

ITM: Who Thinks It Is Important?



By **Kevin L. Hensler**, ITM Specialist, O.J. Noer Turfgrass Research and Education Facility, University of Wisconsin-Madison

From 1998 to 2001, the USGA sponsored research to the tune of \$7.36 million and 134 different projects. In 2001 alone, they funded \$1.78 million for 83 research projects. That's a lot of money, and a lot of knowledge. One of the research categories they are actively funding has been labeled Integrated Turfgrass Management (ITM). In fact, over the four year period, they have awarded more research grants to this category than any of the other categories they provide funding for.

What's the point of all this? Just to show how important the Integrated Turfgrass Management philosophy is to one of the premier support organizations for golf course superintendents, and the game of turfgrass management. Over the latest four year funding period, USGA has quantified the importance of Integrated Turfgrass Management at \$1.62 million.

The USGA funds ITM research projects with the aim of conserving natural resources by reducing the use of water, pesticides, and fertilizers. They feel that the results of these studies will lead to the development of turfgrass management programs that conserve our natural resources and reduce costs, with minimal impairment of playing quality conditions or aesthetic appeal.

The UW has developed an outreach program with similar objectives. Our working philosophy has defined Integrated Turfgrass Management, or ITM, as the selection, integration, and implementation of a management approach for producing and maintaining quality, functional, and healthy turfgrass.

Simply put, ITM is a decision making process that considers all management options. One of the objec-

tives of the UW-Madison ITM program is to provide current knowledge emanating from research institutions across the country that apply directly to the turf industry in the state of Wisconsin. If we don't know about the research, we cannot utilize it in our daily operations.

ITM is placing the management emphasis on plant (turfgrass) systems, rather than individual situations. ITM is an economical, effective, and environmentally responsible management approach to plant health and protection. If the USGA thinks ITM is important, consider utilizing it as a component of your management philosophy.

For more information on the ITM Program, contact Kevin at hensler@entomology.wisc.edu, or (608) 845-2545.

References

Williamson, R.C. 2002. Integrated Turfgrass Manual. ♣



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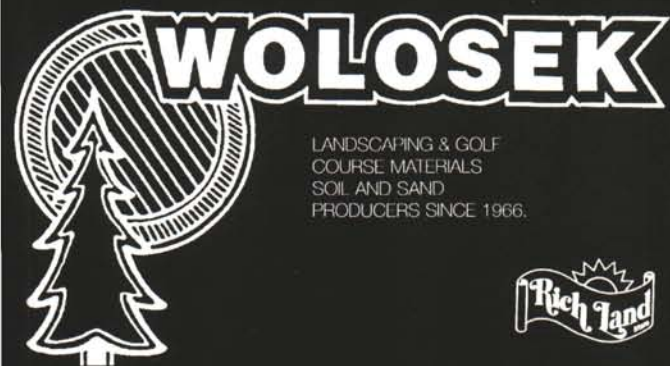
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Clean Sweep "FIX" For 2003

By Roger Springman, Program Manager, Wisconsin Department of Agriculture, Trade and Consumer Protection

I wanted to give you, our clean sweep partner associations, a heads-up on a very recent development important to Wisconsin counties, businesses, and farmers. Owing to an unexpected transfer of monies within DATCP, the Department will now be able to extend collection services through 2003.

Needless to say, I am very pleased that the clean sweep program has been put into the active mode for 2003. It was right at the edge of being cancelled as you likely recall. While we have this good news for 2003, the future beyond 2004 remains uncertain. The money making possible this short term fix will not be available after 2004. Understanding the importance of

clean sweep to prevent pollution, protect public/worker health, and keep the cost of possible remediation events, (i.e. spills) down, the Department is looking at a variety of longer term solutions too.

Once the final details of our 2003 program get worked out, I will contact you so you can inform your members on where and how to receive collection services. Should you have any suggestions on what DATCP can do to increase services and participation, do not hesitate to contact me at 608-224-4545.

Thank you for your interest in and support of the Agricultural Clean Sweep Program. ♣



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Gray Leaf Spot - A Serious, Emerging Disease on Perennial Ryegrass

By Joe Curley and Dr. Geunhwa Jung, Department of Plant Pathology, University of Wisconsin-Madison

I have been interested in plant diseases in one form or another since I was young. I grew up on a small farm in northern Minnesota and saw many different diseases on the plants and trees around me. As I got older, and especially during my undergraduate training I became more interested in science and research in general. When I came to graduate school at UW-Madison I knew that I wanted a research project that emphasized both genetics and plant disease. There were several projects of this type in the Plant Pathology department, but the project dealing with perennial ryegrass and gray leaf spot in Dr. Jung's lab seemed like the best one for me. In this article I would like to tell you a little bit about gray leaf spot itself, what superintendents and turf managers are doing about it, and finally a little bit about my research.

The main host for gray leaf spot is perennial ryegrass (*Lolium perenne*), although it also causes

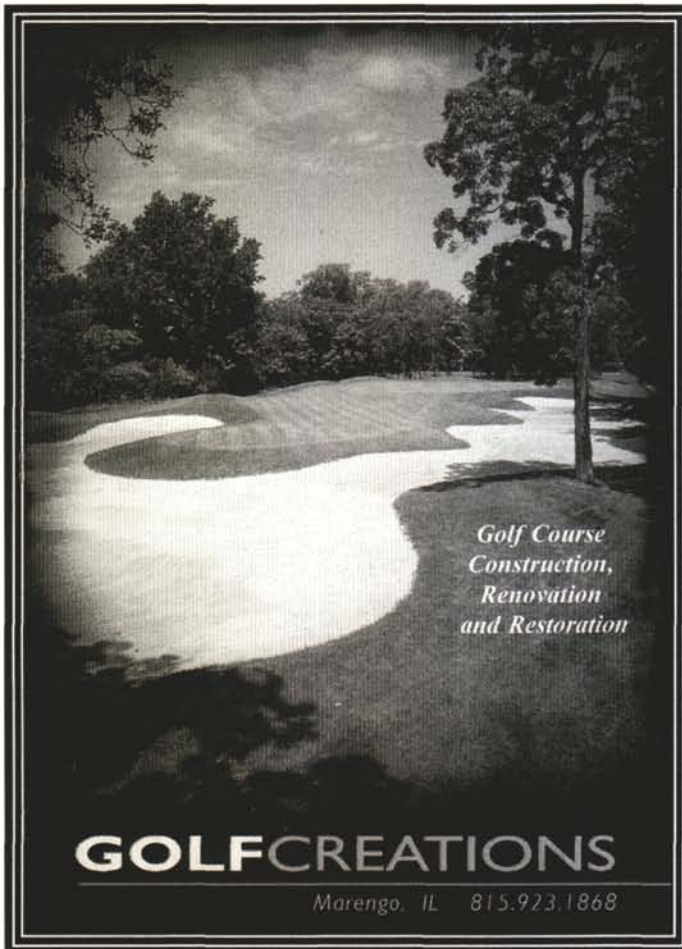
problems on tall fescue (*Festuca arundinacea*), and warm-season grasses such as St. Augustinegrass (*Stenotaphrum secundatum*). Perennial ryegrass is a valuable cool-season turf and forage grass, extensively used on golf fairways and roughs, as well as on athletic fields and home lawns. Lately many improved cultivars have become available, causing renewed interest in and more widespread use of this species.

Gray leaf spot has recently emerged as a serious disease on perennial ryegrass. It is caused by *Magnaporthe grisea*, the fungus that causes rice blast disease on rice, as well as other diseases on a very wide host range among the grass family. For example, it causes foliar disease on wheat, barley, and other turf and forage grasses such as forage annual ryegrass (*Lolium multiflorum*).

Although gray leaf spot has been known on annual ryegrass and St. Augustinegrass in the south for many years, it was first reported on perennial ryegrass in Pennsylvania in 1992 after a spell of hot, humid weather. It was subsequently reported in other mid-western, eastern, and southeastern states, now reaching as far north and west as central Illinois and Kansas. Under warm, humid conditions mature ryegrass plants, and the fields or fairways they compose, can be completely destroyed in a matter of several days.

Most perennial ryegrass varieties are susceptible to this disease, although data from the National Turfgrass Evaluation Program (NTEP) shows some difference among varieties in damage from gray leaf spot. The current control methods involve cultural practices such as reduction of leaf wetness (by changing irrigation practices), lowered cutting heights, which act to create a less favorable environment for the fungus, and reduction of nitrogenous fertilizer applications, as too much nitrogen increases the turf's susceptibility to gray leaf spot.

Also very important is fungicide application, as the other practices only contribute to the control of the disease. However, the causal fungus has begun to develop resistance to one of the most effective fungicides, the strobilurins (Heritage). Although only a few strains are resistant and there are other classes available, such as thiophanate-methyl and DMIs, the ability of this fungus to rapidly change genetically suggests that resistance to these other fungicides may also arise. Therefore resistance management strategies,



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such as not applying strobilurins repeatedly, are very important.

One control tactic that would be very useful against gray leaf spot is host resistance. In fact, in rice, which is the main crop host of *Magnaporthe grisea*, resistance is the most commonly used strategy. If resistant perennial ryegrass cultivars were available, the amount of fungicide applications required would be greatly reduced. And that is the main focus of my research.

Our lab received a group of ryegrass genotypes derived from a cross of annual and perennial ryegrass made at Oregon State University. This group of plants was constructed in such that genetic traits could be studied using molecular DNA markers, which are basically tags or points of reference on the chromosomes. Specifically, two crosses were made, first between a clonally propagated plant of 'Manhattan' perennial ryegrass which was grown from a single seed and a similarly grown plant of 'Floregon' annual ryegrass. Then another cross was made between two other clones of 'Manhattan' and 'Floregon'. These crosses created the annual x perennial hybrid parents, which were designated MFA and MFB. Then, crosses were made between MFA and MFB, to create the mapping population, which is composed of all the progeny from the MFA by MFB cross and will likely display differences in traits such as disease resistance between progeny individuals. This population can then be used to make a genetic map of ryegrass chromosomes using molecular markers, so that the chromosomal location of all the DNA markers (points of reference), and then the chromosomal location of important traits like gray leaf spot resistance, can be determined.

In my work I have inoculated these plants with strains of the gray leaf spot fungus, and have found that the parents, MFA and MFB, are much less susceptible than the standard perennial ryegrass varieties I've tested. The perennial material consists of crosses between clones of varieties 'Linn', 'SR4400', and 'SR4500'. Moreover, the progeny plants from the two parents range widely from more susceptible than perennial types to more resistant than the parents. That is, the susceptible plants lose about half of their leaves to the disease, while the resistant plants only develop very small lesions that simply disappear, and do not permit the disease cycle to be completed.

This result will be useful to us in at least two ways, the first being eventual development of resistant cultivars. These plants have now been inoculated twice in the greenhouse, and some particular plants about half a dozen times, and the resistant ones consistently come up resistant. If they hold up in the field inoculation tests we have planned down in Illinois where gray leaf spot occurs naturally, they will show very high

potential for use in breeding for gray leaf spot resistance, which can easily result in new varieties of ryegrass for use on fairways, roughs, playgrounds, and athletic fields. This will be very important for superintendents as perennial ryegrass establishes quickly from seed, so that it can be simply overseeded rather than having to completely renovate a fairway or rough using sod.

In addition, because these plants compose a population designed for genetic mapping, as explained earlier, we will also be able to determine the chromosomal location, number, and the type of action (how much effect on resistance each gene has) of the genes controlling gray leaf spot resistance in the population. We will also be able to develop molecular DNA tags that allow quick, accurate detection of resistant plants at the seedling stage using the marker-assisted selection strategy first developed in crop plants. This method will also allow detection of plants with multiple genes for resistance, rather than just one, which has been shown to increase the strength and longevity of disease resistance.

In closing, this is a very exciting project, and I am very glad to be working on it for my Ph.D. It can be pursued in many different directions, because so much is known about the genetics of the *M. grisea*-plant host system, and more importantly because the causal fungus infects so many important grass species, ranging from cereal crops to forage grasses to some of the most important amenity turfs in the expanding golf industry. And as distant as these grasses may seem, they are all in fact genetically related, so that often genetic information gained from one species can be used to help solve a problem in another. For example, ryegrass's nearest relative in the grain crops is barley, which also is susceptible to *M. grisea*. Finally this project promises many interesting results, both for scientists and end-users in the golf and turf management industries. ♣



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Mike Does It Again

It's Not Every Day You Get To Play a Course Like This!

By Tom Schwab, O.J. Noer Turfgrass Research and Education Facility, University of Wisconsin-Madison

Golf course superintendent Mike Lee hosted the WTA golf fundraiser for the second time in three years at another one of his spectacular Kohler courses. Two years ago, he hosted the event at one of the Whistling Straits courses. This year we had the pleasure of playing a Blackwolf Run course — The Meadow Valleys. Nine holes of this course played host to the U.S. Women's Open in 1998 which should explain how elite it is. Everyone was wearing huge smiles all day from the grandeur of the scenery and pleasure of playing such fine conditions.

And lots of participants there were! The fundraiser sold out for the first time ever. There were even 20 people on the waiting list wishing they had registered earlier. The lucky 152 registrants were not only treated to excellent golf. In addition they received lunch on the course,

hors de oeuvres after golf, and every participant went home with a door prize. The door prizes were pretty spectacular, also! Many were worth more than the cost of registration. Huge thanks go to the long list of donators who are listed here. Take a look at some of the nice prizes which could have been yours if you participated.

Also take a look at the list of more than 20 golf hole sponsors who contributed \$100 to make the event more of a success. The funds raised from the golf proceeds and hole sponsors will benefit a program at the University of Wisconsin-

Madison called the Wisconsin Distinguished Graduate Fellowship in Turfgrass Research. These are scholarships that will keep the turf program in supply of quality graduate students. The fellowships, when funded, will continue indefinitely. Your turf program at the University will have more graduate students investigating important problems to strengthen our management of turfgrass well into the future. Over \$14,000 was raised towards one of the fellowships from this year's event.

The day could not have been much more successful. Everyone



Event host Mike Lee welcomes in the golfers.

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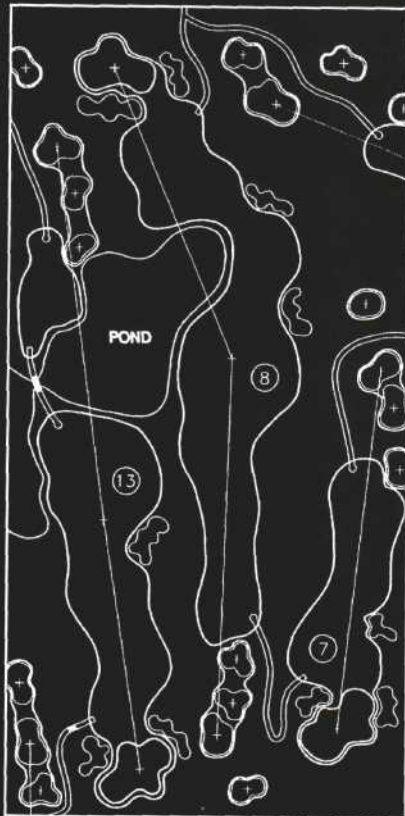
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Holly Gilmour doesn't flinch at this difficult chip shot.



Impressive collection of gift certificates for door prizes.

had a blast. Lots of camaraderie was shared. The weather was close to perfect for October with temps in the low 60s. A few sprinkles came down early in the day, but it wasn't enough to dampen the spirits of anyone. The majority of the round was perfect fall weather. The autumn colors of the trees really showed off the beauty of the natural terrain.

After Mike Lee made the announcement of where next year's event will be held, a number of participants said, "Sign me up for next year." Golf course superintendent Tony Rzadzki of The Bull and Pinehurst Farms secured his brand new course for the October 2003 WTA Golf Fundraiser. The course, designed by Jack Nicklaus, is described as stunning and very upscale. It will be another course that you rarely get a chance to play. It's likely the event will sell out again.

NOTES FROM THE NOER FACILITY



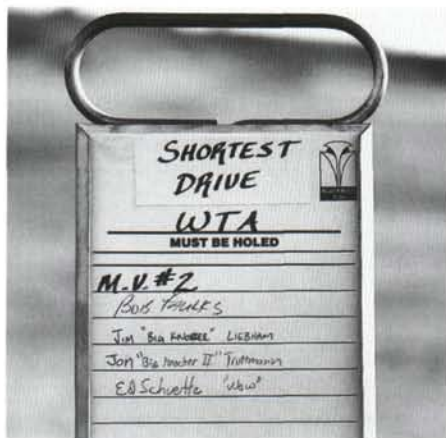
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2002 WTA Golf Fundraiser Door Prizes

This list is not 100% accurate. It is the best that I could record during the hectic registration. The prizes were incredibly generous of these donors. They are appreciated by the event organizer and, of course by the recipients. I'm sorry if I missed your name as one of the donors.

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Allen FudeGreens fees for 2 to Rock River CC	Kerry AndersonWind shirts
Bill RogersGolf Bag and Other Prizes	Kris PinkertonSurprise Item
Bill VogelSnowboard Rental, Lessons, and Lift Tickets for 2 to Sunburst Ski	Larry Lennert2 Dozen Titleist NXT golf balls
Bob Cross\$485 Irrigation System Preventative Maintenance Package	Lyle Christopherson2 windshirts
Bob LohmannSurprise Item	Marc DavisonGolf Shirt, Cleveland Wedge
Bob PadulaWhispering Springs Greens Fees	Mark GrundmanAll Weather Wind Shirt
Brian FerrieSurprise Item	Mark HjortnessSurprise Item
Bridges Golf CourseGreens fees for 4 with cart to Mascoutin	Mark KienertGolf Bag
Bruce SchweigerBicycle	Mike Handrich18 Pack of Golf Ball
Bruce WorzellaCouple Prizes	Mike Kactro2 Golf Packages for two greens fees to Washington Co
Christine FalksFramed Small Mouth Bass Print	Mike Lee10 Prizes
Chuck WollnerGolf Package for 4 with Carts to Christmas Mountain	Mike LyonsTravel Bag
Craig ReindersColor TV, Stereo	Mike UrbenGolf Shirt
Dan BarrittMakita Hand Tool Set, Fishing Tools, and other prizes	Neil RadatzSurprise Item
Dan QuastGolf Bag	Olds Seed2 Swiss Army Knives, 2 Clocks, 4 hats
Dan Shaw18 Pack Pinnacle Gold Balls, Tour Edge Pitching Wedge	Randy DuPontSurprise Item
Dave BrandenburgTraveling Tool Kit, Putter, 2 Golf Packages for Twosomes	Ric LangeGolf Shirt, Head Cover, Putter Cover
Don Ferger.....Sweater	Rod JohnsonAM/FM Flashlight Radio
Doug Laak'Hunter Golf' Golf Bag	Roy JanzenSurprise Item
Dustin RileyGolf Shirt	Roy ZehrenCouple Prizes
Ed Witkowski\$100 Kohl's Gift Certificate, Case of Samuel Adams	Scott SchallerCap
Gary TankoGolf Package for 2 with Cart to Sentry World	Seth BogrenSurprise Item
Geunhwa Jung.....Wisconsin Coffee Mugs	Shawn Hilliard6 Prizes - Golf Shop Merchandise
Glenn GerthGreens Fees for 4 to Mascoutin	Steve Barritt2 gifts of Wollersheim Wines
Gordie WaddingtonSurprise Item	Steve SchmidtSurprise Item
Holly GilmourJohn Deere Toy Tractor	Steve TatroTree Line Exotic Wood Putter
Jeff MilliesSweatshirt/Blanket	Stoughton CCGolf package for 4-some with carts to Stoughton CC
Jerry KershaskyGolf Shirt	Terry KurthSurprise Item
Jim ShoneBox of Titleist Golf Balls, Deluxe Rain Jacket & Pants	Tod BlankenshipGolf Package for 4, 2 Golf Shirts
John HeggeElectronic Rain Gauge, Atomic Clock	Tom KestlyGolf Shirt
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