MANAGING bentgrass dise

Various control methods can help keep your bentgrass looking its best.

By David McPherson

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Golf fans watching the 2011 Open Championship on TV were surprised to see large, dark green round rings on some of Royal St. George's greens. For North Americans used to watching the pristine greens in high-definition on their big-screens at Augusta each April, this was a shock.

What were these strange circles? For superintendents, the appearance of these blights on greens for all the world to see – especially at one of golf's majors – was viewed as a positive since it gave the media a chance to educate the average fan and a global audience on one of the many diseases superintendents combat daily to get their putting greens in top playing shape.

This excerpt from "The Open Championship: a Guide to the Environmental Management of the Links, further educates the average golfer of what these strange rings were all about:

"Observant spectators at The Open may spot rings and arcs of darker coloured grass to some greens and fairways at Royal St George's. These 'fairy' rings are veteran living organisms that may be hundreds of years old. Fairy rings were once believed to be meeting places where fairies came together to dance but are actually caused by fungal mycelia (fungal roots) which grow in circular patterns beneath the soil."

Fairy rings can vary in size from a few inches to 200 feet in diameter and suppression is the most practical way to manage them. The theory is that fairy rings will thrive less where the turf is well irrigated and fertilized. This control method involves a combination of core aeration, deep watering and proper fertilization. As Dr. Peter Dernoeden, turfgrass specialist at the University of Maryland – an expert in creeping bentgrass management – points out, these diseases may be caused by any one of 60 species of fungi, which makes chemical control more unpredictable.

"Control of fairy rings is made extremely difficult due to the hydrophobic nature of the infested soil," says Dernoeden. "Chemical control is difficult because the fungus grows deeply into the soil and lethal concentrations of fungicide do not come into contact with the entire fungal body."

Fairy rings are just one of several bentgrass diseases superintendents are seeing on their greens. Together, turf researchers and agronomists are working diligently to stay ahead of these pathogens to keep those greens green for golfers, but it's no easy task. Many of these pathogens attack thatch, but depending on the growing conditions and climate, each region tends to see different diseases.

Darin Bevard, senior agronomist for the USGA for the mid-Atlantic region, says soilborne pythium diseases are also becoming more of a problem; these pests are often caused by the maintenance practices that today's golfers demand.

"The decline of the grass associated with these diseases generally occurs when the grass is being mowed low with intense mowing and rolling schedules," he explains. "However, this is not always the case. In general, the biggest problems we see are when the greens are being pushed for fast speeds under stressful weather conditions. That's when one of these 'diseases' shows up. Is it the disease or is it the physiological stress of intense maintenance? The answer is both. The grass has limits, and to date, Mother Nature is undefeated. When the weather is poor for cool season grass management, the golfers need to realize that we have to back-off on maintenance or suffer the potential negative consequences."

TAKING IT ALL AWAY. Thatch management is a key to combating bentgrass diseases and keeping these pests at bay says Katerina Serlemitsos-Jordan, an associate professor at the University of Guelph, in the school's plant agriculture department. She recently completed research on this topic. In her region (southern Ontario, Canada), take-all patch is the worst issue. Last spring, when it was very cool and wet, this bentgrass disease was rampant on many courses.

"It's partly the climate because we have extended periods of cool and wet weather, but take-all patch pathogens also do well in soils with high pH levels … anything above 6.5," she says. "The soil pH levels in south-

ern Ontario are probably around 7.5 and sometimes get as high as 8, so we tend to see take-all patch visible for extended periods of time. It's a problem that usually attacks new greens, but if the conditions are right, we will sometimes see take-all patch on 10 to 15-year-old greens too."

So, how do superintendents battle take-all patch and make sure it doesn't become an intrusive invader? Serlemitsos-Jordan says fertilizers such as ammonium sulphate are one option. "Some go as far as acidifying their irrigation source, but I don't know how effective that is," she adds.

The best way to prevent these unwanted guests from making a home on your greens is by managing the thatch – increasing the health of the turf, so these pathogens never have a chance to establish themselves in the first place.

"Thatch-management is huge," says Serlemitsos-Jordan. "Anything we can do to promote healthy root growth such as core aerification, even solid tine aerification just to open up the channels where the roots can actually grow, is beneficial. One of the best ways to manage this disease is to keep the plant as healthy as possible, but you can also change the environment.

"The other thing superintendents can do is to monitor their irrigation," she says. "There are still guys out there that water 10 minutes a day. What that creates is a three-prong negative effect. First, it increases thatch levels; studies show that shallow, frequent watering will increase thatch levels. Second,

Pythium, like several bentgrass diseases, can usually be at least slowed by keeping turf well-drained and aerated.

it also promotes shallow rooting because you are constantly keeping the top three to five centimeters of the root zone moist, so the roots have no need to grow any deeper as they are happy in those shallow layers. Finally, by keeping the soil moist, you are creating a very conducive environment for the pathogen because they like moisture."

Meanwhile, out in California, where courses often deal with dry conditions, Pat Gross, says all is "quiet on the western front." The director for the USGA, southwest region, who joined the Green Section staff back in 1991, advises courses in his region on current agronomic trends, sharing practical information on golf course maintenance issues to greenkeepers in California, Nevada and Mexico.

"If there was something moving through I would be hearing about it and my phone would be ringing off the hook," he jokes.

While there are no major issues or trends when it comes to bentgrass diseases in his region, one new disease that popped up at a few locations in 2011 is something Gross says superintendents need to monitor closely. The disease, called thatch collapse, or artillery or cannonball fungus, decomposes areas of thatch and can be deadly to a greens' playability.

"It shows up in round circles the size of a coffee cup and it becomes depressed," explains Gross. "This disease really impacts the putting quality. What's most concerning about thatch-collapse is that there is very little known as to why this pathogen has arrived."

The only research conducted to date is by academics in New Zealand. These findings were first described in the May, 2011 issue of the New Zealand Turf Management Journal. The article describes how this disease was discovered at several courses down under in 2009 on both New Zealand's north and south islands. The name artillery fungus comes from the fungus' ability to propel spore masses as far as three metres. Since the publication of this journal article, turf researchers from around the globe have become interested in learning more about this fungus as it has been spotted at several courses in the United States. The disease is most notable for its activity well into the winter months.

"Most thatch collapses occur in the summer, so this makes artillery fungus quite unusual," according to the article.

Other than this nasty, mysterious new predator, are there any other bentgrass disease trends Gross is seeing in the southwest?

"Not much that is causing widespread damage," he says. "What I can tell you is that the newer courses with bentgrass greens or courses that have rebuilt their greens with creeping bentgrass generally have far fewer disease problems. I'm making frequent visits to the Olympic Club in San Francisco, Calif. in preparation for the 2012 U.S. Open and they haven't sprayed a fungicide this year."

Back in the Midwest, Darin Bevard offers a couple comments about bacterial wilt.

"One problem that continues to be discussed more often is the decline of creeping bentgrass on greens caused by bacterial related organisms," he concludes. "There is not total agreement in the academic community about these problems, but something is going on. The USGA has committed significant research to fund this issue. The term used is bacterial wilt. We see yellowing, elongated growth of individual bentgrass tillers and this is often associated with thinning grass, especially under hot, wet conditions." **GCI**

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— Peter Dernoeden, University of Maryland

LEFT: MARY ANN HANSEN, VIRGINIA POLYTECHNIC INSTITUTE; RIGHT: CLEMSON UNIVERSITY - USDA COOPERATIVE EXTENSION SLIDE SERIES