



# Pay it Forward

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

Tough economic times are causing companies and institutions throughout the world to scrutinize their expenses and review the cost: benefit ratio of activities. The world of turf research is no different. It is important to make good investments. When finances are low, or likely to become so, a first reaction is often to quit all spending that is not necessary for strict survival. In the long run, though, disinvesting in the future is a bad strategy. Life and history are full of such anecdotes, ranging from an individual foregoing auto maintenance and eventually losing the auto, to businesses, which quit investing in research & development only to see competitors put them out of business a few years later. We're seeing that with the American automobile industry—they've known since the early 1970's that the growing scarcity of oil would require more fuel efficient cars, but have neglected until now to really focus on the research and development. It may be too late—Ford lost \$8 billion last quarter; the media predicts that one of the Big 3 will go under by Christmas. Why? The lack of will and foresight to do the necessary research and development up-front. The Big 3 have focused on engine power to satisfy traditional consumer desires rather than fuel economy. Meanwhile, Honda, Toyota, and other companies with a history of fuel economy will survive if not thrive due to a longer-term vision and support of research and development. Their success is due to their philosophy that current investments in research and development will benefit them five to 10 years in the future. This type of philosophy is sometimes known as "Paying it Forward."

## The Research Process

Unfortunately, fixing a problem is not as simple as just observing the problem then quickly conducting research to fix it. Funding must be available, combined with an interest by a researcher. Most of the time a graduate student must be hired to get the day-to-day work done, and finding any graduate student, let alone a good one, can be difficult.

Research also takes time. Once a problem is identified, be it a new turf disease or nutrient contamination in drinking water, developing solutions may take months to years. The process goes like this: 1) A problem or issue is identified (month 1), 2) A literature search is conducted to determine if a

solution already exists, or at least to gather related information to properly develop a proposal (months 2-5), 3) Potential funding sources are identified, a process which can take 1 year or more depending on funding groups' procedures (months 3-12), 4) Personnel are gathered, or hired (e.g., graduate students), and commit to spending part of their time on the project (end of year 1). The search process typically begins with step 3, but hiring cannot occur until the funding is in hand, 5) Research is begun, typically lasting 2 to 3 years (years 3-4). Data are analyzed, and then written into a manuscript, a process that can take 3 to 6 months. Manuscripts are sub-



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mitted to scientific journals for peer-review, which can take another 3 to 6 months (end of years 4-5). Usually there are corrections to be made once it is accepted, then another 6 to 12 months may pass before the article is published (end of years 5-6). Only after the manuscripts are published is the information released to the public as articles in trade journals such as *Golf Course Management*. It takes an additional 2 or more years before the knowledge becomes "accepted" and starts to be put into practice.

The tremendous length of time needed to collect valid information means researchers have to be forward thinking. I am constantly looking at what will be the issues in golf course turf in 5 to 10 years as much as I am looking at current issues. In our state, future issues will be nitrogen fertility, energy for mowing, and water. Pest and disease control will continue to be issues, with stricter regulations and fewer conventional products. This is one of the reasons the UW turf team sought and received a GCSAA grant last year to study fungicide degradation rates. Our goal is to develop a rapid in-house test that superintendents can use to determine when a fungicide application is

really necessary. This approach will guard against unnecessary fungicide applications and potentially offset stricter regulations: President-elect Obama has vowed, in writing, to use science and economics to guide government regulations (Billings Gazette, 12 Nov. 2008). As often happens, our idea was not funded at first: Jeff Gregos and I submitted a similar proposal about seven years ago and it was promptly rejected—fungicides were plentiful and stricter regulations weren't yet taking effect. However, we were looking at the coming impact of the Food Quality Protection Act, which requires new and existing pesticides to be re-evaluated with a lower margin for safety. Since that time, limits have been placed on the use of iprodione, chlorothalonil and mancozeb; last year the industry was in a furor over the impending loss of PCNB for snow mold control. Justification of fungicide use based on the foliar test procedure Paul Koch is now leading would have been important information that could have swayed the Environmental Protection Agency from banning and limiting these fungicides. As researchers, part of the blame was ours as Jeff and I failed to convince state and national turf groups that



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stricter regulations were coming and that a test was needed to justify fungicide applications.

### Past, Present and Future of University and Industry Relationships

The College of Agricultural and Life Sciences (CALS) at the University of Wisconsin-Madison and the Wisconsin turfgrass industry have long enjoyed a positive relationship based on mutual respect and support. Quite frankly, the University invests in turf research positions and the O.J. Noer facility operations because the turf industry shares the cost. However, tight budgets are forcing the administration to look hard at those industries where a mutually beneficial relationship is truly possible. The cranberry industry, for example, has provided a \$1 million endowment and annually provides several hundred thousands of dollars for research, allowing faculty to help the industry progress. Other fruit crops, such as apple and grapes, have provided little funding over the years. Even though apple and grape industries are now beginning to really grow, and want university assistance, the lack of support from those groups has caused administration to redirect faculty activity away from those crops and focus more on those industries that provide funding. The turf industry in Wisconsin currently enjoys a solid reputation with CALS because of past financial support. A perfect example is the WTA funding of the four Wisconsin Distinguished Graduate Fellowships (\$250,000 each). Another example is the WTA funding the first year salary and benefits, allowing Dr. Doug Soldat and Dr. Jim Kerns to be hired. On the other hand, we have lost five of the seven fruit specialists in the past few years, and those positions are not being fully replaced partly because of the lack of funding from sectors other than the cranberry industry. Clearly, continued industry support is vital for the turf program to survive.

The WGCSA has annually committed critical funding for university research which complements funding from the WTA and Northern Great Lakes Golf Course Superintendents Association. We are fortunate to now have all the turf positions filled: Chris Williamson in Entomology, Doug Soldat in Soils, Jim Kerns in Plant Pathology, and myself in Horticulture. Ours is one of the few really complete teams in the country, and we are becoming the regional powerhouse for turf research and outreach. Being the regional powerhouse improves our ability to leverage funds from the Wisconsin turf industry and attract grant money from outside the state. This money will in turn help the Wisconsin golf and turf industries. A perfect example is the approximately \$500,000 grant we received this autumn from the United States Department of Agriculture-Specialty Crops Research Initiative. The money will be used over a four-year

## IMPORTANCE OF FALL FEEDING

**F**all fertilizing is the most important application a turf manager can make. Promoting good color and stimulating shoot growth are important but many times overlooked is the importance of carbohydrate reserves and root growth.

It is important to build the carbohydrate reserves to prepare the turf for winter. The accumulation and storage of carbohydrates is greatest during the fall and early winter because there is minimal shoot growth in late fall, but good photosynthetic conditions.

In the desert with overseeded turfgrasses, the roots of most cool season grasses continue to grow in autumn and into winter.

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Table 1. Size and research productivity of turf programs among Wisconsin's peer states from 2004-2008.

University	# Turf faculty/full time staff	Annual State Industry Funding	Average annual publications/person
Iowa State	3	Unknown	5.6
Illinois	4*	Unknown	4.2
Michigan State	8	ca. \$250,000+	2.6
Minnesota	2	Unknown	5
Ohio State	5	ca. \$250,000+	2
Penn State	8	ca. \$250,000+	3.1
Purdue	3	Unknown	12
Wisconsin	3**	ca. \$50,000***	10.8

\*The University of Illinois will be at <2-turf faculty in 2009 due to retirements and shifts to non-turf programming.

\*\*A fourth faculty person, Dr. Jim Kerns, started in July 2008.

period to develop more sustainable (read: profitable and environmentally-beneficial) sod production practices. While sod production is currently profitable, growers want to get ahead of new regulations and economic constraints by funding research now. Our success depended on the pledged matching funds from the WTA and the Wisconsin Sod Producers Association. Incidentally, while many turf programs from around the country submitted grant proposals; the turf team at the University of Wisconsin-Madison was the ONLY turf program to receive a grant from the Specialty Crops Research Initiative.

Loss of turf faculty at former turf "powerhouses" is a scary but real situation. The University of Illinois has collapsed from five-turf faculty to essentially none in the past 4 years due to retirements and shift of program focus to more lucrative areas (e.g., perennial

grasses for biofuels). Michigan State University has struggled to maintain a research program with the loss of their primary research position several years ago. Meanwhile, the UW-Madison turf program has gone from essentially zero scientific publications each year 10 years ago, to the second highest per capita productivity in the region (Table 1). Continued funding of the UW-Madison turf program will ensure we are able to support the industry.

#### Supporting UW's Turf Program is a Tremendous Value to Membership

The historically generous support provided by the WGCSA and other turf groups has allowed us to develop a first-class research, extension and educational program for turf management. This in turn provides a steady source of cutting-edge information back to the WGCSA members. Our outreach programs likewise are supported indirectly because of WGCSA research funding. These include activities such as the turf team writing a meaningful Pesticide Applicator Training booklet and providing the training, rather than having to use "hired guns" from agriculture who don't understand or appreciate golf course management. Like many investments, not all of the return is easily visible, but here is a smattering of current and recent types of return back to the industry:

- Cultivar and pesticide trials-superintendents use the information to identify grasses and disease/weed/insect management for golf course construction, renovation and management
- Preparation of the DNR's Turf Nutrient Management Guidelines-presence of turf faculty



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at UW ensured the guidelines were written based on sound scientific and economic principles, safeguarding against excessive regulations without a clear benefit

- NR 151 Training Programs: Both hands-on and web-based training for superintendents to develop required nutrient management plans would not have been possible without industry support to hire and support Dr. Soldat
- Extension support: The Turf Diagnostic Lab, site visits to golf courses with agronomic issues, plus phone and email support are provided for resolving turf management issues
- Future, sustainable turf management practices: One of the themes of the UW-Madison turf program, as we look ahead to days of reduced inputs ranging from water and pesticides to energy. Several projects are in progress including assessment of fine fescues for fairways, velvet bentgrass for putting greens, and grasses that can tolerate irrigation with effluent water

### A Call to the Future

For the 2009 fiscal year, the WGCSA decided not to fund the UW turf program. Needless to say, the turf faculty were surprised, and the decision almost derailed two GCSAA grants we were submitting. Matching funds are required from a chapter for these grants: fortunately, we found another chapter at the last minute that was willing to provide the match. Hopefully the lack of WGCSA support is temporary. One thing is certain: we at the university value and look forward to maintaining a positive relationship with the state's golf course superintendents. As always, we look forward to hearing from you what your current and future issues are, so that we may best serve the industry. With support from the WGCSA, we will continue to be able to leverage the industry's financial investment into attracting additional funds to enhance the profitability and relevance of golf turf to the state. Industry support will also guarantee that turf faculty remain here to assist superintendents in the future. 

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