

## FEATURE ARTICLE I

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# Save Some Green with CDGA Research

*Over the past year, many golf courses were faced with reduced budgets. Thankfully Mother Nature helped which enabled fungicide use to be reduced. So far the worst of the economy's worries appear to be over, but for many, budgets will still be a topic and the question remains the same: "How can I reduce my expenses and still keep the same quality standards?" The Chicago District Golf Association (CDGA) Turfgrass Program was founded in 1985 to assist courses with acute problems, primarily diseases. The program has grown to conduct yearly research on Sunshine Course and off-site research on other golf courses. In part, research is driven by the common goal of how to improve quality or save money while maintaining the same quality. A year ago I started thinking about the numerous ways our recent research and information can be used to save money. Here are my ten money saving picks.*

### USGA Funded Research

1) In 2006, Dr. Derek Settle and Dr. Randy Kane conducted research to suppress moss that commonly invades putting green surfaces. They tested baking soda—a common household item—as a spot application. Additional treatments were the herbicide Quicksilver and the fungicide Daconil Ultrex, as well as a three-way fungicide treatment of Daconil Ultrex, Fore, and Spotrete. All of the treatments were found to suppress moss without phytotoxicity but the baking soda treatment only required two spot applications in the spring compared to twelve fungicide applications every 14 days! In the research, baking soda was mixed at a rate of 6 oz/gallon and applied to each moss colony with three sprays from a hand spray bottle. The surface of the moss will become wet and the baking soda works as a desiccant to suppress the moss. This can work well when moss is localized into spots. I must note that baking soda is not labeled for this use. Larger areas of a moss and bentgrass mixture would be better treated with a broadcast mixture of Quicksilver at 6 oz/Acre.



**Figure 1.**  
*A mixture of baking soda and water can be used as a cheap control of moss on putting greens.*

2) Research conducted on Sunshine Course and at the University of Maryland in 2007 and 2008 put six biostimulant products in a side-by-side test. The results were not as expected and while many of these products are not normally used as a stand-alone fertilizer for a putting green, the research left me asking myself two questions: "What added benefits am I gaining from

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each product?" and "Are these benefits worth what I am paying?" "Back to the basics" is an old saying and I heard it a lot this year. Introductory turfgrass management classes teach us what all plants need to survive. If we categorize six of the most important nutrients, we get three from the air or soil: carbon, oxygen, and hydrogen. Those needed in the next largest quantity are nitrogen, phosphorus, and potassium—also known as N-P-K. These nutrients comprise the majority of our fertility program because they are needed in the plant for primary functions. The end result was that nitrogen provided by spoon-feeding urea every 14 days performed best by providing best overall plant health on a consistent basis both years.

### Disease Control Research

3) CDGA research has been conducted off Sunshine Course over the last two years at North Shore Country Club and Coyote Run Golf Course. A single study has evaluated fungicide programs with the objective of reducing applications and total cost on a *Poa annua*/bentgrass fairway (North Shore in Glenview) versus a 'Southshore' bentgrass fairway (Coyote Run in Flossmoor). There are various strategies that can be used in fungicide programs. Some are strictly preventative and applications are made before conditions are favorable. Others are based on a curative approach or possibly a mixture of both. Dr. Derek Settle composed a program that used both a curative approach and then later in the season, a preventative. During 2009, the first application of this program was held off until June 16 when symptoms of dollar spot appeared and weather conditions were favorable for development. Emerald was then applied and scouting began again after approximately a month of control; in times of low disease pressure, the length of control can be as much as 45 days. The next applications were systemic products based on a 21 day schedule followed by the last application of Emerald around the beginning of September. For the CDGA program, only five applications were needed in 2008 and four in 2009. The program saves money by waiting until dollar spot conditions are favorable and increasing the number of days between sprays. This is easiest in early summer when environmental conditions are not favoring the rapid development of dollar spot disease. Another program tested was preventative but relied on rotating three systemic products: Emerald, Chipco 26GT, and Banner Maxx. This program could have become expensive with eight total applications but low rates were used. The most expensive fungicide program was Daconil Ultrex every 14 days. The eleven total applications add up quick as well as the cost.

4) Fungicide trials have increased at the CDGA over the last few years. New chemistries, names, and combinations have come out and now fill the market. This year on Sunshine Course in Lemont, we tested thirty treatments for their dollar spot control in a bentgrass fairway in addition to conducting two studies on putting greens with approximately one dozen treatments each. Every year several new products are tested and our research field day is a great place to see these new products and help base your fungicide decisions for next year. In recent years, combination products have added more names and complexity to the decisions. These products often have two or more active ingredients and can easily become an expensive product, but the effectiveness of the product must be evaluated to determine if the money is well spent. Two

different classes of fungicides can be very beneficial; however, in some cases, mixing the two ingredients in your own tank can save you money. With more options available, we have the opportunity to make decisions based on the longest control and cost.



Figure 2.  
Fungicide testing has become more important as additional products become available.

5) This past year we included research treatments of biorational products to control dollar spot. Biorational products use biological or alternative methods to control disease. These are not labeled as pesticides and are typically used to reduce fungicide inputs. Once the decisions are made to use these products to reduce fungicide input, research is needed to help determine which products can perform the way they are marketed. Biological products are typically not as effective as fungicides at controlling dollar spot because it is hard for the biological (e.g., bacteria) to become established and survive within the turfgrass environment. High rates are typically used and application intervals can be frequent. Occasionally costs add up quickly without adequate control. Pigment products must also be considered as an alternative. Although many fungicides are being released with pigments, the green color itself may help to mask the symptoms of disease or phytotoxic effects. One biorational product that has surprised us with its control of dollar spot is DewCure by Mitchell Products. This product is designed to control moisture on the leaf blades that are needed for fungal growth. Our research has included this product with only one or two curative applications of fungicide within the last two years. However, phytotoxicity often occurs and further testing is needed to improve its quality. Perhaps a green pigment may help mask yellowing of certain products?

6) Fungicide trials are also set up yearly to control diseases other than dollar spot. During the last two years, control of Waitea patch has been studied. This is an old disease that has gotten a lot of press lately and a new name. Dr. Randy Kane identified this disease as *Rhizoctonia zeae*. However, with more information and a new genetic finger-printing method, we have found out that fungal pathogens are more accurately called *Waitea circinata* var *circinata*. The symptoms appear on *Poa annua* in Chicago as bright yellow rings. In Japan, the disease in bentgrass has been described with symptoms that

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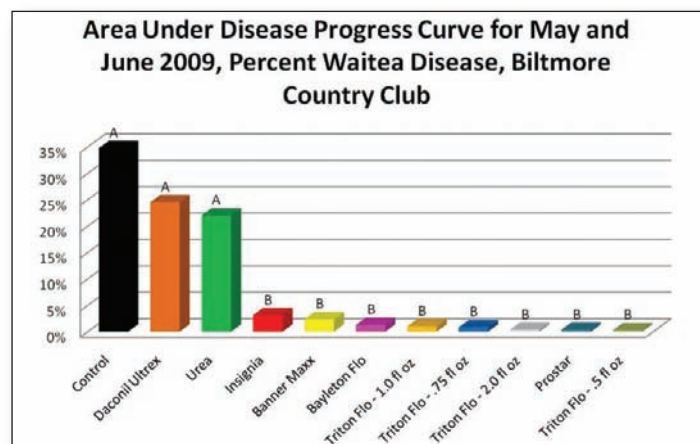
include brown rings and gave the disease the common name 'brown ring patch'. In research trials to control the disease, most fungicides have shown to be effective except the contact fungicide Daconil Ultrex. We have learned, Waitea infects the leaf sheaths and systemic products are needed to control the disease. We also now know a broader spectrum of fungicides (i.e., nearly all DMIs) can suppress this Rhizoctonia disease which is now called Waitea.

Fairy Ring research has escaped us the last two years. Cool summer temperatures have kept the disease from developing in research trials. However, in 2006, preventative research found demethylase inhibitor (DMI) and Prostar fungicides can provide suppression of fairy ring symptoms. The problem with DMI fungicides is that phytotoxicity can occur when applied in hot weather or when applied to certain turfgrass such as sensitive *Poa annua* biotypes. In 2006, applications were timed in June and July. During the months of July and August, Prostar should be used as a curative treatment and it will not risk phytotoxicity. In recent golf green tests, at Kemper Lakes Golf Club in Kildeer and Ruth Lake Country Club in Hinsdale the best visual quality has come from urea plots that used nitrogen to mask the effects of fairy ring. Our research on Waitea and fairy ring are two more examples of fungicide testing to control problematic turfgrass diseases. It should be noted that these results can be used in an integrated pest management program (IPM) and allow suppression of more than one disease. For example, fungicides used to control Waitea or prevent fairy ring could be used to suppress dollar spot as well.

to older varieties. Genetic disease resistance in your newer varieties can save money by requiring fewer fungicides. Another genetic component that will get more attention in the future is thatch production. For now the data is limited. In the future, we hope to determine which varieties may require more cultural inputs.



**Figure 4.**  
*Bentgrass varieties vary in their level of dollar spot resistance and fungicide requirements.*



**Figure 3.**  
*Systemic fungicides used to control Waitea in the spring could be used as the first application to prevent dollar spot.*

### Turfgrass Varieties and Species

7) Genetics can ultimately determine much of the costs to manage a turfgrass at a desired quality. When varieties are chosen with genetics in your favor, cost savings can begin to occur. Within the last year we established two new bentgrass variety trials on Sunshine Course. Both are cooperative efforts with eleven Midwestern universities. We are looking at dollar spot resistance and the inputs required in maintaining acceptable conditions. New varieties have been released with better resistance than the 'L-93' standard of over ten years ago. 'Declaration' has shown good resistance in National Turfgrass Evaluation Program (NTEP) tests. Now all that remains is to figure out how many fungicide applications are needed to maintain quality and to compare the findings

8) Selecting the correct turfgrass species is equally important. Sunshine Course was established with six different turfgrass species as well as many other prairie and pasture grasses that were included for research and demonstration. Dr. Tom Voigt established many species including fine fescue, buffalograss, and blue grama to investigate reduced mow areas. In fairways we learned that colonial bentgrass does not perform well in Chicago. Brown patch becomes a big problem and weeds such as "creeping bentgrass" become established. Today, Sunshine Course and our off-site research locations have replicated trials that include the species: creeping bentgrass, colonial bentgrass, velvet bentgrass, Kentucky bluegrass, and tall fescue. Velvet bentgrass has shown a propensity for pink snow mold damage at North Shore Country Club and is another bentgrass we do not recommend for northern Illinois. In contrast, tall fescue may be an option to reduce inputs and save money but it is not used frequently this far north. Our extensive tests on Sunshine Course will help answer if this species is an option for the Chicagoland area.

For demonstration our number 3 teebox has Supina bluegrass (*Poa supina*) and warm season turfgrasses such as zoysiagrass and bermudagrass. This past spring we learned that one warm season species did not survive the cold temperatures of last winter. All of our seashore paspalum varieties and 'Tifway' bermudagrass did not survive while other bermudas and zoysia did survive. Testing of different grasses is important for understanding the benefits they may offer. The differences between turfgrass species are much greater than within varieties of one species. For example, it can be difficult to find a variety with heat and drought tolerance but perhaps the answer could be found in a different turfgrass species. As we further refine our abilities to reduce costs, I believe alternative species will fill more niche roles in reduced management areas.



*Figure 5.  
The Kentucky bluegrass trial is one of 4  
new variety trials on Sunshine Course.*

### **Diagnostics and Communications**

9) One of the main focuses of the CDGA Turfgrass Program is disease diagnostics. In the early 1980's bacterial wilt killed many greens of 'Toronto' bentgrass and prompted the hiring of two plant pathologists in Illinois. Dr. Hank Wilkinson started first by establishing a nationally recognized research program in Illinois at the University of Illinois in Champaign/Urbana. Hank later hired Dr. Randy Kane with the support of Illinois golf course superintendents and the Chicago District Golf Association's Board of Directors. Dr. Randy Kane was based in Chicago (Oak Brook) and turfgrass diagnostic services, communications, and research became available to CDGA member clubs.

Diagnosing diseases is critical to finding the solution that will provide the best results and avoid useless applications. To have the best control, different fungicides or classes of fungicides may be recommended for each disease issue. In other cases diseases are not the problem, but diagnostics are needed to rule out the possibility of disease. If this is the case, fungicide applications can be avoided and money can be spent on other ways to control the problem.



*Figure 6.  
The turfgrass laboratory and greenhouse are used  
to solve problems throughout the season.*

10) The CDGA Turfgrass Program also provides information through electronic communication and the internet. Each week during the season, the turfgrass team collects their observations and research results to compose the Turfgrass eScouting Report. About ten pages of pictures, diagrams, and graphs summarize the week's activities. We record every pest outbreak and collectively place them on the next year's calendar date in the Pest Activity Calendar. This tool can be used to see what happened last year and what pest outbreaks could occur. Scouting within your golf course is important, and an unbiased communication of the observations from a whole region takes scouting to a whole new level. Superintendents are better able to predict what is ahead and prepare for the challenges year to year.

Website communications are also important in this day and age. Our [www.cdगतurf.com](http://www.cdगतurf.com) website is our tool to archive all Turfgrass eScouting Reports and Pest Activity Calendars. Current and past research can be accessed to look up the results from previous field days or published reports. By the printing of this article, more updates as well as information on diseases and fungicides, search capabilities, and the latest research will be added to the website. In years past, the web based tools in Interactive Turf have provided disease forecasting models for member clubs. As of 2009, we teamed up with Purdue and Michigan State University to add Illinois and Indiana to a website called GDD Tracker, [www.gddtracker.net](http://www.gddtracker.net). Currently, models of Proxy/Primo application timing for Poa seedhead suppression, crabgrass pre-emergent application, Japanese beetle, and billbug models are available. In the future we believe this website will grow to include more states, more weather stations, and more models including disease forecasting.

The CDGA Turfgrass Program offers useful research, diagnostics, and communication to golf course superintendents. The ideas, tools, and information provided have become an asset to turf managers in Illinois and the upper Midwest Region. For more information on any of these ten topics or other CDGA Turfgrass activities please email me at [krincker@cdगतurf.org](mailto:krincker@cdगतurf.org). **-OC**

### **Acknowledgements**

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