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MGCSA Harold Stodola Research Scramble
The Classic at Madden's
Host: Scott Hoffmann, CGCS

October 4
MGCSA Fall Mixer
Minnesota Horse & Hunt Club
Host: Tom Proshek

December 8
MGCSA Awards & Recognition Banquet
Southview CC
Host: Jeramie Gossman

AUGUST HOLE NOTES ADVERTISERS

About the Cover:

North Oaks will host the First Annual Minnesota Wee One golf tournament on September 27. Proceeds will go to Tom Fuller and his family as they await a lung transplant. You are encouraged to participate.

PRESIDENT'S MESSAGE

Moisture Conditions Present Perfect Opportunity to Kill Undesirables

By Paul Diegnau, CGCS

Is anyone else having difficulty keeping up with the incredible growth in your roughs? Wow! It is amazing what a significant rain event every three or four days can do for the often neglected rough areas on our golf courses. I don't know about you, but it is the end of July and I began spraying broadleaves a week ago. Clover made significant inroads this summer and these unusual moisture conditions have presented the perfect opportunity to kill some undesirables.

By now, you should have received a three-question survey via email regarding the treatment of water features on your property. Please answer these questions at your earliest convenience and send to the MGCSA office. Why is this important? As I had mentioned in my previous column, there are new regulations on the horizon regarding all chemical treatments for surface waters. This will include BIOLOGICAL products as well as DYES and COPPER SULFATE.

"As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches."

In a nutshell, these new regulations deem a spray nozzle as point source pollution. Under this designation, pesticide applications made to, over, or near U.S. waters will require a Pesticides General Permit (PGP). The Minnesota PGP program will be administered by the MN Pollution Control Agency. The PGP was developed in response to a decision by the Sixth Circuit Court of Appeals (National Cotton Council, et al. v. EPA). The court voided EPA's 2006 rule that said NPDES permits were not required for applications of pesticides to U.S. waters. As a result of the Court's decision, discharges to waters of the U.S. from the application of pesticides will require NPDES permits when the court's mandate takes effect, on April 9, 2011. EPA estimates that the Sixth Circuit's ruling will affect approximately 365,000 pesticide applicators nationwide that perform 5.6 million pesticide applications annually using 500 different active ingredients.

EPA's PGP regulates discharges to waters of the U.S. from the application of (1) biological pesticides, and (2) chemical pesticides that leave a residue. The following pesticide use patterns are covered under the PGP: mosquito and other flying insect pest control, aquatic weed and algae control, aquatic nuisance animal control and forest canopy pest control.

The current proposed regulations contain thresholds that relate to pesticide use under the PGP. The annual treatment area threshold for controlling mosquitoes and other flying insect pests and for forest canopy pest control activities is 640 acres of treatment area. The annual treatment area threshold for aquatic weed and algae control and aquatic nuisance animal control is 20 acres of treatment area in water or 20 linear miles of treatment area at water's edge. For calculating annual treatment area totals, each pesticide application activity is counted as a separate activity. For example, applying pesticides twice a year to a 10-acre site should be counted as 20 acres of treatment area. Treating both sides of a 10-mile ditch is equal to 20 miles of water treatment area. Exceeding these proposed annual thresholds requires the operator to submit a document to the regulating authority known as a Notice of Intent (NOI). Along with the submission of an NOI come additional responsibilities. These include implementation of IPM practices, development of a Pesticide Discharge Management Plan, submittal of annual reports and maintaining records of pest control practices.

The MN Turfgrass Government Affairs Committee of the MGCSA is considering engaging the MPCA in an attempt to increase the annual threshold levels to minimize the impact on our industry. Please take several minutes and answer the questions in the survey. We need this information to make a case to request this change. Stay tuned and informed.

MGCSA has created a blog site for members to use to disseminate information and assist each other. It will only be successful if members participate. There is a link to the blog on the front page of the MGCSA website. Let's use it!

MGCSA members interested in running for the Board should contact Rick Traver, CGCS.

Nominations for the MGCSA Distinguished Service Award should be forwarded to Scottie Hines, CGCS.

Roger Stewart, CGCS of the TPC Twin Cities is doing fine and recovering at home after recently undergoing heart surgery. He says he will be back to work in no time and will probably be running at 110% by the time you read this.

Until next time,
Paul Diegnau, CGCS

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TIRED OF SUMMER?

Plan Ahead for Snow Mold Control

By **PAUL KOCH**, *Turfgrass Diagnostic Lab Manager*
JIM KERNS, *Department of Plant Pathology*
University of Wisconsin - Madison

It seems rather stupid to start thinking about snow mold with dollar spot, brown patch, and even some Pythium blight wreaking havoc on many area courses, but fortunately or unfortunately we in the Upper Midwest never let snow mold drift too far from our minds. With the dog days of summer upon us, nothing says cooler temperatures are ahead like a snow mold discussion.

The 2009-2010 University of Wisconsin Snow Mold Fungicide Trials were held at Milwaukee Country Club in Milwaukee, WI; Sentryworld Golf Course in Stevens Point, WI; Wawonowin Country Club in Champion, MI; Edina Country Club in Edina; and The Legacy at Cragun's Resort in Brainerd. To see the final results and reports for all these sites, along with pictures of each treatment, please visit the "Research" page at the Turfgrass Diagnostic Lab's website (www.plantpath.wisc.edu/tdl). Disease pressure was quite low at Milwaukee and Edina so those reports provide little information. Disease pressure was extremely high at Wawonowin, and many products that will provide excellent control in most situations did not perform well at this Upper Peninsula course. The pressure at Sentryworld and the Legacy at Cragun's was more representative of what most golf course superintendents in the region face in a given winter, so I encourage you to look up the reports for those sites. We will focus on the Cragun's trial here.

The Legacy at Cragun's is located in Brainerd about two hours north of the Twin Cities. Brainerd has a dense concentration of excellent golf, and Cragun's Resort is among the finest you'll find in the area or region. The primary reason for holding a fungicide trial in the Brainerd area was to test a wide array of products for the control of snow scald, a comparatively rare snow mold disease caused by the fungus Myriosclerotinia borealis. Little is known about the biology of the pathogen or its control, except that many standard fungicide combinations don't provide adequate protection. Unfortunately for us, no snow scald developed on the plots or the course as a whole this year, most likely due to the early and persistent snow cover. but Typhula blight (Typhula ishikariensis) still developed, and we can discuss those results and more below (Figure 1).

The trial itself was conducted on the Dutch course on a creeping bentgrass (Agrostis stolonifera) and annual bluegrass (Poa annua) golf course fairway maintained at a height of 0.5 inch. Either one (late) or two (early and late) fungicide applications were made based on the specifications of the cooperator providing the material. Early applications were made on October 22nd, 2009 and late applications were made on November 23rd, 2009. Disease severity, turf quality and color were recorded on April 1st, 2010. Disease severity was visually rated as percent disease, turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable, and Normalized Difference Vegetative Index (turfgrass color) was rated using a TCM 500 NDVI Turf Color Meter® from Spectrum Technologies. Data was subjected to an analysis of variance and means were separated using Student Newman-Keuls test. Means for disease severity, turf quality and color are presented in the following tables for individual treatments. Thiry-four standard and experimental treatments were tested in the 2009-2010 trials, of which 30 are presented in Table 1. *(Page 6)*

Figure 1: Though some sort of winter injury made rating the snow mold somewhat difficult and may have affected the statistical significance of the results, significant snow mold did still develop and was controlled effectively by many products.

Disease pressure at Cragun's was rather high, though some sort of winter injury was also present in the plots that made rating for snow mold difficult. Non-treated controls averaged 77.5% disease, and T. ishikariensis was the predominant snow mold pathogen observed. All treatments with the exception of two experimental granular products (Trt 2 and 3) provided a significant reduction in disease severity compared to the non-treated control. Acceptable disease suppression was established as anything less than 5% disease, and several treatments failed to provide acceptable control (though rating was made difficult by the winter injury). The treatments providing the poorest control were granular products or those with only a single active ingredient (2, 3, 4) with the exception of PCNB applied as Turfcide 400 (33). Most of the treatments providing complete or acceptable control of snow mold had 3 or in some cases four or or 5 active ingredients in each treatment. One result observed at Wawonowin CC 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 a lighter rate 3-4 weeks earlier than your normal application timing to knock down initial fungal inoculums earlier in the fall before making your normal fungicide application later in the fall.

Controlling snow mold is the primary disease objective for many golf course superintendents in the Upper Midwest. Unfortunately, while every superintendent has the same mission, not all have the same capacity and financial resources at their disposal. There are dozens of different treatments presented in the table on the next page.

(Continued on Page 6)

Snow Mold-

(Continued from Page 5)

below and in the other reports 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 Koch at the Turfgrass Diagnostic Lab to discuss your options.

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.

(Continued on Page 7)

Treatment	Rate	Timing[a]	Dis severity[b]	Quality[c]	Color[d]
1 Non treated Control			77.5 a	2.0 c	0.437 a
2 BAS 67300F	2.25 LB/M	Late	71.3 ab	2.5 c	0.445 a
3 BAS 67300F	3.0 LB/M	Late	57.5 ab	2.8 c	0.439 a
4 Insignia	0.9 OZ/M	Late	51.3 b	3.3 bc	0.472 a
5 Insignia	0.9 OZ/M	Late	20.0 c	5.0 ab	0.493 a
Trinity	1.0 FL OZ/M	Late			
6 Insignia SC	0.54 FL OZ/M	Late	17.5 c	5.0 ab	0.536 a
Trinity	1.0 FL OZ/M	Late			
Daconil Ultrex	3.2 OZ/M	Late			
7 Insignia SC	0.54 FL OZ/M	Late	12.5 c	5.8 a	0.536 a
Trinity	1.0 FL OZ/M	Late			
Iprodione Pro	4.0 FL OZ/M	Late			
8 Honor	0.83 OZ/M	Late	20.0 c	5.3 ab	0.508 a
Trinity	1.0 FL OZ/M	Late			
Daconil Ultrex	3.2 OZ/M	Late			
9 Curalan EG	1.0 OZ/M	Early	11.3 c	6.3 a	0.482 a
Daconil Ultrex	3.2 OZ/M	Early			
Insignia SC	0.54 FL OZ/M	Late			
Trinity	1.0 FL OZ/M	Late			
Daconil Ultrex	3.2 OZ/M	Late			
10 Interface	4.0 FL OZ/M	Late	3.8 c	7.0 a	0.544 a
Triton Flo	0.85 FL OZ/M	Late			
11 Interface	5.0 FL OZ/M	Late	10.0 c	6.5 a	0.534 a
Triton Flo	0.85 FL OZ/M	Late			
12 Interface	6.0 FL OZ/M	Late	2.5 c	7.0 a	0.535 a
Triton Flo	0.85 FL OZ/M	Late			
13 Reserve	4.5 FL OZ/M	Late	23.8 c	6.0 a	80.427 a
Compass	0.25 OZ/M	Late			
14 Reserve	5.4 FL OZ/M	Late	5.0 c	7.0 a	0.551 a
Compass	0.25 OZ/M	Late			
15 Tartan	2.0 FL OZ/M	Late	2.5 c	6.8 a	0.541 a
Daconil Ultrex	5.0 OZ/M	Late			
16 Instrata	4.5 FL OZ/M	Early/Late	12.5 c	5.5 a	0.499 a
17 Instrata	9.3 FL OZ/M	Late	0.0 c	7.0 a	0.541 a
18 Instrata	11.0 FL OZ/M	Late	4.5 c	6.8 a	0.552 a
19 Interface	4.0 FL OZ/M	Late	2.5 c	6.8 a	0.522 a
Turfcide 400	8.0 FL OZ/M	Late			
20 Reserve	4.5 FL OZ/M	Late	6.3 c	7.0 a	0.509 a
Compass	0.2 OZ/M	Late			
21 Vitalonl	8.0 FL OZ/M	Late	22.5 c	5.0 ab	0.500 a
Daconil Ultrex	3.2 OZ/M	Late			
22 Tourney	0.37 OZ/M	Late	8.8 c	6.0 a	0.539 a
Chipco 26GT	4.0 FL 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. 22nd, 2009 and Nov. 23rd, 2009, respectively

[b]Mean % diseased area

[c]Quality was visually 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®

Treatment	Rate	Timing[a]	Dis severity[b]	Quality[c]	Color[d]
27 QP TM/C	6.0 OZ/M	Late	3.8 c	6.5 a	0.522 a
QP Ipro	4.0 FL OZ/M	Late			
QP Propiconazole	2.0 FL OZ/M	Late			
28 QP TM/C	6.0 OZ/M	Late	10.0 c	5.5 a	0.588 a
QP Ipro	4.0 FL OZ/M	Late			
QP Myclobutanil	2.4 FL OZ/M	Late			
29 QP Chlorothalonil	5.5 FL OZ/M	Late	10.0 c	5.5 a	0.515 a
QP Ipro	4.0 FL OZ/M	Late			
QP Propiconazole	2.0 FL OZ/M	Late			
30 QP Chlorothalonil	5.5 FL OZ/M	Late	5.0 c	6.5 a	0.548 a
QP Ipro	4.0 FL OZ/M	Late			
QP Myclobutanil	2.4 FL OZ/M	Late			
31 3336 Plus	3.0 FL OZ/M	Late	10.0 c	5.8 a	0.509 a
Turfcide 400	10.0 FL OZ/M	Late			
32 3336 Plus	3.0 FL OZ/M	Late	6.3 c	6.0 a	0.535 a
Turfcide 400	10.0 FL OZ/M	Late			
Daconil Ultrex	5.5 OZ/M	Late			
33 Turfcide 400	10.0 FL OZ/M	Late	5.0 c	6.5 a	0.585 a
34 Chipco 26GT	4.0 FL OZ/M	Late	12.5 c	5.3 ab	0.550 a
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. 22nd, 2009 and Nov. 23rd, 2009, respectively

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Not Yet Ready for the Pasture!

New Life for an Old Sprayer

By KEN ROST
Frost Services

Well-designed and well-maintained equipment can get decades of use and just like the cars we drive, the older ones are sometimes our favorites. When we hang on to an old favorite car, we know that we miss out on recent advancements in technology. Auto engineers solve problems on previous models and introduce new technologies to create a competitive edge. The same applies to turf sprayer technologies. Every year, advancements and improvements are made in sprayer components. From pumps, tank agitators, valves and controls to nozzle bodies and spray tips, incremental improvements are constantly being made to solve the little nagging problems that we experience when we spray. More importantly, advancements are made in the areas of safety and efficiency to improve the experience of turf spray application.

The question then becomes, 'How do we keep our sprayers up-to-date?'

One answer would be to buy new spray equipment on a regular basis. This is a good choice if you want to minimize the hours of operation on the drive train and chassis. It also helps if you want to have new-looking equipment on your course. This is the same philosophy as trading in your car every couple of years. If you can trade in or resell your sprayer before the booms lose all the paint, you might be able to get good value from a short replacement cycle. However, it's a little harder to do when budgets are slim. Also, a short replacement cycle won't guarantee that components are updated because sprayer OEMs can be slow in adopting new spray component technologies.

A second answer would be to address the little headaches that bother you as you make your applications. Sometimes addressing just one issue improves your equipment and can make you feel like you are using a new sprayer.

The answer we chose for a recent sprayer upgrade project was a more comprehensive overhaul of a beloved sprayer that had accumulated a few items that needed addressing. The sprayer was a Toro Multi-pro 1100 and it was built in 1995. It had an excellent drive train and handled very well. However, after fifteen years of use, the list for improvements to be made on the liquid system had grown.

Problems listed by the sprayer owner were:

Pump: if prime is lost at the end of the tank, we can't get it back.

Agitation: too little agitation at the beginning of the tank and too much at the end of the tank.

Filter: not catching enough junk and the nozzles are getting plugged.

Valves: if one boom is shut off, the pressure for other booms goes up.

Boom Control and Pressure Gauge: lost function of the boom section switches and pressure gauge.

Wishes listed by the sprayer owner were rate monitoring and multi-turret nozzle bodies.

The following was done to address these issues:

PUMP

The pump on the prayer was a centrifugal pump. Centrifugal

pumps are nice because they rarely need any servicing or repair simply because they have few moving parts. However, Centrifugal pumps need to have water in the impeller inlet in order to prime. If trapped air gets into the pump, it will not prime and the mechanical seal can be damaged. New technology in seal material has solved the seal damage issue (Hypro LifeGuard seals) but we still need to get the trapped air out of the pump to get back to spraying. This was accomplished with a simple vent line installed in the uppermost vent port on the pump housing. The other end of the vent line went to the top of the tank. The vent line allows any air in the pump to be expelled back to atmosphere. Then, when the pump is primed a small stream of liquid is returned to the tank. The volume of this liquid is not significant compared to the rest of the volume of liquid that the pump can produce, so it has no effect on the availability of liquid for spraying.

AGITATION

A lot of improvement has been made in agitation technologies since this sprayer was originally built. It was originally equipped with a 'sparge tube' which was simply a stainless steel tube with holes drilled in it to direct flow over the bottom of the tank. It moved very little liquid when the tank was full and it created no movement when the holes got plugged up.

The sparge tube was replaced with an inducting agitator. This device creates extra flow and turn over by shooting a stream of liquid through a venturi which draws in additional fluid. The ratio of fluid pumped into the device to the fluid that comes out is 5:1 for the version we used. That means if 5 gallons per minute goes into the agitator, then 25 gallons per minute of total flow exits the outlet. The longer the cone is on the 'horn' of the eductor, the more efficient the total turn over.

(Continued on Page 11)

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