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THE GRASS ROOTS

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ABOUT THE COVER

Our cover artist Beverly Bergemann offers an image of Monroe S. Miller, WGCSA Member, Past President, Distinguished Service Award Winner and 24 year editor of *The Grass Roots*.

"You can feel the vibrations of optimism in the clouds of pessimism"

– by Rodney Johnson, Certified Golf Course Superintendent, Pine Hills Country Club, Sheboygan WI, while at the Golf Industry Show observing the positive outlook of attendees at the Wisconsin Hospitality Room.



Re-evaluated. Re-organized. Ready to Go??

By **Dustin Riley**, Certified Golf Course Superintendent, Oconomowoc Golf Club

In a prior message, I wrote that the off-season is a perfect time to recharge your batteries and organize your thoughts as you prepare for the season. Unfortunately, I do not get the impression that any of us have been able to relax through the winter months. Maintenance budgets have been cut and most likely through labor reductions. Therefore, many of us will be attempting to produce the same conditions with less labor or inputs. These expectations have no doubt added stress, as each of our operations are re-evaluated and re-organized. And in addition to these worries, we are now entering spring, where the turf's health will alert us of the severity of Wisconsin's winter weather swings.

The Association has been busy as well, re-evaluating and re-organizing. Since the Fall Business meeting, the Board of Directors has continued the development of our Chapter Manager position. In January, the Board re-defined the Chapter Manager's Request for Proposal (RFP). The new RFP was announced and advertised through several avenues, including our own association. The replies to the RFP have been received and candidates selected for interviews. Hopefully the WGCSA Chapter Manager will be announced by the April 20th meeting, to be held at Geneva National. The Chapter Manager will have the responsibility of managing our day to day business affairs. But, the Chapter Manager will also be expected to assist the Board of Directors develop and maximize Association activities in coordination with our mission and vision. Although the Association is financially stable, operational spending habits will be analyzed and adjusted to help support and fund the position. The Chapter Manager will improve the services to all of the members, thus increasing the value of a WGCSA membership. Due to a recent change in his employment and his interest in the Chapter Manager position, Affiliate Member Representative, Brett Grams, has resigned from the Board of Directors. Brett has submitted a proposal per the RFP and is considered a candidate. Brett's role on the Board of Directors has truly been invaluable. He provided insight to the potential impact, of the Board's actions, on our Affiliate Membership. His input will be missed. Brett's 2-year term is set to expire November at this year's Fall Business Meeting. I do not intend to "re-appoint" a replacement for the remainder of this term. A new Affiliate Member Representative will be



appointed by the next President of the Association.

On February 17th, the Inaugural Assistant Only seminar was held at Milwaukee CC. This seminar was the initial step in the Board's examination of a Class C Committee proposal. The event was a success as 35 Assistant Golf Course Superintendents were in attendance. GCSAA TV recorded the event and can be seen on the GCSAA website. The video provided an

excellent review of the event and the professionalism of our Association. So what is the status of the Class C Committee proposal? The Board of Directors is glad that the event was successful. But at this time, we feel that the highest priority of the Association is the selection and implementation of a Chapter Manager. Once the Chapter Manager is in place, it is our intent to survey the membership regarding several aspects of the Class C Committee proposal. The Board recognizes the impact of this proposal and we feel that a survey will help us understand the "pulse" of the membership prior to continuing with a possible formation of a Class C Committee or recommending a by-law change.

The Golf Industry Show is the opportunity for many of us to take seminars and view new tools of the trade. This year was special for the members of WGCSA. At the GIS Opening Session, Monroe Miller received the GCSAA's Distinguished Service Award - Col. John Morley Award. Monroe's credentials and accomplishments are second to none. His impact has made Wisconsin and the WGCSA better. Although retired from the golf course, Monroe will be around as he applies his charm and passion as the WTA Executive Director/Ambassador. Monroe....Congratulations and Thank you.

Finally, our *Grass Roots* editor, Dave Brandenburg CGCS, has implemented a minor change in the mailing process of our bi-monthly publication. This minor change will significantly reduce the mailing costs. But, it is extremely important that mailing addresses are accurate, because the Association will be billed for any returned copies as a result of address error. If there is a change in your address, please notify Jim Vanherwynen, Membership Chair immediately. *The Grass Roots* is one of our greatest assets and we want to make sure all members receive this publication.

The 2009 Season is upon us. Good Luck to everyone this season. 🌱

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Mesotrione: A Multi-Purpose Tool for Weed Control

By Ben Pease and Dr. John Stier, Professor and Chair Department of Horticulture, University of Wisconsin-Madison

Today you have three very different projects: Renovate and seed an area affected by snow mold damage, control the crabgrass population developing in the clubhouse lawn and selectively remove the creeping bentgrass that is infesting the tee surrounds. Could this be possible in one day with one tool? Yes! Over the past decade mesotrione has been determined to be a low-risk and effective chemical for use in the above, and other, scenarios. While many know the uses of

mesotrione, this is a good time of the year to revisit its utility. During the 2008 season at the OJ Noer Turfgrass Research Facility, three different trials involved mesotrione: Preemergent and Postemergent Crabgrass Control, Broadleaf Weed Control, and Bentgrass Removal. Today the focus will be bentgrass removal but results from all three trials can be found in the Wisconsin Turfgrass Research Reports and previous issues of *The Grass Roots* (Stier, 2004; 2008). While others

across the country have documented the uses of mesotrione, it was beneficial to confirm its utility for turfgrass management in the Wisconsin climate.

How Mesotrione Works

Mesotrione is derived from the bottlebrush plant (*Callistemon citrinus*) native to Australia, originally marketed as Callisto™ for non-turf uses. It acts by inhibiting the 4-hydroxyphenylpyruvate dioxygenase (HPPD) enzyme in target species. This disrupts

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Table 1. Bentgrass removal with mesotrione, treatments and application dates, Madison, WI, 2008.

Trt. #	Treatment Product	Rate (fl oz/A)	Application Date(s)
1	Control	----	----
2	Mesotrione (Tenacity)	4.0	June 2, June 23, July 14
3	Mesotrione (Tenacity)	5.0	June 2, June 23, July 14
4	Mesotrione (Tenacity)	4.0	June 2, June 23, July 14, Aug. 4

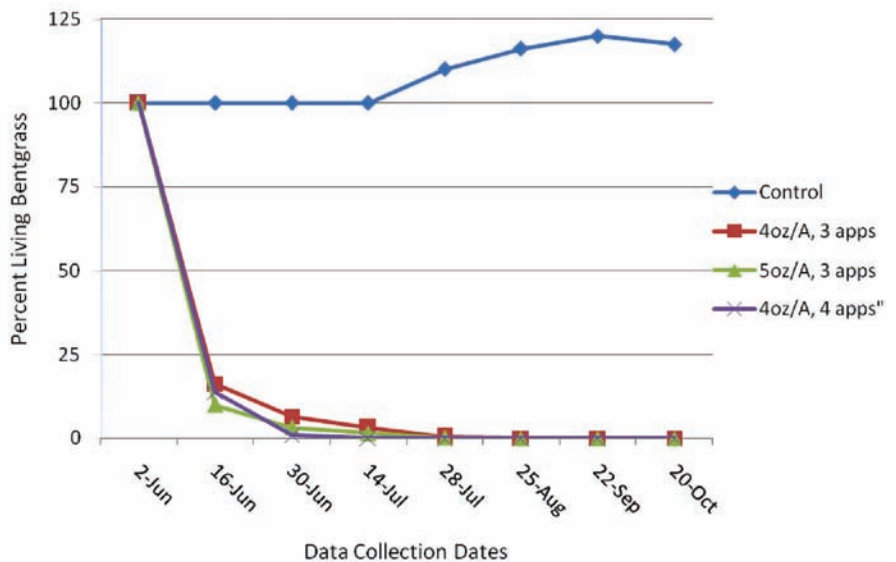
carotenoid biosynthesis in the chlorophyll molecule, which is manifested visually by the white bleaching of sensitive plants (EPA Pesticide Fact Sheet, 2001). Mesotrione is absorbed through the roots, shoots and leaves of the plant and is translocated by both xylem and phloem. It is presently labeled as Tenacity(tm) for use on sod farms and golf courses for bentgrass removal and broadleaf weed control. Mesotrione is considered a low-risk (“biorational”) herbicide due to its low biological risk and rapid degradation rate. It also has low use rates (5oz/A for cool-season turfgrasses), minimal PPE requirements and can be used at, or soon after, seeding.

Mesotrione is based on the same compound as the pharmaceutical drug NTBC, also an HPPD inhibitor, which is used to treat the condition tyrosinemia. Tyrosinemia is the deficiency of the enzyme used to degrade the amino acid tyrosine. When not treated with NTBC, tyrosine builds up in the body’s organs, leading to organ failure (Duke, S.O., WSSA Annual Meeting, 2009).

Demonstrating Control of Creeping Bentgrass

In early May 2008, six standard golf course cup cutter-sized plugs of mature creeping bentgrass (*Agrostis stolonifera*) were transplanted into 3’ by 5’ plots of a mature mix of Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), with each herbicide treatment replicated four times. Bentgrass plugs were allowed to acclimate in their new location for about six weeks

Figure 1. Percent Remaining Bentgrass Population by Treatment



before herbicide treatment began. During this time, irrigation was supplied four times per week to replace 100% of the moisture loss from evapotranspiration (ET). Irrigation was reduced to twice weekly at 100% ET replacement for the remainder of the trial. Turf was mowed three times weekly at 1.5” using a riding reel mower with clippings returned. The numbers of applications of mesotrione varied by treatment but all applications were at three-week intervals (Table 1). All treatments were applied using a CO₂-powered backpack sprayer operated at 40 psi using TeeJet XR8004VS nozzles at 1 gallon of water per 1000 ft². All treatments included a nonionic surfactant at 0.25% volume/volume. Bentgrass removal was rated visually at 2, 4, 6, 8, 12, 16 and 20 weeks after initial treatment (WAIT). Quantification of

bentgrass removal was determined as the percent of bentgrass remaining in the six transplanted plugs. Phytotoxicity affecting desirable turfgrass species was rated visually at 2, 4, 8 and 12 WAIT.

What We Found

Both the 4.0 and 5.0 fl oz/A rates of mesotrione provided 100% bentgrass removal by 12WAIT (Figure 1). Prior to the fourth round of applications associated with the second 4.0 fl oz/A treatment, all treatments achieved 100% bentgrass removal. The fourth application was not necessary for this rate but was still applied according to the research protocol. Measurable turfgrass phytotoxicity was only observed at 2 and 4WAIT but it was never above the unacceptable threshold of 3 on a 1-9 scale for either rate of mesotrione. Turfgrass

phytotoxicity was most evident after the first application and less after the second application possibly because of desirable turfgrass species increasing tolerance to mesotrione applications. Any lingering phytotoxicity was essentially mown off. Similar turfgrass phytotoxicity trends were noted by other university researchers (Branham, 2005). It is of interest to note that the bentgrass populations in the untreated plots increased throughout the trial by 10-20%, showing that the bentgrass transplant method was successful.

How You Can Use the Information

Historically only non-selective herbicides like glyphosate (Roundup™) could be used to control creeping bentgrass, but these herbicides also killed all other turfgrasses, usually requiring reseeding or resodding of the affected areas.

Mesotrione (Tenacity) provides selective bentgrass removal without unacceptable turfgrass phytotoxicity. For Wisconsin, three applications spaced three weeks apart provided 100% bentgrass removal. Because of this high level of control, applications could be spaced up to four weeks apart to possibly better fit the busy summer golf course schedule. Also, because mesotrione is safe to use at and after seeding, the now voided areas of bentgrass can be slit-seeded with your variety of choice even during the bentgrass removal program. This speeds the recovery of the affected areas, keeping you, your members and guests golfing on (weed-free) green turf.

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Tenacity™ Label. Syngenta Crop Protection, Inc. Greensboro, NC, 2008. 

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Save Money This Year With the TDL

By, **Paul Koch**, Turfgrass Diagnostic Lab Manager, University of Wisconsin - Madison and **Dr. Jim Kerns**, Department of Plant Pathology, University of Wisconsin - Madison

It's no secret that money in the golf course industry is tight these days. Even before the nationwide economic meltdown, revenues at most golf facilities had leveled off or declined. A small but growing number of courses, including some right here in Wisconsin, have been put up for sale or turned into housing developments (which doesn't seem to make sense now either). Flat or declining golf course revenues seem to hit maintenance budgets disproportionately hard, and at a time like this allotting scarce dollars for non-essential items like outside diagnostics such as those provided by the Turfgrass Diagnostic Lab (TDL) can seem foolish. But when used properly, services provided by the TDL can save golf course superintendents thousands of dollars over the course of a year.

For those unfamiliar with the TDL, it is a non-profit lab affiliated with the University of Wisconsin that solely diagnoses turfgrass problems for both professional and non-professional turfgrass managers alike. No state or university support is designated for the lab, and the funds rose from sample submissions, contract memberships, and fungicide testing provides all the funding required to run the lab. For each sample submission, a fee of \$100 is charged to help support lab operations. On the surface, this seems like a significant amount of money. Money that can go towards fertilizer or fungicides or PGR's. But when the costs of a pesticide application to a misdiagnosed ailment are taken into account, the cost of a sample submission in comparison looks similar to that of Halloween candy on November 1st. Rather than illustrate this to you through vague comments about how hard it is to diagnose something without the aid of a microscope, we have included three actual examples from the past couple of years that include either the amount of money saved by not spraying or the amount of money lost due to a misapplication.

Example 1: To be anthracnose, or to not be anthracnose?

Nationwide, two of the most difficult diseases to diagnose without a microscope are Pythium blight and brown patch. Most people assume that when they see white, fluffy mycelium during hot, humid conditions that it's Pythium, but oftentimes it's actually brown patch. In Wisconsin though, a more common misdiagnosis is the assumption that any thinning turfgrass on putting greens and tees is anthracnose (Figure 1). Sometimes anthracnose is the primary cause of turfgrass decline, but most of the suspected anthracnose

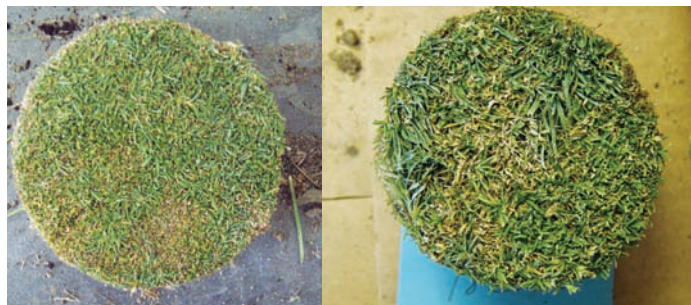


Figure 1. Both of these samples were submitted to the TDL within the past two years. Can you tell which one is anthracnose and which one is abiotic? The one on the left is abiotic, while the one on the right is anthracnose.

infections submitted to the lab are simply cultural or abiotic stresses. Cultural or abiotic stresses may include traffic, low mowing height, and low nitrogen fertility; all conditions where fungicide applications would provide little to no benefit.

A common and effective fungicide combination in Wisconsin for controlling anthracnose in recent years has been a tank mix of Banner MAXX (propiconazole) at 1 oz/M and Daconil WeatherStik (chlorothalonil) at 3.2 oz/M. Using current early order prices provided by a Madison-area superintendent, applying Daconil WeatherStik and Banner MAXX at the rates listed above costs \$80.30 per acre and \$98.35 per acre, respectively. If a superintendent assumes anthracnose is present on greens and decides to spray the approximately five acres of greens on their course, \$893.25 would have been spent. Since tees are often sprayed on a similar program as greens, spraying an additional five acres of tees would bring the total cost of the "anthracnose control" to \$1786.50. If a sample were to be submitted to the TDL for diagnosis, and no anthracnose found, that spray would essentially be a waste of over \$1,500. Contrast that with submitting a sample to the lab before fungicide application, and the diagnosis coming back as abiotic stress with a recommendation to apply one half pound of nitrogen in the form of fast release UMAXX fertilizer to stimulate turf recovery. Using early-order prices, the cost of applying UMAXX at 0.5 lbs N/M would cost approximately \$25 per acre, or about \$250 to spray the greens and tees at this course. Throw in the \$100 TDL sample submission fee, and the total cost of \$350 is about \$1,500 cheaper than the fungicide application...not to mention more effective.

Example 2: When the kitchen sink doesn't work.

Pythium root dysfunction has become an important problem of newly established creeping bentgrass putting greens throughout the United States. However prior to the work conducted by Dr. Kerns and Dr. Lane Tredway at North Carolina State University (Kerns and Tredway, 2008), this disease was frequently diagnosed as take-all patch. Initially Pythium root dysfunction was even diagnosed as take-all patch by Dr. Tredway! However, with the knowledge available at the time take-all patch made the most sense. To combat the problem it was recommended that fungicides effective against take-all patch be applied. These applications were not effective. Then an extremely hot, dry summer pushed the affected areas past the point of no return. During these extremely stressful times, three or four golf courses reported spending \$15,000 - \$20,000 **per month** for several months on end to combat the turf loss. The symptoms reappeared during the fall and were at that time accurately diagnosed as Pythium root dysfunction. Though initially this example may seem to suggest that diagnostics failed and tens of thousands of dollars were wasted, since the superintendents continued to inform us when symptoms developed we were able to finally come to an accurate diagnosis. As a result, these three golf courses went from spending \$15,000 to \$20,000 a month down to \$1,000 to \$2,000 a month, a savings of up to \$19,000 a month! Admittedly, this was an extreme case, but it provides

an excellent example about the savings that result from accurate problem diagnosis.

Example 3: Not everyone is your friend.

This past summer, a nationally renowned home builder with developments in northern Illinois contacted the TDL with some very expensive problems. Each of their three most recent developments in the Chicago area consisted of approximately 150 to 200 homes, and all of them were sodded at nearly the exact same time three or four years ago. This past summer, widespread problems started occurring with the sodded lawns. Symptoms included small, roughly circular patches of tan grass that would appear in June and spread as summer progressed (Figure 2). When they contacted the landscaper who had installed the sod their recommendation was to scrape off all the sod and the top foot of soil, then backfill with new soil and re-sod. The cost for each lot was approximately \$12,000. When considering that nearly a quarter of the homes in these three developments were being affected to some degree by these symptoms, renovation of all the affected lots by this particular company's method would approach an unbelievable \$1.8 million. Aside from this ridiculous cost estimate, the builder noticed that as new home developments were slowing with the economy (and hence new accounts for this landscape company were slowing) that the landscaper was increasingly diagnosing insect and disease problems that required costly pesticide applications. Finally



Figure 2: These roughly circular patterns of turf death, later diagnosed by the TDL as necrotic ring spot, were widely observed at all three home developments in the Chicago area.

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