

tendents who were apprehensive about rolling. Now, however, Santerre isn't worried about that because he says rolling only affects the top inch or inch and a half of the profile. Griffith says many superintendents aren't concerned about compaction because they have USGA-spec greens, but those who have push-up greens might be more concerned.

Santerre warns superintendents of damage that could be caused by rollers around greens because of turning a machine while it's in motion. He suggests rolling right off the green to avoid any damage. Griffith says rolling puts less stress on greens than mowing.

Economic impact

Superintendents can save money by rolling more and mowing less. Less mowing means you don't have to backlap or sharpen reels and change blades as often. The cost savings would pay for a roller in one year, Nikolai says.

Griffith says the main reason he rolls is economic, saving on labor because he doesn't mow as often. He also rolls after topdressing, so there's less wear and tear on the mowers. By eliminating a mowing once a week, Bittner saves 24 hours of labor (eight mowers used for three hours).

Rolling costs Santerre \$5,000 a year, but he says it's worth it.

What's right for you?

When it comes to a particular rolling program, superintendents are figuring out what works best for them based on weather, type of turfgrass and green construction, golfer expectations and budgets. Nikolai says there's no one right way to roll, noting that time of year and region of country affects rolling.



"Most superintendents I know roll at least three days a week."

THOM NIKOLAI, MICHIGAN STATE UNIVERSITY

He suggests they look at not mowing every day.

"I never thought I'd be rolling as much as I do, and we're not seeing a detrimental effect," he says.

For Emerson, it's all about managing risk.

"Anytime I can take risk out of the equation, I will," he says. "Rolling is a partnership with the greens program. How does it fit in for you?" ■

Walsh is a contributing editor from Cleveland.

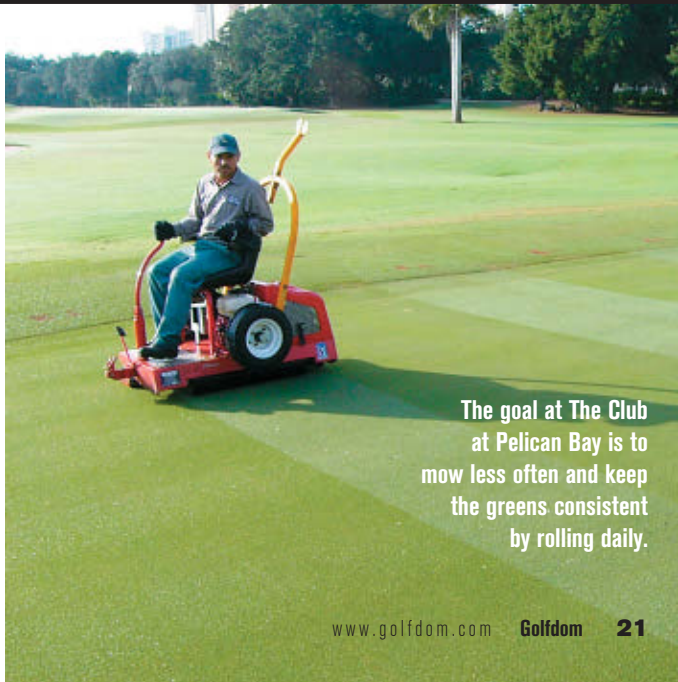
MOWING AND ROLLING

"Thom's classes eased our worries, and we've experimented more," he says. "We increased rolling from four to five times a week. And we haven't been mowing as much. We skip a day or two during the winter, depending on the weather."

Bittner's assistant, Dan Cruse, is conducting rolling research on the bermudagrass. He has nine plots on the club's nursery green. He's performing tests that entail alternating different mowing and rolling fre-

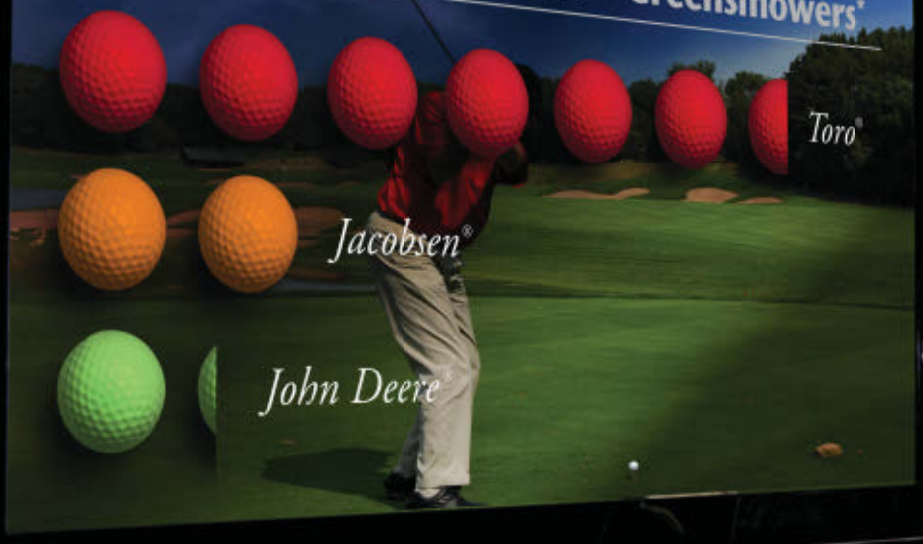
quencies. (For newly published research about rolling on warm-season turf, e-mail Thom Nikolai at nikolait@msu.edu or visit www.michiganturfgrass.org.)

"By rolling daily, you could easily skip one mowing a week," Cruse says. "Rolling every day is advantageous, even if you skip a mowing. We've determined you can roll every day and mow every other day and keep green speed, but we haven't implemented this on the course."



The goal at The Club at Pelican Bay is to mow less often and keep the greens consistent by rolling daily.

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* Top 100 U.S. golf courses as published by Golf Digest, "America's 100 Greatest Courses" supplement, 2009-2010. Brands in use as of August 2009, the chart depicts 99 of the 100 courses.

**Brand share leadership as measured two times per year by the National Golf Foundation.



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BANKING ON EARLY-SEASON DOLLAR SPOT C

Superintendents find success and save money by spraying earlier

Caught between a rock and a budget crunch, golf course superintendents from low-end daily-fee to high-end private layouts are looking for ways to save money without reducing the quality of their turfgrass.

For some, the answer comes in their methods of battling the pervasive dollar spot disease that doesn't require a change in their favorite product or the rate of application. All that is modified is the timing. Across the country in regions that see dollar spot, roughly 50 percent of superintendents are now applying fungicides in either early spring or, for some, in late fall. The result for many is a better control of the disease with fewer applications.

Jay Mathews, the longtime superintendent at Grove City (Penn.) Country Club, first tried early-season control after hearing about it at a field day sponsored by The Ohio State University. Since that time, Mathews has been putting down two fungicide applications in early April. Not





BY ANTHONY PIOPPI,
CONTRIBUTING EDITOR

CONTROL

More superintendents
are finding that it pays
to spray in the spring
to control dollar spot.

only has he found that control is even better than when he previously only sprayed during the summer, but his course requires fewer chemicals. He estimates his savings at \$20,000 a year.

In conjunction with the new way of battling the disease, Mathews has also changed the way his turf receives nitrogen. “We’ve had crazy summers with too many variables with our slow-release fertilizers,” he says.

As a result, 79 percent of his nitrogen applications are in ready-available form and 21 percent are slow-release products. He makes nitrogen applications once a month.

Mike Boehm, professor and chair of the plant pathology department The Ohio State University, says researchers stumbled across the possibility of a spring or fall application controlling dollar spot back in 1999. The department was rotating turf plots for disease trials and some received no fungicide applications in order to prevent carryover from one study to the next. It was then that Boehm and others realized that plots that didn’t receive chemical applications didn’t show signs of dollar spot.

“That’s the way research happens,” Boehm says. “If you keep your eyes open, you might see something.”

At the same time, says Boehm, turfgrass researcher Joe Vargas at Michigan State University saw the same results with early-season applications of chlorothalonil-based products. Soon, leading researchers such as Rutgers University’s Bruce Clarke, Purdue University’s Rick Latin and Penn State University’s John Kaminski were conducting their own experiments.

By 2005, several fungicide manufacturers were taking part in the research. Their products had an impact. “This isn’t chemical-company specific,” Boehm says.

What is specific to make the program work, though, is for superintendents to have a handle on five areas of information. Boehm said knowing the historical trends for heat, humidity and precipitation as well as the fertilization status of the turf and the frequency of plant growth regulators use is vital.

The goal is to determine when the pathogen is active and doing damage to the plant, not when the plant shows the damage, Boehm says.

“If you know when it interacts with the host, you’re better equipped to manage the pathogen,” he adds.

Mathews describes it this way: “It’s a lot easier to control a 5-year-old child than a 25-year-old child.”

All the research has not determined why applying fungicides in fall and spring is so effective. Boehm said some postulate that the timing inhibits the “waking up” of the disease or possibly, in the case of the fall application, makes it less winter hardy.

Continued on page 26

PHOTO COURTESY: OKLAHOMA STATE UNIVERSITY

Dollar Spot Control

Continued from page 25

"Somehow, we're affecting how the fungus works with the grass plant," Boehm says.

When conditions are right for dollar spot to emerge, the temperature is between 68 degrees Fahrenheit and 86 degrees F, according to Boehm. But it can still survive, and might be doing the most damage, at temperatures below 68.

"It doesn't like it less than 42 degrees," Boehm says. "We're not sure what it's doing between 42 and 68 degrees, but the chance is it's growing."

Boehm says the optimum time to put down the initial spring application is soon after fairways have been mowed for the second time. Fall applications probably work just as well as spring ones, but it's more difficult to know when to apply.

"It's easy to predict when you're going to break dormancy," he says. "It's difficult to predict when you're going dormant."

Whatever the reasons for the success, more and more superintendents are buying into the early-application method.

Dennis DeSanctis, a territory manager for Syngenta Professional Products in the Northeast, estimates that about 50 percent of his customers now put down a spring application.

"It's been a trend going on for the last five years," DeSanctis adds, adding a reason for this is "more and more resistance issues" shown by dollar spot, the most troublesome disease on cool-season turf.

Boehm says he's happy superintendents are trying the method and monitoring the results rather than just listening to the "sage on the stage," as he refers to himself and others who lecture at education seminars. "It just validates all the work we're doing," he adds.

Many superintendents, however, are sticking with the method of frequent summertime spraying. In Pennsylvania, Mathews says he's touting the program and has let others know he's saving money and controlling the disease better than ever. But those superintendents still don't change.

"They haven't bought into it because they have the budgets," Mathew says of many of his brethren at courses with money. But Mathews says he has been questioned about it more in recent years as budgets have been cut. Mathews also admits that making the switch can cause consternation.

"It's a little scary," he says.

There are some superintendents, like Mike Stachowicz at Dedham (Mass.) Country and Polo Club, who experimented with the spring application and missed out on the desired results.

"It didn't seem to help me when I needed it most," he says, although he admits he remains intrigued by the early

spraying regime and may experiment with it again.

For those looking to see if the spring or fall application will help their courses, Boehm suggests this strategy: First, determine which fairways are most affected by dollar spot and choose one for the experiment. Second, cover a 4-foot by 4-foot section at the end of the fairway nearest the tee, with 2 feet on either side of the midpoint so that an unsprayed control zone is created. Next, spray half the fairway in early spring, again covering the 4-foot by 4-foot-section.

From there, the superintendent should follow his or her normal spray regimen, remembering to cover the control area. On the second application, don't apply to an area one boom width in from the end of the fairway nearest the tee. On each subsequent spray, move in one more boom width. As a result, the chemical will not have been applied four boom lengths in from the tee end of the fairway by the fourth application.

The final step is when dollar spot does hit, starting at the green end, the superintendent should drive down the middle of the fairway to look for symptoms of the disease, noting when he sees the beginning of satisfactory control, Boehm says.

The superintendent should also look to see if there's less dollar spot on the side of the fairway that received the spring application. Also, at the end of the fairway nearest the tee, he or she should check to see if the pathogen is still being controlled in the

area that received fewer applications than normal.

Often times, superintendents will realize, even if they don't want to switch to putting down a fungicide in the spring, that they can still get away with fewer applications, Boehm says.

Early-season applications to control dollar spot could have a far-reaching impact on golf course maintenance as a whole.

"Understanding the biology and ecology of the fungi is key to moving IPM on golf courses to a whole new level," Boehm adds. ■

Whatever reasons for the success, more and more superintendents are buying into the early-application method.

Pioppi is a contributing editor to Golfdom and is based in Middletown, Conn.

THE POLITICS OF GREEN SPEED

BY CHRISTOPHER S. GRAY SR.

Few maintenance issues affect more superintendents, regardless of what type of facility they manage, as much as green speed. It's also the one issue that has continued to attract more awareness and greater disagreement. Sadly, it's also the one issue that we've been woefully ineffective in handling properly.

To be fair, though, the topic of green speed went from being a new issue to a full-fledged superintendent-killing machine in a ridiculously short amount of time. It was only the late 1970s when the Stimpmeter burst onto the industry as the tool that was designed to measure consistency among the greens on a course, not the speed. Even the developer of the modern Stimpmeter, USGA's senior technical director Frank Thomas, feared that course owners and green committees would use it as a "speedmeter" to compare their course's greens with competing golf courses. Boy, was he right.

Televised golf should also shoulder a significant portion of the blame for escalating the status of the Stimpmeter reading. It seems every televised tournament includes a broadcaster enthusiastically reporting the greens are Stimping at 14 or some other ridiculously high number that simply doesn't translate into daily course conditioning. Such statements give ambiguous credibility to a legion of misinformed green committees and members who want the fastest greens in town.

The bottom line is television coverage of ultra-high-end courses, some of which have prepared for years for the four days of one golf tournament, have manipulated viewers to associate high-quality golf with super-fast greens. Golfers watching these broadcasts believe they can play like the professionals they're watching — and play on greens just as fast.

As a superintendent, developing an effective game plan when it comes to managing unrealistic demands for green speed hasn't been easy. One strategy involves educating golfers on the perils of maintaining abnormally high green speeds to get them to lower their expectations. By explaining to them what happens to the plant physically when techniques to produce high green speed are employed, they are supposed to see the light and decide that it's all right to slow down the greens.

Another popular strategy is lying to golfers about Stimpmeter

readings. I can't believe anyone would attempt this for fear of being fired, but I know several superintendents who have.

While these strategies have good intentions, their effectiveness has been spotty at best. Green committees and members don't want to be educated on agronomy; they want fast putting surfaces like they see on TV. It's that simple.

Michigan State University turfgrass professor Thom Nikolai, Ph.D., has outlined his concept of developing an "ideal green speed" for golf courses, which would be driven by the course's superintendent. Under this model, the superintendent would collect data on daily green speeds, survey the golfers daily on their perception of the green speed to develop the desired range, evaluate maintenance practices affecting green speeds, and communicate the results to golfers.

To date, this idea has the best chance of being effective. It addresses and uses the Stimpmeter properly. Ultimately, it will be the superintendent's communication skills that will serve this program best. Communication has always been the key to success in

our industry, which reminds me of a story.

I once visited a superintendent at his course where the topic of green speed had been a huge problem for several years, mostly with the superintendent having the final say. Immediately outside his office door, he had constructed the most creative "thing" I have seen pertaining to the green-speed issue. He took a white-plastic seed bucket and filled it entirely with cement. He then took a Stimpmeter and placed it in the hardening slur with about half of it sticking out of the top at a 60-degree angle. When it dried, he made a sign and hung it on his sculpture for all to read: *"Only the truly worthy may pull the sacred Stimpmeter from its resting place."*

I wonder how many members have tried to pull it out. ■

Gray is golf course superintendent and general manager of the Marvel Golf Club in Benton, Ky.



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PART TWO OF A THREE-PART SPECIAL SERIES

Plant Health Report

They are two of the golf course maintenance industry's biggest buzz words: plant and health. And, yes, they go together like spaghetti and meatballs. That's why *Golfdom*, in partnership with BASF Professional Turf & Ornamentals, has embarked on this plant health series.

PART TWO of the series focuses on fungicide management in accordance with plant health. Editor and Chief Larry Aylward spoke with golf course superintendents and other experts on how to get the best out of fungicide programs as the programs relate to plant health. His story begins on page 32.

THE FINAL STORY in the series, which appears in May, looks into the future and examines how superintendents will manage turf in 2025. We'll speak with superintendents and other experts to get their thoughts on how plant health will best be achieved 15 years from now.

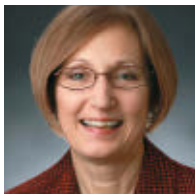
PART ONE, which ran in March, covers the modern concept of plant health and turf-disease management — from cultural practices to fungicide use — and what golf course superintendents should do to achieve the highest success rate to control diseases such as dollar spot and anthracnose, among others.

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Rooted in Science

After reading the March column, you're now aware of research at BASF that reveals plant health benefits, which can help golf



BY
RENEE J.
KEESE

Editor's note:
In May's column, look for how BASF is connecting science to superintendents.

course superintendents and other turf professionals better manage stressed turfgrass. You may be wondering what this means to you and asking yourself,

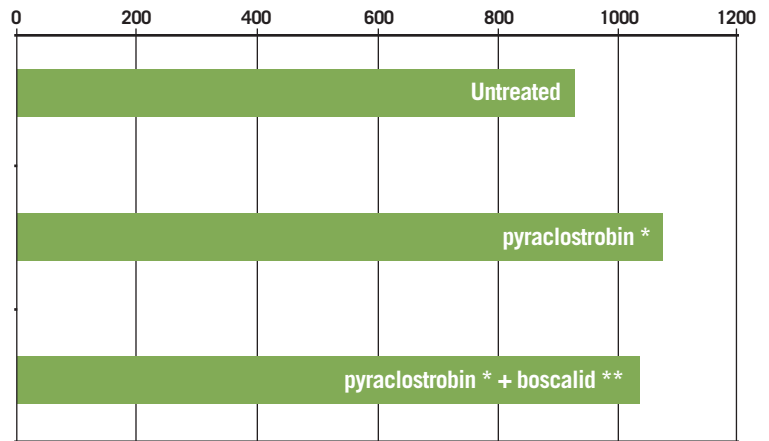
"How can I go from research to my real world?"

Research across the United States has demonstrated that pyraclostrobin effects in turf are not easily documented above ground — the turf is green, has good chlorophyll content, is healthy and looks like any other turf. The big differences are occurring below ground where we don't usually look.

When turfgrass goes through drought stress, current research shows that the pyraclostrobin-treated turf has deeper roots and more roots compared to turf that is untreated. This holds true for both pyraclostrobin alone (a new liquid formulation which is pending EPA registration) and when combined with boscalid.

Bentgrass varieties A-1, Penncross and Colonial were grown in United States Golf Associ-

BENTGRASS TOTAL ROOT LENGTHS (CM) UNDER DROUGHT STRESS



* new liquid formulation pending EPA approval
** pyraclostrobin rate reduced in combination

6 US trials: A-1, Penncross and Colonial creeping

ation specification sand mix under greenhouse conditions. Bentgrass was either treated with fungicide or left untreated, then exposed to normal irrigation or reduced irrigation to simulate drought. The turf was continually mowed at greens height to simulate normal maintenance practices.

When root samples were pulled from the sand cores, the total length of the roots and the volume in centimeter/cubic meter (cm/m³) were significantly increased when pyraclostrobin was applied under drought-stress conditions.

TifEagle bermudagrass was also evaluated and a similar response was observed when it was stressed with short days and drought.

With both turf types, more roots were present following a pyraclostrobin application, and this difference in root growth

became greater as the turf plants were stressed. Pyraclostrobin-treated plants under stress had similar root lengths and volumes compared to untreated-unstressed plants.

Superintendents understand the value of having healthy roots. Deeper, healthier roots can sustain a turf plant during any stress that comes along — the plants are able to tolerate the stress better and recover more quickly. Turf managers know that developing a strong root system in spring can help them through the summer months — now pyraclostrobin can also help through those tough summer months not only by providing excellent disease control, but also by providing longer, higher volume turf roots. ■

Renee J. Keese, Ph.D., is biology project leader for BASF Turf & Ornamentals.

