



# WHAT FUTURE FOR TURFGRASS DISEASE RESEARCH?

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If I were a young scientist given a chance to work on turf diseases and their control in Wisconsin over the next quarter of a century, I could get very excited over the opportunity!

There are lots of reasons. One is that the era of descriptive pathology still exists with turf. That is, there remains a number of serious and poorly understood diseases that are waiting to be properly described and their causes identified. That's detective stuff, or the "who done it" syndrome that has some appeal to a plant pathologist. (I can understand why similar excitement is not shared by golf course superintendents!)

Another is the extremely dynamic nature of the turf industry. Management and expectations are changing daily. And since disease development and importance is directly related to what and how we grow, it says that the person will not lack for new questions to answer and new challenges to pursue.

Of critical importance is the integrity and support of the industry. Without adequate funding for technicians, students, field and laboratory facilities, the questions and concerns that are encountered, no matter how important, cannot be pursued. The Wisconsin turf industry is demonstrating real maturity and dedication to its profession. The O.J. Noer Research and Education Facility is the dramatic capstone, but of at least equal importance is the overall professional growth and caliber of people who make up the industry today. In addition to the state support, there should be some help through Foundations and the Graduate School to share the load and the benefits of good research.

The ecological and sustainable agricultural movement we are into will provide some serious constraints. Treatments and chemicals we formerly took for granted will probably never be accorded that simplistic approach again. But problems beget opportunities. The very questions concerning fate of

chemicals and their metabolites, biological fallout, dislodgeable residues and the like, seek answers as well as alternatives to present practices. I don't foresee an end to fungicides as a primary control tool for intensively managed turf in any near time, but the legislative and environmental patterns of Vermont and elsewhere will spread.

The turf crop may be the best of any future example for application of biological control principles! Virtually all new turf pathologists are active in their pursuit of this elusive goal. Nelson and Craft at Cornell recently reported on a strain of the bacterium *Enterobacter* that suppresses dollar spot. Antagonists to suppress *Pythium*, take-all patch, *Typhula* snow mold and *Rhizoctonia* have also been reported. Not that these biologicals are anywhere near adequately effective, nor available. There's also the economic factor of making them available, as well as knowing how to apply them. Certainly we've got a long way to go in effectively understanding the epidemiology (precise weather, management, host physiology and ecological requirements) in which to make these new tools work. And how they can be made to interact with appropriate fungicide treatments so that they are complementary, and not competitive, is another question. But we are well beyond the starting point.

Add to that the perennial characteristic of turf. Long lasting relationships of fungi and other microbes with the roots and crowns of grass plants has become recognized as a normal thing. Disease-wise, we can picture fairy rings and patch diseases as negative examples of that pattern. That is, the pathogens involved develop a continuous and close affinity to the affected plants. But beneficial patterns, including those capable of combating damaging root and crown diseases, should be possible to create, and in fact offer considerably greater promise to control these diseases than I believe we can expect with chemical fungicides.

Sophisticated plant breeding, both by traditional, and certainly by recombinant DNA systems, will become more important, I suspect. I doubt that turf will be one of the plants selected by the basic scientists as an early model for developing genetic engineering methodology, but it will have its turn, once suitable techniques have been created and demonstrated. I've been "from Missouri" on this one for quite a while (they need to show me). But so much is happening, and so much fundamental research is ongoing in this area that I think good progress is bound to happen—by accident if not by design. It's just a matter of time! And disease response—good (disease resistance) and bad (emergence of new pathogens)—will be a significant factor in the gene manipulation scenario.

Related processes are rapidly making their way as well into development of more sophisticated diagnostic tools. Ohio State University recently employed Dr. Sally Miller as their turfgrass pathologist. Her background is with AgriDiagnostics, the firm that has created the field kits for *Pythium*, *Rhizoctonia*, Dollar spot and other diseases on other crops. I haven't talked with her or her colleagues, but I suspect very strongly they will be expecting her to provide strong leadership in developing diagnostic tools that will make field diagnosis of most turf diseases not only possible but commonplace. Recent discoveries are likely to surpass and expand upon these kits in the future.

You may have guessed that I have been fantasizing about the future and the prospects for the person who will assume leadership in turf pathology in Wisconsin.

The department has been searching diligently for that replacement during the last few weeks. There are good young scientists waiting their opportunity! The chosen one will have to pick and choose from among the many challenges that will await her or him. And it will not be easy, for the person

will have to assume responsibilities with trees and ornamentals, as well as turf, and will have both research and extension responsibilities. However, on both the local (CALS) and national basis, there's an increasing cadre of collegial scientists with which to work, both within plant pathology and in re-

lated disciplines. One should not expect to work alone. And together, in a constructive collaborative setting, much more can occur, and with a lot more fun.

But what that person will come to enjoy and appreciate the most over time is the opportunity to work side by side

with that foremost of dedicated, supportive, loyal—and patient—group of individuals who make up the Wisconsin Golf Course Superintendents and other turf professionals in Wisconsin. If that person is at all perceptive, the chosen one will come to know that's what the work is really about!

## Great Golf, Weather and Hospitality Highlight May Meeting

By Tom Schwab

You couldn't dream up a nicer day than the one that greeted the 35 golfers at our May 20th Wisconsin Golf Course Superintendents Association meeting at Drugan's Castle Mound Golf Course in Holmen. The day was 80° with a slight breeze. Superintendent Mike Drugan had the course in superb shape. Castle Mound is set back in the coulees and bluffs of the Mississippi River. It would be hard to find a more natural place to build a golf course. Mike also had some greens, tees and sand traps under construction which added to the educational experience of the day.

The evening educational session was presented by Dr. Don Taylor of the U.W.-River Falls Soil Science Department. His talk was on green construction as related to soil moisture. He mentioned how greens are very different from other agricultural soils because of all the compaction they receive and because of the layers we purposely build into them. Dr. Taylor has done extensive research on four different layering or soil moisture management concepts. The most famous of these is the United States Golf Association perched watertable con-

cept. All four were made up of 12 inches of root zone mix on top and plastic tiling on bottom. The differences were in the middle layers. The first concept was rootzone over native subsoil; the second was over gravel rather than subsoil, third was over course sand over gravel over subsoil (this is USGA), and fourth was over course sand over subsoil. Three of them work as perched watertables because of the larger pore space underneath. The rootzone just over subsoil does not perch water.

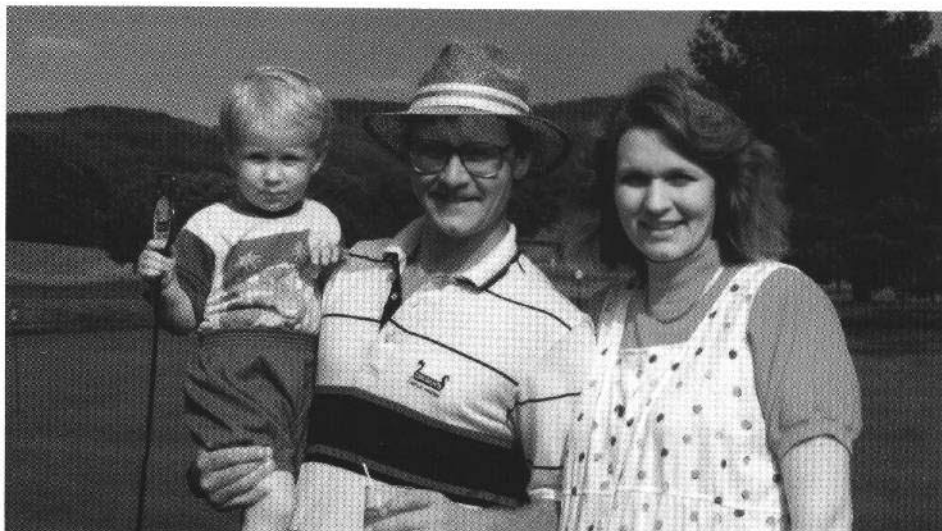
Based on his laboratory research, Don had a preference for one of the four concepts. It varied from the accepted USGA style. He liked the root mix just over course sand with it's drain tile in the sand. His research showed this to perch water but not enough water to hurt root growth. The USGA method perches so much water in the bottom of the rootzone mix that roots would not grow into it, according to his research.

Dr. Taylor had two warnings, though. One is his concept is based on lab research, rather than field research. Secondly, if a green failed, it's easier to blame the USGA than to explain why you changed the accepted construc-

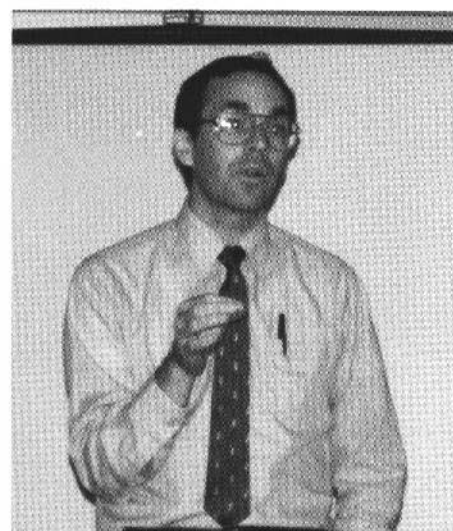
tion technique. Two thoughts are: 1. There are an awful lot of successful USGA greens out there, and, 2. with this black layer problem possibly being caused by excessive moisture, could perching too much water be a problem? Definitely more research has to be done.

The day ended with presentation of the golf prizes. The game was a yellow ball tournament. In this game one yellow ball alternates among each member of the foursome. The winner is the foursome with the lowest total using only the yellow ball scores from each hole. First place went to Wayne Horman, Pat Norton, Dave Smith and Andy Kronwall. Second place went to Bruce Worzella, Rod Johnson, Steve Schmidt and Greg Kallenberg. The flag prizes for long putt on #18 and closet pin on #4 both went to Joe Bahr. Norton and Bahr taking prizes demonstrates local knowledge won over skill at Castle Mound!

The Drugans hosted a perfect meeting. Mike and his wife Mary, the clubhouse manager, put a lot of hard work into making the day so enjoyable. We really appreciate that and their hospitality.



Keegan, Mike and Mary Drugan.



Dr. Don Taylor