

reporter with an urge to peek when playing a new course, my head bobs up. And there, just across the practice green, are three more billboards.

They belong right where they are. Two of them promote golf. One, however, is for McDowell's Signature Whisky, a libation that sounds more my style than the vodka at No. 10.

We turn to the beautiful tee box at No. 1. It plays 395 yards from the back tees and falls so sharply downhill that a mountain goat would feel at home. Even my wife, a short-but-straight hitter, is salivating at the prospect of seeing her drive cover 280 yards (that's 105 straight and 175 downhill). I swing, and look up toward Mount Everest in the distance. I top my shot and it still goes 200 yards.

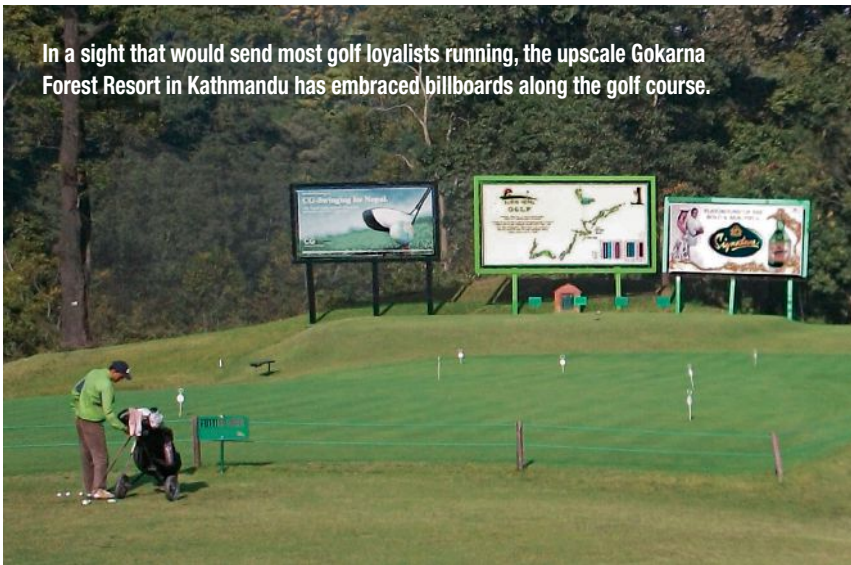
Most of the course is delightful and scenic. And that McDowell's Signature Whisky advertisement I see obviously works on me. Because back at the clubhouse, I down a glass of it, discovering that it really is a full-bodied blend of imported Scotch with Indian malts.

Later, I am gratified to learn that Signature is marketed to premium whisky drinkers who are younger, well heeled, well exposed and on the way to the top. In other words, guys who play at premier courses, guys...like me.

See? Advertising pays. ■

*Contributing editor Curt Harler immediately changes the channel whenever "Flo," the Progressive Insurance spokesperson, comes on. But he likes the Geico gecko.*

In a sight that would send most golf loyalists running, the upscale Gokarna Forest Resort in Kathmandu has embraced billboards along the golf course.



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**C**lub members occasionally say to me, “We want to move our course to the next level, what would you suggest we do?” If the golf course is maintained at a relatively high level, I tell them, “Sand topdress your fairways.” From a golfing perspective it is hard to explain the exact sensation of hitting an iron from a sand-top-dressed fairway. The feeling is like hitting off a links fairway in the United Kingdom or Ireland.

And during wet periods, sand-top-dressed fairways allow golfers to quickly get back out and play, whereas natural soil conditions (soil containing silt and clay) do not.

As a sand layer becomes moisture saturated, it still retains strength and structure, allowing for play and golf cart use that would not have been possible prior to topdressing. The advantage of sand-top-dressed fairways is most apparent during wet springs and periods of summer thunderstorms, when play can be resumed and, in the long term, partially offset the cost of topdressing fairways.

Sand-top-dressed fairways are expensive. Sand, shipping, topdressing equipment and labor are not cheap. The amount of sand going down per topdressing application is significant. The goal is to produce a two- to five-inch layer of sand in a relatively short period of time. Thus, light, frequent sand topdressing is not going to be the most efficient program.

The type of sand used is important, and in the quest for an ideal topdressed fairway, sand strength is important. Research looking at sand characteristics on sports turf can serve as a guide for topdressing fairways (Crum et al., 2003; McCoy, et al., 2004; Yi et al., 2002; Zhang, et al., 1999). Sand that moves or shifts under a load has inadequate bearing capacity, where bearing capacity is defined as the maximum contact pressure the sand can withstand without producing sheer failure. In other words, bearing capacity is the ability of the soil to support a load, such as golfers and equipment.

From research done at Michigan State (Crum et al., 2003) and Penn State (Yi et al., 2002) it appears that coarse and uniform sands

## Sand Topdressing and Fairways

BY KARL DANNEBERGER



LIGHT, FREQUENT  
SAND TOPDRESSING  
IS NOT GOING TO  
BE THE MOST  
EFFICIENT  
PROGRAM.

have the lowest strength and that reducing uniformity adds to strength more so for coarser sand than finer sand. Sand shape appears to play only a minor role, unless the sand is rounded. Amendments such as soil or peat tend to strengthen sands regardless of whether sands are round or angular.

Based on the research, avoid coarser, uniform and well-rounded sands. You can choose either uniform finer sands, or coarser, less uniform sands. I would not add soil, but if you do, only add a small amount and only to coarser sand. Organic matter accumulation and soil contamination, in my opinion, will occur naturally on the fairway during the sand topdressing process. However, the sand component is just one factor in a successful fairway sand topdressing program.

To get the desired effect of sand topdressing, drainage is important to install in areas where water accumulates or is channeled in the fairway. For a better term, if the sand-top-dressed layer gets “supersaturated” with water, all strength will be lost regardless of sand type or mix composition. Drainage is a critical component to the success of sand-top-dressed fairways.

Sand topdressing fairways may sound like a radical practice, a costly one limited to poor soil conditions. But sand topdressing is actually one of the oldest turf practices. Old Tom Morris often shouted to his assistant, “*Mair sand Honeyman*,” which meant apply even more sand topdressing to the greens, tees, and fairways. (Beard, 2002).

Maybe the next step is not as radical as you think.

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*Karl Danneberger, Ph.D., is Golfdom's science editor and a professor at The Ohio State University. He can be reached at danneberger.1@osu.edu.*

# TURFGRASS TRENDS

■ S N O W E D I N

## Preparing for Snow Mold Applications

By Jim Kerns, Ph.D., and Paul Koch

**A**fter an amazingly warm winter and excruciating summer, superintendents probably welcome the chance to plan for snow mold applications. Unfortunately for us, the winter in the upper Midwest was extremely mild in 2011-2012. We only had one location out of five with snow mold damage. Yes, it is sick to wish for damage, but when treatments are evaluated under extreme pressure we are confident they will work in the real world. Due to the mild winter, we will only present data from our 2010-2011 UW Snow Mold Trials. Before getting into the results, however, we should briefly review the biology of the more common snow mold pathogens.

### Pathogen biology

First, snow mold collectively refers to winter diseases of turfgrasses and includes six different diseases (pink snow mold; gray and speckled snow mold; Coprinus snow mold; snow scald; and Pythium snow blight). This article focuses on pink snow mold (*Microdochium patch*), gray snow mold, and speckled snow mold biology and management.

Pink snow mold is caused by *Microdochium nivale* and develops when temperatures are between 32 and 46 degrees F. However, pink snow mold can develop when temperatures remain between 50 and 70 degrees F if wet conditions persist. The pink snow mold pathogen does not require snow cover to develop and can be an extreme problem for areas such as the Pacific Northwest. Symptoms initially appear as small, water-soaked spots less than 2 inches in diameter but quickly develop into larger, darker or reddish-brown patches (See Figure 1A, next page). White mycelium may be observed when the disease initially develops or after snow cover recedes. Eventually, the perimeter of patches may have a pinkish hue (See Figure 1B, next page). Pink snow mold symptoms can resemble gray or speckled snow mold. In our experience however, the gray and speckled snow mold pathogens typically dominate under persistent snow cover.

Gray and speckled snow molds are caused by *Typhula incarnata* and *Typhula ishikariensis*, respectively. The recognized common disease name for both of these organisms is Typhula blight, but we do not agree with that terminology. Although the symptoms induced by these fungi are similar, the signs, epidemiology and management are different. Therefore, we separate them when discussing their management. Gray snow mold requires at least 60 days of continual snow cover to develop, while speckled

*Continued on page 34*

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**FIGURE 1A****FIGURE 1B**

*(Figure 1A) Pink snow mold starts out small but quickly grows. (Figure 1B) A pink hue can be seen around the edges of pink snow mold damage.*

*Continued from page 33* snow mold needs at least 90 days of continual snow cover. These diseases are only problematic for golf course superintendents managing cool-season turfgrass in northern climates that receive persistent snow cover. Symptoms are apparent when snow melts as circular areas of gray or straw-colored patches ranging from two inches to three feet in diameter (See Figure 2A, page 36). Examining affected foliage for reddish-brown or dark, wrinkled sclerotia is an excellent way to identify gray snow mold (See Figure 2B, 2C, page 36). Speckled snow

mold will have much smaller sclerotia, which never have a red color and give the remaining mycelium a peppered look (See Figure 2D, page 36). These sclerotia serve as the inoculum source and typically germinate as temperatures decline to 50 degrees F in the fall.

### Timing is everything

Timing of fungicides is extremely important for successful management of snow molds, especially gray and speckled snow mold. We find that applications soon after the last mowing work very well. We also have observed that split applications work well too, but do not expect excellent suppression if fungicides are applied when turf is still being mowed. We have also found that impermeable putting green covers can increase the severity of gray and speckled snow mold, so plan for high rates of mixtures that performed well in our trials.

The 2010-2011 UW Snow Mold Trials were held at five locations throughout Wisconsin, Minnesota and the Upper Peninsula of Michigan. The trials were held at Grant Park GC in south Milwaukee, Wis.; Sentryworld GC in Stevens Point, Wis.; Wawonowin CC in Champion, Mich.; Les Bolstad GC in St. Paul, Minn.; and The Legacy at Craguns GC in Brainerd, Minn. The full reports for each site can be found at the Turfgrass Diagnostic Lab's Research page at [www.tdl.wisc.edu/research.php](http://www.tdl.wisc.edu/research.php).

The 2010-2011 trials that showed the greatest differences among treatments were observed at Sentryworld GC. Ninety different treatments were tested, and not a single one contained PCNB. Disease pressure was high, as non-treated controls averaged 74.8 percent disease. Despite this high pressure, nine treatments completely suppressed speckled snow mold (*T. ishikariensis*) and 13 kept disease below 5 percent. We tested numerous experimental products and mixtures. There were 14 experimental treatments that kept disease below 5 percent as well.

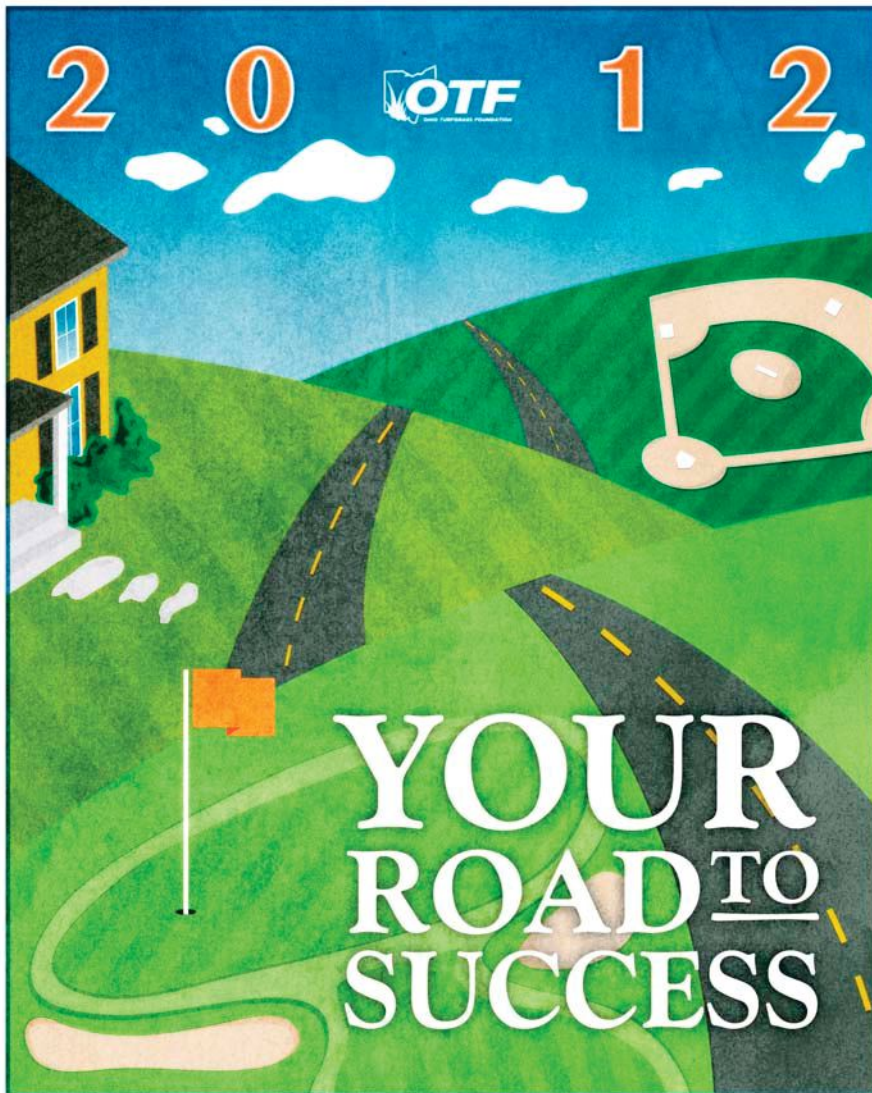
Treatments that performed well included tank mixtures of two or three active ingredients from different fungicide chemistries (contact, DMI, QoI). In general, products that included

*Continued on page 36*

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**FIGURE 2A**



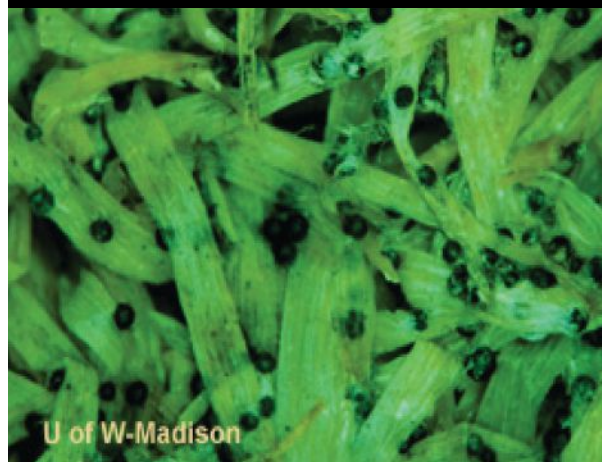
**FIGURE 2B**



**FIGURE 2C**



**FIGURE 2D**



*Continued from page 34*  
 high rates of a DMI did very well in our trials. Products that performed well when mixed with other products included Insignia, Trinity, Instrata, Interface, Reserve, Velistra, Torque and 26/36 (See Figures 3A and 3B, page 37). With 36 treatments performing exceptionally well, including experimental products that are forthcoming, there is a wide range of options for chemical snow mold management.

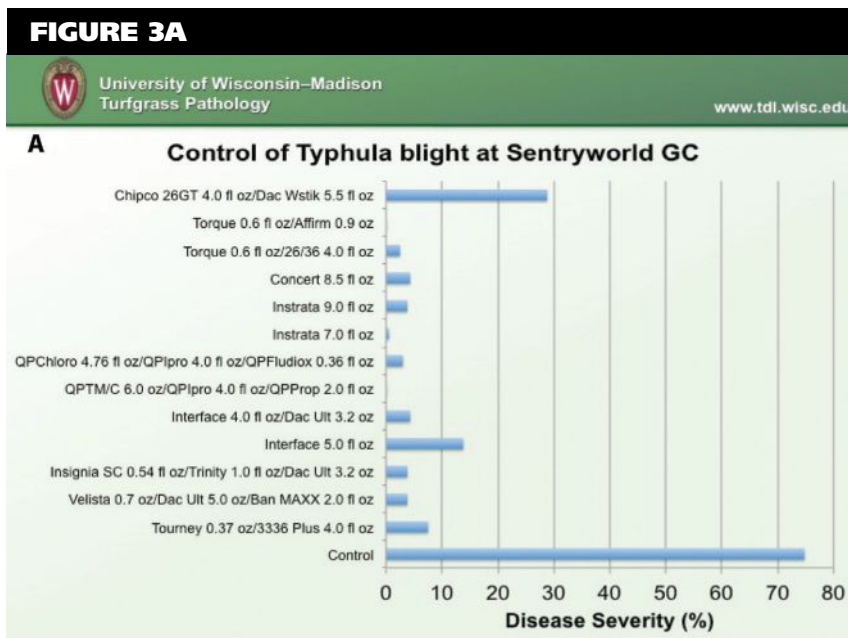
In most areas, the primary snow mold of concern is pink snow mold. Products that are typically very effective against pink snow mold are iprodione, QoI fungicides (Heritage, Insignia, Compass, Disarm), Trinity, Torque and various pre-mix products. Research from Dr. Derek Settle reveals that tank mixtures of

Banner MAXX and Daconil Ultrex work well against pink snow mold, as do applications of Tartan or Heritage TL (See Figure 4A, page 38). Data from the West Coast demonstrate that applications of Interface, Headway and Torque are effective in suppressing pink snow mold development (See Figure 4B, page 38). Fairway applications in many areas may not be warranted, but be prepared to deal with pink snow mold during the spring if wet conditions develop and persist. If the disease does develop, it is normally easy to clean up with any of the fungicides listed above. Moreover, research has shown that applications of ammonium sulfate help to limit severity of pink snow mold, especially in calcareous soils.

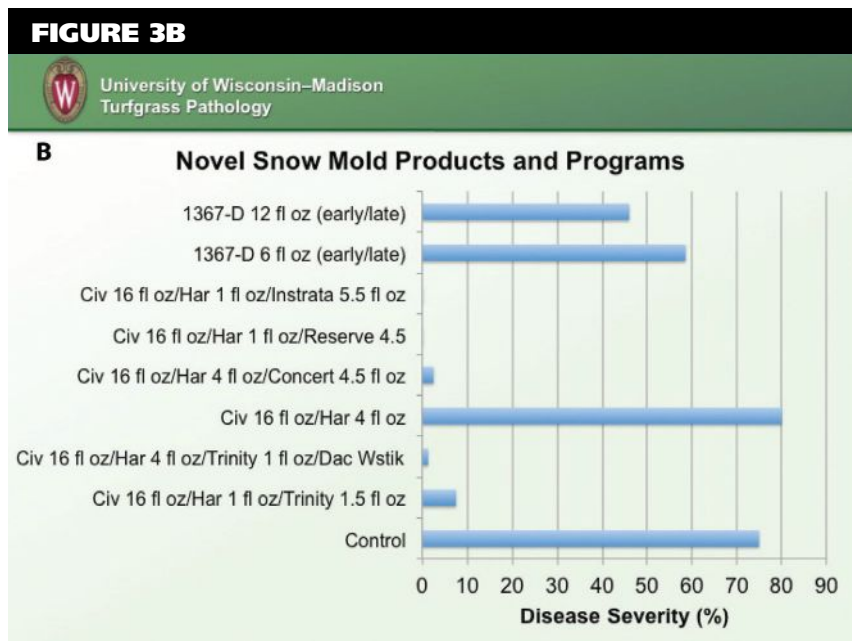
The treatments listed above will provide

LEFT (Figure 2A) Gray snow mold patches range in size from two-inches to three feet. (Figure 2B, 2C) Examining affected foliage for reddish-brown or dark, wrinkled sclerotia is a good way to identify gray snow mold. (2D) Speckled snow mold has much smaller sclerotia than gray snow mold, which never have a red color and give the remaining mycelium a peppered look.

**FIGURE 3A**



**FIGURE 3B**



The pink snow mold pathogen does not require snow cover to develop and can be an extreme problem.

excellent snow mold protection but may not be practical for most facilities or larger areas such as fairways. PCNB is a popular product because it provides a reasonable level of control at an affordable price.

Trinity and Torque will both provide a reasonable level of snow mold control (0 to 20 percent disease allowed) at costs that most facilities can afford. If greater levels of control

are desired and can be afforded, mixing in products such as Daconil, 26/36 and Insignia will improve disease suppression. A final consideration about snow mold fungicides is how soil temperatures affect their residual efficacy. Once soil temperatures consistently eclipse 32 degrees F, fungicides applied prior to snow cover quickly degrade.

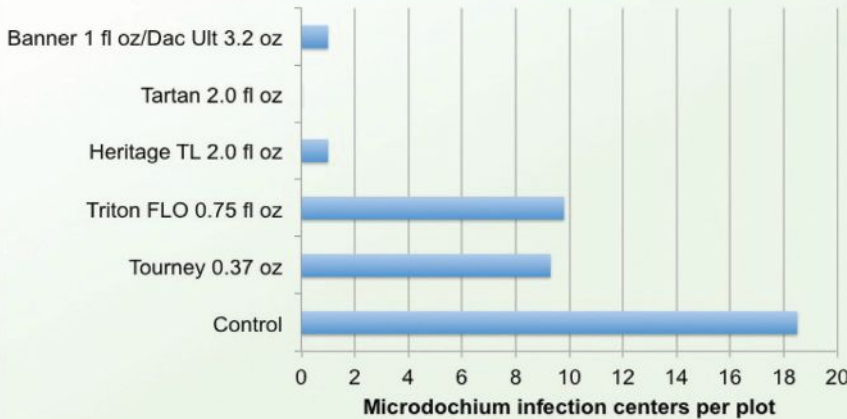
*Continued on page 38*

**FIGURE 4A**



University of Wisconsin-Madison  
Turfgrass Pathology

**A Spring Microdochium patch control in Chicago 2010**



Applications dates were May 6, 20 and June 2, 2010.  
Settle et al. 2010. PDMR 5:T036

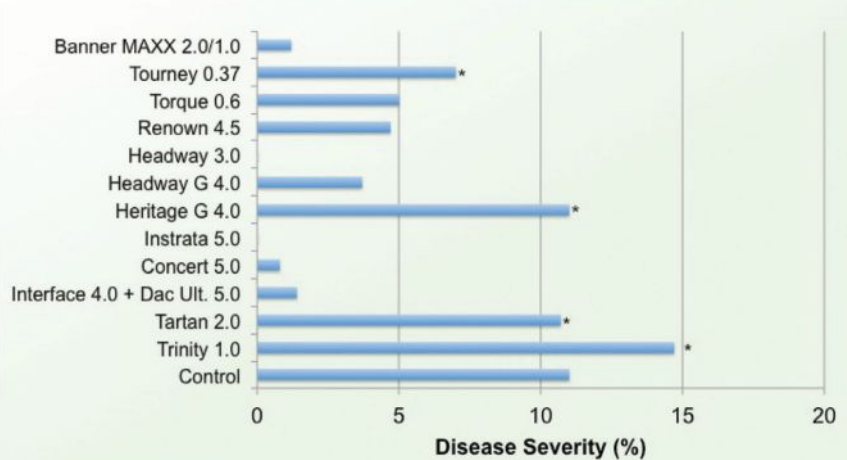
There is a wide range of options for chemical snow mold management.

**FIGURE 4B**



University of Wisconsin-Madison  
Turfgrass Pathology

**B Fall and spring applications for control of M. patch in Oregon**



Data from Dr. Rob Golembiewski  
Treatment dates: 10-21-10, 11-19-10, 12-16-10, 1-14-11, 2-10-11 & 3-9-11  
\*Treatments are not different from non-treated control

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Ultimately, once the snow melts and the ground thaws, fungicides applied in the fall are no longer effective, and re-applications may be warranted to protect against new pink snow mold infections.

Jim Kerns, Ph.D., is an assistant professor of plant

pathology at the University of Wisconsin, Madison, and Paul Koch is turfgrass diagnostic lab manager there.

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## The 19th Hole with...

# Damon Di Giorgio

Superintendent, Fieldstone Golf Club, Greenville, Del.



### What are you drinking?

Presidente. It's a Dominican beer. *Me gusta Presidente!*

### What's your dog's name?

That's "Pinki," with an 'i.' She is half-Chihuahua, half-Yorkie. I've had her five years this month.

### Tell me something cool about "Pinki."

She's a certified therapy dog. We visit people with Alzheimer's. We spend time with people making them happy. I don't think too many superintendents have dogs that are certified therapy dogs.

### How often do you get back to your place in the Dominican Republic?

Two or three times a year, mostly in the

winter. I miss it every day. I have a picture of the D.R. in my office. It's definitely where my heart is.



### Where's the first place you go when you're back in the D.R.?

Soles. It's a chill-out bar on the beach. It's about 100 steps from my place. It's totally "Norm" from *Cheers* when I go there. The cook in the back comes out and gives me a hug when I walk in.

### What was the last thing you bought online?

I bought my work shoes online from Cabela's. They're brown, waterproof, low-cut shoes. Good for working outside but classy enough you can go to meetings in them.



**Who is cooking dinner and who is doing the dishes?** I'm getting Chinese tonight, so there are no dishes. Everything goes right in the trash.

**Do you always eat out?** Absolutely. You work so much — I've been here for 14 hours today — the last thing I want to do is go home and cook.

**There has to be something you like to cook?** I have no desire to ever cook. I only use the microwave.

### What game show would you like to be on?

The Price is Right. We watch that at lunch. You don't have to be extremely smart, and people can help you — you can look into the crowd, someone can tell you what to say. Plus, the awesome models.

### Where do you like to go after work?

Brandywine Brewing Co., because they allow my dog there and they give her water. She can sit right beside me. They give her a huge bowl of water, big enough that she could probably swim in there. They put ice in it and everything.

### Damon, thank you, you're off the hot seat.

So I can go get my Chinese now?

As interviewed by Seth Jones, August 27th, 2012.

