago, at a time when the majority of people on the planet struggled daily for food and warmth, some Europeans took pleasure in hitting a small ball presumably into animal holes in the ground. These areas were naturally cropped by animals, both domestic and wild, causing the grasses to adapt to frequent defoliation and traffic. By the late 19th century, the simple game of golf had been developed as we know it, relying on regular-managed turf and skilled greenkeepers.

In the United Kingdom some of the grasses used for golf were bentgrasses though they were usually found in mixtures with fine fescues and sometimes ryegrass. A little over 100 years ago South German (Mixed) Bentgrass was introduced to the U.S for turf. Seed from pastures was harvested from what was then known as Austro-Hungary and later from other parts of Europe (Warnke, 2003). The seed, containing a mixture of creeping, colonial, velvet, and redtop bentgrasses was planted on U.S. golf courses and home lawns. Selections from some of the nicer-appearing patches were collected and maintained by the United States Golf Association Green Section at the Arlington Turf Gardens during the early 1900s (Duich, 1985). Some of the best turf patches were composed of creeping bentgrass (*Agrostis palustris* Huds.; possibly also *Agrostis stolonifera* L.) while others were velvet bentgrass (*Agrostis canina* L.). Since none of the creeping bentgrasses pro-

duced a consistently reliable seed source, cuttings of stolons (clones) were used to propagate the most desirable of the selections. These clones contained the exact same DNA as the "parents", including both desirable and undesirable characteristics. Continued propagation of the creeping bentgrasses resulted in what we now refer to as the "C-series" of "vegetative bentgrasses". Stolons were harvested from the turf using a type of vertical mower then collecting the stolons. Superintendents who wished to establish the vegetative varieties would purchase the stolons immediately after harvest then spread them on the ground, either covering them with sand or soil (stolonizing) or pocking them into the ground (sprigging). These practices are still used today in the southern U.S. for establishing vegetatively-propagated grasses such as hybrid bermudagrass. The vegetative bents became widely used on golf courses during the early half of the 20th century. The most popular variety was 'Toronto', sometimes called 'C-15'. Other varieties included Washington (C-50), Cohansey (C-7), Arlington (C-1), Congressional (C-19), Old Orchard (C-52), and Metropolitan (McCarty, 2001; Warnke, 2003). Although the release of 'Penncross' and other seeded varieties diminished the reliance on the C-series, they continued to be used until the early 1980s when they were discovered to be susceptible to bacterial wilt caused by *Xanthomonas campestris* (Roberts et al., 1983). Bacterial wilt appeared about the same time that sand topdressing began to be commonly employed: it is thought the abrasions from sand wounded bentgrass plants, allowing the bacterium (which had always been around) access to the turf (McCarty, 2001).

In 1954 Penncross became the first widely used seeded type of creeping bentgrass. Seeded varieties such as 'Seaside', 'Coos Bay', and 'Cocoos' bents were actually available prior to the 1950s (Hitchcock, 1951), but lacked the desirable characteristics of the vegetative bents and Penncross. Interestingly, Hitchcock (1951) listed these early seeded varieties as belonging to *Agrostis palustris* Huds., the same designation he applied to the vegetative bents. *A. stolonifera* was recognized as a different species and native to the U.S. Today the terms *A. stolonifera* and *A. palustris* are used interchangeably. Developed by Dr. Musser of Pennsylvania State University, Penncross remains unique among the bentgrasses because seed is developed by cross-pollination of three varieties. To produce Penncross seed, fields are planted with alternating rows of 'Pennlu', 9(38)5, and 11(38)4 (McCarty, 2001). Individual seeds of Penncross vary in the amount of DNA from each of the 3 parents resulting in good overall turf vigor but creating a tendency for turf to develop a patchy appearance over time known as "segregation". Segregation is especially prominent in older greens as individual plants develop into larger patches or distinguish themselves by differences in leaf texture, color, or other characteristics.

Occasionally segregating patches of turf yield substantial benefits. The A and G series of creeping bentgrass ('A-1', 'A-4', 'G-1', 'G-2', 'G-4', 'G-6') were developed from plants plucked from putting greens at Augusta National Golf Club in Georgia. The progenitors of the A and G series had a collection of genes that made for superior-quality turf compared to their brethren. These genes provided for the fine leaf texture, incredibly high density, and tolerance to short mowing height that have made the A and G series almost legendary.

While Penncross continues to be synonymous with creeping bentgrass for much of the interna-

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tional golf world, U.S. turf managers have long realized its imperfections. Compared to other varieties, Penncross has a relatively shallow root system, a tendency to develop grain, and is prone to segregates into patches (McCarty, 2001). As with most bentgrass varieties, it lacks sufficient dollar spot resistance to obviate the need for fungicides, though it continues to have better resistance than some newer varieties.

As the U.S. economy began to boom following WWII, golf course development followed suit. Between 1950 and 1970 the number of golf courses nearly doubled from approximately 5,000 to 10,000, and has since nearly doubled again to approximately 17,000 (Beard, 2002). The U.S. turf seed market became the second largest in the country following only corn (maize). A growing realization that a single grass variety did not have suitable genes for all situations became evident. Long dominated by Pure Seed Testing, Inc., other companies and universities began breeding creeping bentgrass cultivars, often for specific niches. In the mid-1990's 'Crenshaw' was released by Texas A & M specifically for the high temperatures of the American Southeast (Engelke et al., 1995; McCarty, 2001). Crenshaw has since acquired an unfavorable reputation as being especially prone to dollar spot but this is because it was planted outside the region for which it was adapted. Other varieties such as Seaside and 'Mariner' (developed from a Seaside selection) were developed for improved salt tolerance. Salt tolerance will become more important in many parts of the country as increasing numbers of golf courses are forced to rely on effluent irrigation due to increasing demand for potable water to support a growing human population.

Today there are dozens of creeping bentgrass varieties on the market. The latest NTEP putting green test has 26 varieties including some velvet bentgrasses; the fairway NTEP has 25 varieties including some colonial bentgrasses. Some varieties such as 'L-93' are marketed for and often preferred for putting greens. Others are marketed for fairway use-these may have less tolerance to close mowing heights but better traffic tolerance than other varieties. In some cases it is difficult to distinguish useful differences on which to base selection for planting.

Dr. Geunhwa Jung and others

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have developed various types of molecular markers used to fingerprint, or identify, bentgrass species as well as individual varieties (Caceres et al., 2000; Scheef et al., 2003). The ability to identify species and especially varieties within an existing turf stand allows us to determine the competitiveness of different bentgrasses when they are blended, something that was impossible to do just five years ago. The information can also be useful to determine the degree of genetic difference among varieties. Warnke et al. (1998) published the first data documenting the genetic distance among 19 creeping bentgrasses. Warnke's work showed two distinct groups of creeping bentgrass based on differences enzyme forms of phosphoglucomutase. Warnke later noted that the ability to develop resistance for certain bentgrass diseases such as dollar spot would depend on the exhaustive, time- and money-consuming processes of developing genetic linkage maps for resistance genes (Warnke, 2003). For the past several years Dr. Jung and his students have been doing just that, with the first data now starting to be published (Chakraborty et al., 2005). Breeders will soon be able to use the genetic information developed at the University of Wisconsin-Madison to incorporate known dollar spot resistance genes into new or existing creeping bentgrass cultivars.

Tremendous advances have been made in the quality and availability of creeping bentgrasses for golf courses in the past 50 years. Breeders and seed dealers can now offer high quality varieties with fairly consistent performance for various regions of the country. A growing awareness exists that best turf performance may depend on choosing a variety specifically suited to a certain region. To that end, the NTEP test results are becoming increasingly important as end-users base varietal selections on local data. The University of Wisconsin-Madison results can be located either in our annual Wisconsin Turf Reports or at www.ntep.org.

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