Iprodione Pro combinations (Trt 2 and 3) as well Curalan EG (Trt 6) provided a significant reduction in disease severity compared to the non treated control (Figure 2). Acceptable disease suppression was established as anything less than 5% disease, and several treatments failed to provide acceptable control. Granular products as well as those with only a single active ingredient were the ones most prone to breaking down, including PCNB applied at 10 fl oz/1000 ft^2. Treatments 12, 14, 20, 22-25, 27-29, 34, 42, 44, and 47-48 provided complete suppression while many more provided acceptable levels of control. Most of these treatments had 3 or in some cases 4 or 5 active ingredients in each treatment. One result observed at Wawonowin that is not shown in this trial is that splitting up the applications can increase control under heavy snow mold pressure. That is to say, spraying a lower rate (but not a half rate) at an early and a late timing can increase control over a higher rate made in one application. If you have had trouble with snow mold control in the past despite using what is generally regarded as an effective product, try spraying 3-4 weeks earlier than your normal application timing to knock down initial fungal inoculums earlier in the fall.

Differences in plot color and quality were also observed, though most products that provided excellent disease control provided statistically similar quality and color. One exception was the treatment containing PCNB (49), which caused a slight discoloration that recovered within 3 weeks of the initial rating.

The primary purpose of these fungicide trials is not to find the best products for controlling snow mold. The primary purpose is to find the best products for controlling snow mold at *your* facility. Every course is unique, and what works for the expectations and budget of one course might not make sense at another. There are dozens of different treatments in the table that can provide excellent or adequate protection at a cost that fits into nearly any budget. If you have any questions regarding the trials or what might work best at your facility, please don't hesitate to email (plkoch@wisc.edu) or call (608-845-2535) Paul at the TDL to discuss your options. In the meantime, if preparing for snow mold doesn't cool you down enough, football season is just days away.

Thanks to the host superintendents listed below for their willingness to let us perform this valuable service to the turfgrass industry on their property. Matt McKinnon at The Legacy at Craguns, Mike Powers at Edina Country Club, Glen Rochester at Wawonowin Country Club, Pat Sisk at Milwaukee Country Club, and Gary Tanko at Sentryworld Golf Course.

	Treatment	Rate	Timing[a]	Dis severity[b]	Quality[c]	Color[d]
26	Instrata	5.5 FL OZ/M	Late	2.5 g	7.3 a-d	0.548 a-e
27	Instrata	5.5 FL OZ/M	Early/Late	0.0 g	7.5 abc	0.584 a-e
28	Instrata	9.3 FL OZ/M	Late	0.0 g	7.3 a-d	0.557 a-e
29	Instrata	11 FL OZ/M	Late	0.0 g	7.3 a-d	0.585 a-e
30	Instrata	5.5 FL OZ/M	Early/Late	11.3 fg	7.0 a-e	0.564 a-e
	Fore	8.0 OZ/M	Early/Late			
31	Headway	1.5 FL OZ/M	Late	3.8 g	7.3 a-d	0.585 a-e
	Daconil Wstik	5.5 FL OZ/M	Late			
	Medallion	0.33 OZ/M	Late			
32	Concert	8.25 FL OZ/M	Late	1.3 g	7.3 a-d	0.548 a-e
	Headway	1.5 FL OZ/M	Late			
33	Interface	4.0 FL OZ/M	Late	2.5 g	7.5 abc	0.579 a-e
	Turfcide 400	8.0 FL OZ/M	Late			
34	Reserve	4.5 FL OZ/M	Late	0.0 g	7.8 ab	0.599 a-d
	Compass	0.2 OZ/M	Late			
35	SP 2169	1.41 FL OZ/M	Early/Late	62.5 bc	3.5 jkl	0.399 fg
36	SP 2169	1.41 FL OZ/M	Early/Late	42.5 cde	4.5 h-k	0.521 a-e
	Pentathlon LF	12.8 FL OZ/M	Early/Late			
37	SP 2169	2.82 FL OZ/M	Early/Late	35.0 def	5.0 f-j	0.526 a-e
38	SP 2169	2.82 FL OZ/M	Early/Late	18.8 efg	5.8 c-h	0.546 a-e
	Pentathlon LF	12.8 FL OZ/M	Early/Late			
39	Vitalonil	8.0 FL OZ/M	Late	36.3 def	4.8 g-k	0.471 def
	Daconil Ultrex	3.2 OZ/M	Late			
40	Tourney	0.37 OZ/M	Late	1.3 g	7.0 a-e	0.576 a-e
	Chipco 26GT	4.0 FL OZ/M	Late			
45	QP TM/C	6.0 OZ/M	Late	2.5 g	7.0 a-e	0.571 a-e
	QP Ipro	4.0 FL OZ/M	Late			
	QP Propiconazole	2.0 FL OZ/M	Late			
46	QP TM/C	6.0 OZ/M	Late	1.3 g	6.8 a-e	0.565 a-e
	QP Ipro	4.0 FL OZ/M	Late			
	QP Myclobutanil	2.4 FL OZ/M	Late			
47	QP Chlorothalonil	5.5 FL OZ/M	Late	0.0 g	7.3 a-d	0.567 a-e
	QP Ipro	4.0 FL OZ/M	Late			
	QP Propiconazole	2.0 OZ/M	Late			
48	QP Chlorothalonil	5.5 FL OZ/M	Late	0.0 g	7.3 a-d	0.567 a-e
	QP Ipro	4.0 FL OZ/M	Late			
	QP Myclobutanil	2.4 FL OZ/M	Late			
49	Turfcide 400	10 FL OZ/M	Late	20.0 d-g	5.3 e-i	0.544 a-e
50	Chipco 26GT	4.0 FL OZ/M	Late	8.8 g	5.8 c-h	0.605 a-d
	Daconil Ultrex	5.5 OZ/M	Late			

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

[a] Early and late fungicide treatments were applied on Oct. 16th, 2009 and Nov. 6th, 2009, respectively

[b] Mean % diseased area

[c] Quality was rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = dark green

[d] Color was rated using a TCM 500 NDVI Turf Color Meter from Spectrum Technologies ®

Table 1a

To Be or Not to Be Resistant!

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

It is hard for me to visualize all of the propaganda golf course superintendents have to sift through. I imagine that most superintendents could fill a dumpster with all the product evaluations they receive. I see a lot of advertisements about disease resistant turfgrasses, but the question I keep asking myself is does this resistance equate to a reduction of fungicide applications. I think this is the question we should be asking ourselves. Why? Yes cultivars of turfgrass do differ with respect to resistance to important pathogens, yet no cultivar to my knowledge is immune. The rebuttal to the aforementioned statement, is why use the word resistant.

Plant resistance is defined as the ability to delay or prevent infection. This definition allows for a continuum of resistance that spans slight delays in infection to complete immunity. In particular the hot topic with host resistance for golf courses is the introduction of cultivars possessing enhanced resistance to the dollar spot fungus. What is the mechanism/s of resistance for these newer creeping bentgrass cultivars?

A study conducted by Stacy Bonos at Rutgers University, evaluated the physical properties associated with increased levels of dollar spot resistance. She found that cultivars with enhanced dollar spot resistance had larger and significantly more trichomes (leaf hairs) than those cultivars with lower levels of dollar spot resistance. These leaf hairs act as a physical barrier to the fungus, which only impedes the infection process. In no way am I trying to diminish the accomplishment of turfgrass breeders with respect to dollar spot resistance, but we still have some more progress to make.

These newer cultivars (Memorial, Declaration, 007, etc.) do demonstrate increase levels of resistance to the dollar spot fungus, but dollar spot eventually still develops on these cultivars. Although dollar spot still develops on these cultivars, they are marketed as means to reduce fungicide inputs. Yet, golf course superintendents have to maintain a certain aesthetic and playability standard that may not be attainable with limited fungicide inputs even with a resistant cultivar. The questions that remain are: 1. Will deployment of creeping bentgrass cultivars with enhanced dollar spot resistance reduce fungicide inputs? and: 2. What genetic mechanisms govern dollar spot resistance?

Paul Koch is working on a project to answer question one. He has planted eight creeping bentgrass cultivars (Memorial, Declaration, Penncross, Penn A-1 and A-4, Syn-96, L-93 and G-2) at Eagle River Golf Course in Eagle River, WI and at the OJ Noer in Madison. We are evaluating snow mold resistance in Eagle River and dollar spot resistance in Madison. This trial was planted last summer, so we have limited data so far. However, what we do have is promising. It appears that the culti-

Figure 1. Relative resistance among creeping bentgrass cultivars planted at Eagle River Golf Course in Eagle River WI. Penncross is the cultivar on the left and Declaration is the cultivar on the right.

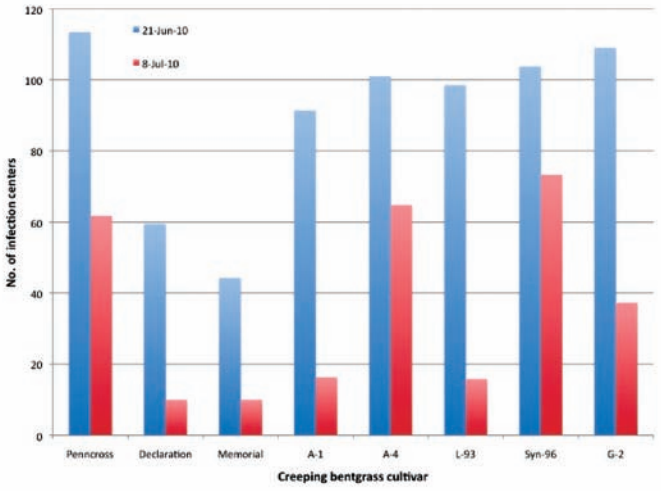

Figure 2. Relative resistance of eight creeping bentgrass cultivars to the dollar spot fungus Sclerotinia homoeocarpa. Blue bars represent the number of dollar spot infection centers per plot on June 21, 2010 and red bars represent the number of dollar spot infection centers per plot on July 8, 2010. Fungicides were applied on June 21 and July 9, 2010, which explains the decrease in dollar spot developed between the two rating dates.

vars touting dollar spot resistance are also more resistant to snow mold fungi (Figure 1). The picture demonstrates snow mold development when sprayed with half rates of Instrata and clearly the dollar spot resistant cultivar in the picture (Declaration) has far less snow mold. This was surprising because very few cultivars of bentgrass display differences when placed under intense pressure.

Memorial and Declaration are marketed as creeping bentgrass cultivars possessing enhanced dollar spot resistance, which is supported by our initial data (Figure 2). Yet when we calculate the area affected within each plot regardless of cultivar, using a resistant cultivar does not provide acceptable levels of dollar spot control (<5% disease). However, all of these plots have only received two fungicide applications to date. On the second rating date on July 8, 2010, dollar spot intensity was greatly reduced in some creeping bentgrass cultivars even after a fungicide application. So far these data indicate that planting a dollar spot resistant cultivar maybe an effective method for reducing fungicide inputs.

We will attempt to answer the second question by using molecular tools. A colleague in our department, Andrew Bent, is an expert on host plant defense mechanisms and genetics. We are going to work with Dr. Bent to elucidate the mechanisms that may contribute to dollar spot resistance. We are planning on inoculating large populations of a model plant called Arabidopsis thaliana. This plant is a dicot with a very small genome that will allow us to rapidly look at many different genotypes. Basically we can order different genotypes of this model plant and inoculate with the dollar spot fungus. After many screenings we can identify genes that may confer resistance to the dollar spot fungus. The main disadvantage to this system is the plant is a dicot therefore the genes may not exist in monocots. Yet, it is still a good starting point.

Once we have identified genes that moderate resistance to dollar spot, we can then screen existing creeping bentgrass cultivars as well as other grasses such as velvet bentgrass and even rice for these genes. Our goal is to find a gene or genes that convey dollar spot resistance that can be transferred to creeping bentgrass. Furthermore, we can use tools to characterize the gene products responsible for conveying dollar spot resistance.

You are most likely wondering why any of this gibberish I just wrote is important. The main value is for breeders. As plant pathologists understand host resistance using models or molecular tools, specific markers could be developed to screen future turfgrass cultivars for dollar spot resistance. A specific marker for dollar spot resistance could facilitate the release of future creeping bentgrass cultivars.

Disease resistance was not a focus of turfgrass breeding programs in the past. Breeders focused primarily on agronomic qualities such as leaf texture, color, and density. Once cultivars were released with improved agronomic qualities breeders then started focusing on heat and drought tolerance. Only recently have breeders begun focusing on disease resistance, especially in populations of creeping bentgrass. Breeding for disease resistance is paramount if turfgrasses are to remain the dominant urban plant. The turfgrass pathology program at UW Madison intends to help that effort anyway we can.

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What a Treat This Will Be! 2010 WTA GOLF FUNDRAISER

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

Have you ever played golf at Blackhawk Country Club in Madison, with its spectacular views overlooking Lake Mendota? Better yet, have you ever played Blackhawk in the autumn with the trees in full color and the turf in perfect condition? You'll have the chance on October 4th to do just that during the WTA Golf Fundraiser to benefit the WTA Wisconsin Turfgrass Research Sustainability Fund. A registration form is included here and others will be mailed as the event nears. Registration forms may also be downloaded from the website wisconisinturfgrassassociation.org.

Course superintendent Chad Grimm is in his second year, and on behalf of his staff and the Blackhawk CC members, welcomes everyone to this WTA event. Proceeds from the golf outing will be used to fund turfgrass research at the UW - Madison that will focus on maintaining turfgrass in even more environmentally and economically sound ways.

Blackhawk Country Club will provide a unique scenic golf experience. The glacier that crossed the area 20,000 years ago formed the landscape of Blackhawk. Rock, soil and debris left after the glacier melted formed Lake Mendota and the rolling hills of today's golf course.

The course was opened in 1921 and designed by Charles H. Mayo, an English architect whose courses can still be played in England. His Chicago designs gave way to city growth many decades ago. The Club, over its history, hosted all of the WSGA, WWGA and PGA events, including the State Open. Twice in

Blackhawks 375 yard par 4 first hole is not as easy as it looks.

Hole 9 at Blackhawk, 347 yard Par 4.

recent years, it has been the site of the Western Women's Golf Association National Junior Girls Tournament.

The registration fee for the fundraiser is $125. For this you will be treated to a delicious lunch, practice range, and golf with a cart. After golf you'll enjoy hors d'oeuvres and hopefully go home with one of the valuable door prizes and/or golf awards. Many door prices are worth more than the cost of registration. You may register as a foursome or by yourself. The event is a four-person best ball format.

Your registration fee not only provides you the above benefits, but also supports the Wisconsin Turfgrass Research Sustainability Fund at the University of Wisconsin - Madison. Over the WTA Golf Fundraiser's long history, proceeds have gone directly to research projects and more recently have helped fund the Wisconsin Distinguished Graduate Fellowships in Turfgrass Research. Beginning this year, your participation will allow the WTA to add to the new Research Sustainability Fund at the UW Foundation. The difficult fiscal times have only amplified the need for quality research, and your presence at Blackhawk CC will help meet that need.

Blackhawks 310 yard 10th hole shows Badger Pride with a W striped in the fairway.

The golf outing isn't all about funding research, though. It is also about spending time with friends to enjoy a round of golf near the end of the season, and this golf course will not disappoint! I hope that you are able to attend the WTA Golf Fundraiser and play this truly outstanding course. You may contact Audra Anderson at 608-845-6536 or ajander2@wisc.edu if you have any questions. Whether it is your first WTA Golf Fundraiser or if you have attended them all, we hope you won't miss this one.

Wisconsin Turfgrass Association
Golf Fundraiser

Benefiting the
Wisconsin Turfgrass Research Sustainability Fund

Blackhawk Country Club – October 4

Where: Blackhawk Country Club
3606 Blackhawk Drive
Madison, WI 53705
(608) 231-2454

Directions: On Back

What: Golf, Cart, Practice Range, Lunch, Door Prizes, Golf Awards, Hors d' Oeuvres

When: Monday, October 4, 2010

9:30-10:30	Registration
9:30-11:15	Range
10:15-11:15	Lunch (cookout on the patio)
11:30	4-Person Best Ball Shotgun Start
After Golf	Hors-d' Oeuvres, Reception, Prizes, Cash Bar

Cost: $125 per person

Questions: (608) 845-6536

Blackhawk Country Club

The landscape of Blackhawk Country Club was formed by the glacier that crossed the area 20,000 years ago. Rock, soil and debris, left after the glacier melted, formed Lake Mendota and the rolling hills of today's golf course.

The course was designed by Charles H. Mayo, an English architect whose courses can still be played in England. His Chicago designs gave way to city growth many decades ago. The Club has, over its history, hosted all of the WSGA and WWGA events, and the Wisconsin State Open.

Course superintendent Chad Grimm is in his second year, and on behalf of his staff and the Blackhawk members, welcomes everyone to this WTA event. Proceeds from the golf outing will be used by UW-Madison scientists to develop new techniques for managing turfgrass in the most environmental approach.

ENTRY FORM – WTA Golf Outing Fundraiser

Name: _____ Phone: ( ) _____

Name: _____ Email: _____

Name: _____

Name: _____

# of People Attending ____ x $125 per person = _____

You May Also Sponsor A Golf Hole or Make An Additional Tax Deductible Contribution

Optional Tee Sign Golf Hole Sponsorship x $100 = _____

Name To Be Printed on Tee Sign --- _____

or Additional Tax Deductible Contribution = _____

- Please make check payable to WTA and return to 2502 Highway M, Verona,WI 53593
- Refer questions about the outing to Audra Anderson at @ 608-845-6536 or ajander2@wisc.edu
- Registration deadline is Tuesday, September 28, 2010
- You may register by yourself or as a foursome

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August - September 1979

Complied By David Brandenburg, *Editor*

Editors Note: On occasion we look back at a past issue of The Grass Roots for history, entertainment and education. All past issues of The Grass Roots *can be accessed by WGCSA members at the Michigan State Turfgrass Information File. The file can be accessed through the member portion of the WGCSA website.*

The Grass Roots looked a bit different back in 1979 but Editors Danny Quast and Jeff Bottensek did a great job in getting information out to the members. They may of been having trouble getting articles submitted though as they printed the following:

"We Can't Print Promises. Every day all I get are bills. Everybody wants something and I have nothing to give. All I am asking for is articles and nobody wants to give. If only our members knew my address as well as my creditors. THE EDITORS"

Woody Voight's Presidents Message discussed how Wisconsin Golf Courses compare to the rest of the United Sates. Having recently hosted tournaments both Tuckaway Country Club, Ray Knap Golf Course Superintendent and North Hills Country Club, Bob Musbach received quite a bit of complimentary press from local radio and television regarding the excellent playing conditions.

An announcement was made the 1980 GCSAA Conference and Show was to be held in St. Louis February 17-22 with the Mississippi Valley GCSA hosting the event. The Theme for 1980 was "Conservation: Our Key to the Future".

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