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Golfdom

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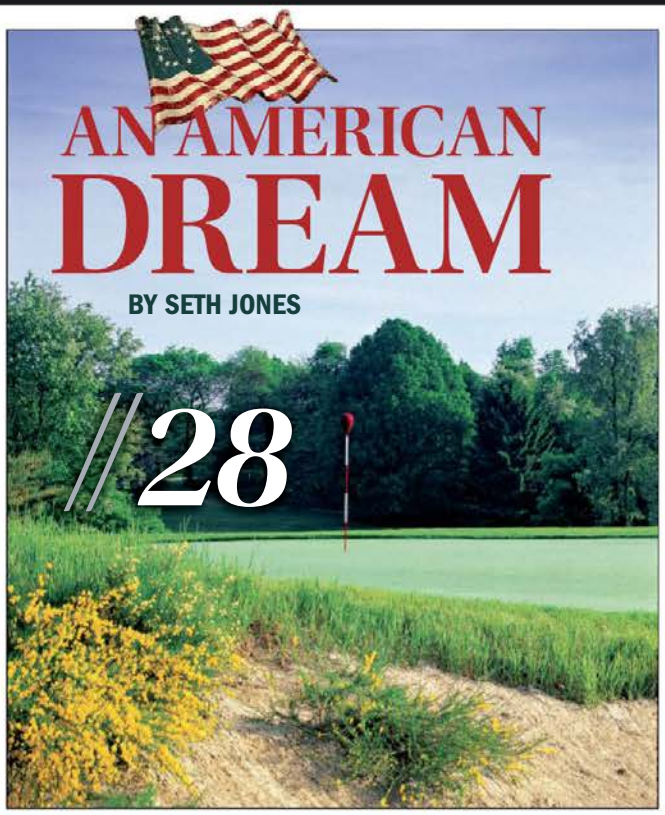

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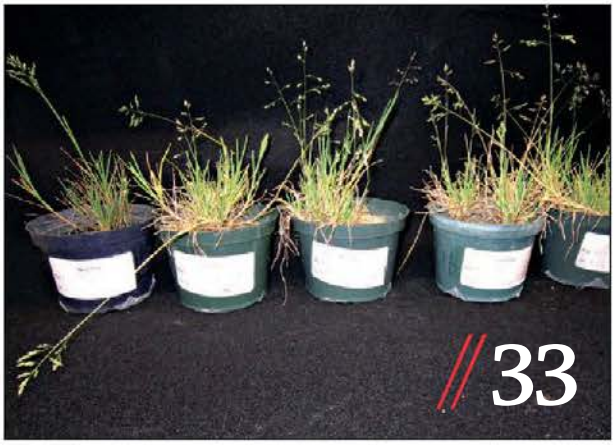

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"As much as Shaffer is a superintendent, he's also a teacher. He teaches his crew everyday, and he also taught this visiting journalist a few things."

SETH JONES, *Editor-in-Chief*

An Open mind

Last month we had Austin Allison on our cover, a young up-and-comer in the industry. ¶ This month we feature Merion Golf Club, site of next month's U.S. Open, where Matt Shaffer is the director of golf course operations. ¶ From Allison in April to Merion in May. That's like going from the rookie of the year on one cover to a hall of famer the next.

I'll tell you that I felt some trepidation in taking the trip to Ardmore, Pa. to do a cover story on Merion. I went there knowing full well that Shaffer and his crew would be getting a ton of ink in the next few weeks. Not just in the industry trade magazines, but even in the magazines and newspapers that you find on the newsstand. The new issue of *Golf Digest* on my desk contains multiple Shaffer quotes.

And then there's always the question of, what will this story do for you? Can a course profile of a place like Merion be useful to courses around the country?

Upon arriving at Merion, it didn't take long before I knew I made the right choice to visit the historic course. And not just as I stood over the Ben Hogan 1-iron plaque.

(A side note: the previous week I was at Augusta National for the Masters. The next week I'm standing on the same spot where Hogan hit that 1-iron to win the 1950 U.S. Open. Sometimes, I have to pinch myself.)

Last year we asked readers who they thought the most famous living superintendent was. Paul Latshaw Sr. got the most mentions, but one of his students, Matt Shaffer, also received several mentions. And something else we heard: not only is Shaffer one of the most famous superintendents, he's also one of the most innovative as well as one of the nicest.

Readers were right on all three points. And that's why I found so much value in visiting with Shaffer and his staff in mid-April.

Shaffer has a passion for turf, a passion for the profession, a passion for seeing his employees grow as professionals and then move on. He's dubbed the head superintendent's office "the launching pad." It's currently occupied by Arron McCurdy, but probably not for much longer. Once the Open is over, McCurdy's phone is going to start ringing, and he's going to move on to a course of his own.

As much as Shaffer is a superintendent, he's also a teacher. He teaches his crew everyday, and he also taught this visiting journalist a few things. Some of these things could be applied to any golf course around the country. As you'll see, that's the theme of the story, "An American dream," our U.S. Open preview story, which starts on page 28.

I'll be returning to Merion the week of the Open. While I'm there, I'll be blogging regularly at the Golfdom Daily (**golfdom.blogspot.com**) and Tweeting as often as I can from @Golfdom. I'll be reporting on all things maintenance, so if you'd like to see some of the behind-the-scenes operations, and maybe even win a U.S. Open souvenir, please stop by.

Recently our blog has had back-to-back months where we set personal bests for hits in a month. Even more recently, the Golfdom Daily won first place in the TOCA awards for blogs (see page 10). This is the second year in a row the blog has won this award, and last year it also won a Gardner Award (a best-in-show award.) So we like to think that we must be doing something right.

I'm glad I kept an open mind and took the chance to visit Shaffer and his crew at Merion. I look forward to learning more things from Shaffer and his team. Hopefully, you'll enjoy this month's cover story while also picking up a few ideas, then stop by the blog and see what else can be learned during the week of the Open.

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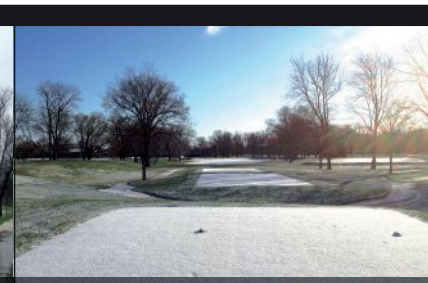
Starter

NEWS, NOTES AND QUOTES

//WEATHER

Standing water one day at Evanston GC, following 5.6 inches of rain in 24 hours...



And then a nice little April snow storm a few days later.

THE WAY THE WIND BLOWS

THIS SPRING'S CRAZY WEATHER PATTERNS HAVE MADE GREENKEEPING A CHALLENGE.

By Beth Geraci // *Senior Editor*

Snowstorms in the Southwest. Flooding in the Midwest. A deep freeze down South. Absolutely no one has been exempt from Mother Nature's firestorm this season, least of all golf courses.

"The high yesterday was 47 with a wind chill of about 28 or 29, and I'm in central Texas," marveled Van Berry, CGCS at Hancock Park Golf Course in the city of Lampasas. "Normally it would be mid-80s during the day. Today it's 55."

On Chicago's North Shore, Evanston Golf Course has been getting hit by Mother Nature's wallop, too. On April 18, the course saw 5.6 inches of rain in about 24 hours, said superintendent Dan Charlton. The course had standing water for a day, causing some retention ponds to overflow.

"Damage-wise it wasn't that significant, but then a couple days later it snowed," Charlton said. "This has been bizarre. It was 80 two days ago and now it's 41."

The fluctuating temperatures are not so good for grass, as Berry well knows. When temps get to be as high as 80, as they were in Lampasas in February, grass starts growing.

"It would be 80 and then the next morning we'd have frost," Berry said.

Despite what the calendar says about Opening Day, golfers largely have stayed away this spring. In the last three weeks, Hancock has seen six days with no golfers whatsoever, and it's worse in Evanston. "Play's been atrocious compared to last year. We didn't open the course until the first week of April and we've had very little play," Charlton said. "Last year in March we had 700 rounds, and this year we had zero."

Superintendents may as well laugh it off, Charlton said. "After a while you just roll with the punches."

//EDUCATIONAL OPPORTUNITY

BAYER PLANT HEALTH ACADEMY ACCEPTING APPLICATIONS

Environmental Science, a division of Bayer CropScience LP, is accepting applications from GCSAA Class A and superintendent members through June 5th for its inaugural Healthy Turf, Healthy Tomorrow plant health academy. Candidates can apply by visting the Plant Health Academy web page at backedbybayer.com/plant-health-academy. Prospective attendees must answer two short essay questions to be considered.

The academy's curriculum will involve in-the-field training at the Bayer Training and Development Center in Clayton, N.C., and classroom training at GCSAA headquarters in Lawrence, Kan.

"Bayer designed the Plant Health Academy to allow GCSAA members to study plant health and then see it put into practice, learning valuable strategies that they can use on their own courses," said Jose Milan, head of Bayer's Turf and Ornamental business. "We are committed to providing superintendents with the knowledge and tools to integrate and promote plant health."

//IN MEMORIAM

P. STAN GEORGE, CGCS AT PRAIRIE DUNES, PASSES AT AGE 57

It is with great sadness that we report the passing of Philip S. "Stan" George, CGCS at Prairie Dunes CC in Hutchinson, Kan.

George is survived by his wife, two sons and six siblings, as well as numerous nieces and nephews and great nieces and nephews.

George was a friend and mentor to many in the industry over his thirty-plus year career. A native Kansan, he was proud to host the U.S. Women's Open in 2002 and the U.S. Senior Open in 2006. Geoge was a champion of preserving wildlife and the prairie grasses that surround Prairie Dunes, considered by many as one of the nation's top courses.

ISTOCKPHOTO / PHOTOS BY: DAN CHARLTON

//CALL FOR APPLICATIONS

SYNGENTA PROGRAM ACCEPTING APPLICATIONS

For the fifth year, Syngenta is inviting superintendents from across the United States to apply to attend the Syngenta Business Institute, an innovative professional business development program developed in conjunction with Wake Forest University School of Business. This year's SBI will take place Dec. 6-9 on the Wake Forest campus in Winston-Salem, N.C.

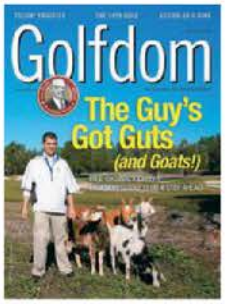
Workshop sessions focus on financial and human resource management, delegation skills, effective communications and negotiation skills, managing generational differences and more.

Superintendents can apply by filling out an essay at **greencastonline.com**. Approximately 25 superintendents will be chosen.

//TOCA AWARDS

Golfdom nabs nine, including blog and feature

PORTLAND, ORE. — It was a rewarding evening for *Golfdom* magazine. Upon the conclusion of the annual Turf and Ornamental Communicators Association awards ceremony, *Golfdom* walked away with nine TOCA awards.



Golfdom earned two first place awards, one for general feature article, for 2012's "The Guy's Got Guts (and Goats!)" by Seth Jones, and another for new media for the Golfdom Daily, the magazine's daily blog (**golfdom.blogspot.com**). The magazine also won seven merit awards: for photography ("Like Father, Unlike Son" and "Healing Power," Carrie Parkhill Wallace); for design (*Golfdom* Gallery, Carrie Parkhill Wallace); for ornamental feature article ("A Course Built on Sacred Ground," by Karl Danneberger, Ph.D.); for product information article ("All Zoysias are Not Created Equal," by Ben Wherley, Ph.D.); for original content on the web ("The Guy's Got Guts (and Goats!)" by Jones) and operations profile ("Enemy at the Gates," by Stacie Zinn Roberts.)

READER JOKE

AS TOLD BY **P.J. McGuire, CGCS,** American Country Club Comedians, supplier of golf entertainment. Visit acccomedy.com to learn more.

A married couple are playing the No. 12 hole at their local club when the wife hits a big slice to the far right side of the hole behind a big barn. After looking at the lie, the husband suggests that if they open the doors on each side of the barn, a decent hit would have her back in the fairway. But for the shot to work, he'd have to hold open the door closest to her ball.

They go through with the plan. When the wife hits the ball her slight miss directly hits her husband in the head, killing him instantly.

Many months later the widow is again playing No. 12 with some friends when her tee shot again slices, ending up behind the same barn. Her partner suggests if they open the doors and she holds the one closest, a good shot would have her right back in the fairway.

The widow shakes her head no, explaining that the last time she'd done this she'd taken a nine on the hole.

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Golfdom Gallery

WE CAME.
WE SAW.
WE TOOK PICTURES.

1 Dinner time The annual Golf Writers Association of America dinner in Augusta, Ga., was a star-studded event, including Rory McIlroy and K.J. Choi. Somehow *Golfdom* EIC Seth Jones, seen here with GCSAA Secretary/Treasurer John O'Keefe, CGCS and Vice President Keith Ihms, CGCS, also got in.

2 The boss Also at the GWAA dinner, Seth ran into his old boss Steve Mona, former CEO of GCSAA and current CEO of the World Golf Foundation. "I read *Golfdom* every month on my iPad," Mona told us. Sweet!

3 The train kept a rollin' We took so many cool photos of the crew hard at work at Augusta National during the Masters that we had a hard time picking just one for the Gallery. Visit the *Golfdom* Daily, **www.golfdom.blogspot.com**, to see all of them.

4 A hidden Ross gem Roy Heim (owner, Heim Construction Co.) and Jim Rattigan (superintendent and general manager, Schuylkill CC in Pottsville, Pa.) gave Seth the VIP tour of a fun Donald Ross layout in Schuylkill CC.

5 Construction crew Superintendent Kasey Kauff and greens committee chairman Chris Wilmot take time for a photo at Country Club of Orlando's maintenance facility, which is soon to be torn down and reconstructed.

6 Masters patrons It was great to see Jeff Wetterling, CGCS at Greenacres CC in Lawrenceville, N.J. while at the Masters. Look for Wetterling to make another appearance in the magazine soon, maybe even as a 19th Hole interview? What do you say, Jeff?

7 Schuylkill crew We grabbed the crew at Schuylkill CC and nabbed a photo of them with their trusted Ford truck. Rattigan tells us these three Penn Staters are as tough as that truck.

PHOTOS BY: EMMY MOORE MINISTER (1, 2) / SETH JONES (3, 5, 7) / MARK JOHNSON (6)

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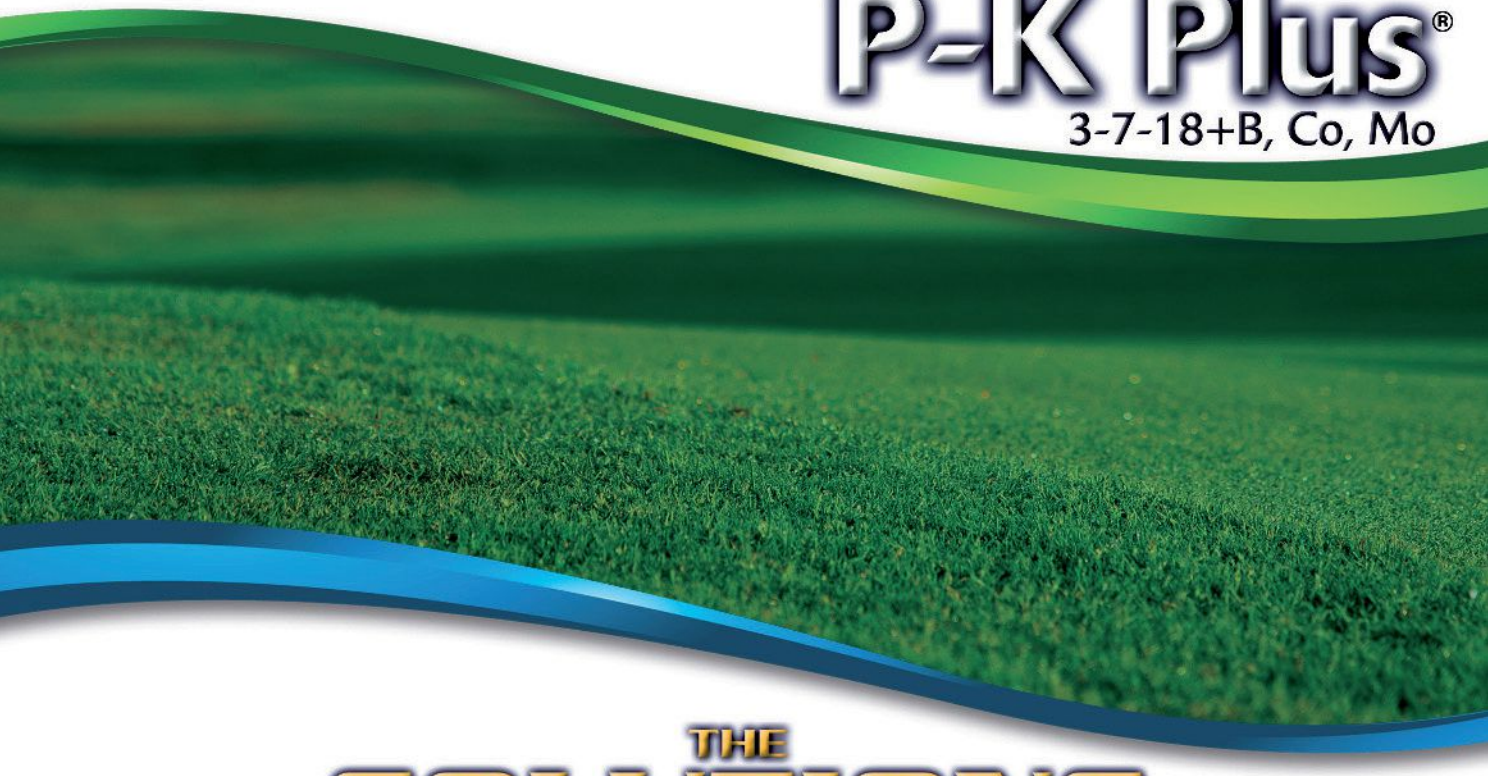

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My Second Office

BECAUSE THE COURSE IS YOUR FIRST

About our host

ANTHONY WILLIAMS, CGCS, CGM at Stone Mountain (Ga.) Golf Club by Marriott, is a force to be reckoned with. His boisterous personality has earned him the reputation of a go-getter, while his work as a superintendent has earned him accolades in the industry.

Growing up on a small farm in rural Georgia, Williams received his turf degree from Abraham Baldwin Agricultural College. He then served as superintendent at Renaissance PineIsle Resort & Golf Club in Buford, Ga., and later followed in his uncle's footsteps at Stone Mountain. Williams' decorated résumé includes recognition for superintendent of the year, association involvement, excellence and even martial arts.

1 **REBUILD** This office had a roof leak and the walls were so thin you could almost fly a kite when the wind was blowing. Me and the boys decided to do something about it, so we started buying little pieces of the flooring here and there. I saw that the FMC folks were doing a contest. You had to tell the strangest thing you've ever seen on a golf course. We shared a story and were a finalist, winning $250. We used that money to finish the office. *(Let the record state that the story was a golfer making an eagle during an active crime scene at what is now known as "Cop Hill Cove.")*

2 **GNOME OF CHEER** That was a Christmas gift from my administrative assistant, who has been with us for 20 years. The golfing gnome came to live on the shelves — he's like the elf on the shelf. He does move around some during the Christmas season; he may be out in the shop, or on a mower.

3 **THE GREATEST GENERATION** That's Harold Baldwin sitting at his desk in 1964, when he was president of our chapter. One of the things I'm most proud of during my tenure is creating the Georgia Golf Course Superintendent Hall of Fame. Mr. Baldwin was in the very first class. The funny thing about it is that on his desk is the latest issue of *Golfdom* (circa 1964.) I thought how ironic is it that all these years later I would be wearing that blue blazer, that I would be wearing that crest, and that I would be the environmental editor of *Golfdom*.

4 **WAX ON/WAX OFF** I won the *Golf Advantage*'s Purple Cow Award for being an innovative person in the golf business. When they set up the photo shoot, I was scheduled to be in the National College of Martial Arts' National Championships that week. I paid for my turf degree by teaching karate in college and I stayed active all this time. When we shot that picture all the karate people thought I did karate full time and all the turf people thought I did turf full time.

5 **ESTEEMED HONOR** That's a statue of Old Tom Morris. He's standing on the Swilcan Bridge. Every year Marriott Golf awards their superintendent of the year that trophy. I am one of the few to have won it twice.

BY KATY IBSEN // PHOTO BY JULIE TOWE

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"It's amazing how skillfully and quickly superintendents can turn a storm-ravaged golf course around and make it playable again."

MARK WOODWARD, *Contributing Editor*

Greenkeepers versus Mother Nature

When I was trimming the frost-damaged foliage from my ornamental trees and shrubs the other day, I got to thinking about what superintendents have to go through in dealing with Mother Nature.

Just a few weeks prior, at the tail end of February here in Phoenix, we had some very odd weather, and every golf course in the region was hurt by it. To give you an idea of the variety of weather we had, we went from temps in the 70s one week to a dust storm, rain, sleet, hail and high winds the next. We even saw some snow. The following week, temperatures skyrocketed to the 90s.

And it was all taking place in the Valley of the Sun — in the heart of the region's high season for golf. The vast array of strange weather conditions forced superintendents to determine the best management practices for their turfgrass and find a way to attract golfers to the course at what's typically the most lucrative time of year for them.

It's very important we in Arizona capture as much revenue as we can during these months to get us through the hot summer months, when play is down.

All of this brought back memories from my days at Torrey Pines, when we were preparing for and hosting the Buick Invitational. For two consecutive years we had a weather event. Most problematic was the wind. Many concession and corporate tents were damaged when the wind picked them up and tossed them upside down. Trees were damaged, so much so that we couldn't allow spectators in for safety reasons. It took us a few hours that morning to get all the debris cleaned up, the tents erected again and the course prepped.

In other years, we had to deal with frost delays and fog that reduced visibility to only a few yards and delayed play for several hours. These weather issues are so prevalent that the PGA Tour and the USGA actually have staff members (meteorologists) who focus on tracking weather conditions during the week of an event.

Every superintendent I know has experienced similar issues with weather. I realize this phenomenon is not unique to me. In fact, my experiences are minimal when compared to some of you superintendents out there who have had to deal with major natural disasters, such as tornadoes, hurricanes, wildfires and flooding that have caused severe damage.

Writing this column is my way of recognizing the sometimes under-appreciated skills superintendents have, particularly when things go wrong. Most superintendents do a great job under good conditions when Mother Nature cooperates. But when she doesn't, it's hard for us to sit back and watch as all our years of planning and preparation are destroyed in one fell swoop by a dramatic weather event that is totally out of our control.

Superintendents have become so accustomed to and adept at handling these unforeseen problems that events rarely have to be cancelled or even shortened.

Under adverse conditions, it's amazing how skillfully and quickly superintendents can turn a storm-ravaged golf course around and make it playable again — meeting the high standards of golfers, members, the best players in the world, hundreds of thousands of spectators and millions of television viewers.

Mark Woodward is president of Mark Woodward and Associates, principal of DaMarCo Golf, CEO of MasterStep Golf Group and a contributing editor for *Golfdom*.

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"Then there's the always popular 'freak power outage.' This one is a real bummer. The guy's plugged the alarm in, remembered to turn it on, only to have the power company screw it all up for him."

MATT NEFF, *assistant superintendent, Wedgewood G&CC, Powell, Ohio*

Never heard that one before

I have to admit that on some level I absolutely love some of the excuses people come up with for unexcused absences or tardiness. Sometimes they're so good, it almost makes the inconvenience of shuffling work assignments worth it — almost, but not quite.

I'm not talking about the run-of-the mill "I overslept" or "my car wouldn't start." That stuff happens from time to time. I'm talking about the truly valiant efforts at deception that clearly require considerable thought or creativity. I'm talking about excuses that make you wish the individual giving them would put that much thought and effort into their work.

In my experience, alarm clock "issues" are probably the most popular. That really shouldn't come as a surprise to anyone. Alarm clocks are unbelievably complex instruments that can't be mastered with just a few uses. After all, an alarm clock has to be plugged in, the alarm has to be set for the correct time, and the alarm has to be turned on. There's just so much that can go wrong.

My personal favorite alarm clock-related excuse is the "am/pm inversion," where the late employee claims he accidentally set his alarm for 5 p.m. instead of 5 a.m. Every guy who uses it thinks it's absolutely genius and that he's the first person to come up with it, when it's actually the worst-kept secret in the world of chronically late employees.

I suppose it's a slightly plausible excuse following a day off when the employee may have changed the alarm time. But considering many people use the alarm clock feature on their cell phones, most of which have the capability for multiple alarms, it's still pretty suspect.

Then there's the always popular "freak power outage." This one is a real bummer. The guy has done everything right — got it plugged in, managed to avoid the perilous am/pm inversion, remembered to turn it on — only to have that fickle mistress known as the power company screw it all up for him. If only alarm clocks had battery back-ups, this disaster could be avoided (See also: cell phones).

I also am a huge fan of overly specific or completely bizarre medical excuses. I could really do without the actual horrific details, regardless of how false they may be. It's the thinking behind it that I find entertaining. My theory with this one is that by being willing to subject himself to the embarrassment of admitting to his (ahem) bathroom troubles, his excuse will seem more credible. Obviously, people occasionally get sick, but sometimes you just know it's completely made up.

When a guy who struggles to understand how to operate a weed eater suddenly calls one morning with an astoundingly intelligent description of his symptoms — complete with a med student-like grasp of anatomy and physiology — it's probably fair to assume he's actually lying in bed seriously regretting a few decisions he made at the bar the night before.

While I tend to believe that most people are pretty honest, I sometimes think the only people who get lied to more than supervisors, not just in this but in any profession, are policemen and people on Internet dating sites. I guess if you're a police sergeant with a Match.com account you probably don't trust anyone anymore.

I believe that most people want to do a good job. They want to be considered reliable employees. It's those few who couldn't care less who make it interesting for everybody else. At least they make it entertaining.

Oops, gotta go. I'm experiencing some pretty serious discomfort in the upper left quadrant of my abdomen. I'm afraid it might be splenomegaly, so I need to call off. Till next time...

Matt Neff (mneff4@yahoo.com) is assistant superintendent at Wedgewood G&CC in Powell, Ohio.

JOHN R. JOHNSON-GOLFPHOTOS.COM

// PLANT HEALTH

Part 1 of a 2-part series

How about this weather? Many parts of the country saw snow in May. Snow in May? Mother Nature's sense of humor seems to get more peculiar by the year.

Now summer stares us down. The golfers will shake off this cool spring and courses will get busy. The life cycle of golf, just like the life cycle of turf, continues.

Golfdom, in partnership with BASF Professional Turf and Ornamentals, is proud to once again bring readers the Plant Health Series. In part one we look at the art of aeration. In part two, we'll take a look at beating the heat, which is sure to come.

Here's to healthy plants in 2013.

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BASF
The Chemical Company

SPONSOR'S WORD

BY RICH KALIK

Separate the pretenders from the contenders

These days lots of basic manufacturers are making plant health claims in our marketplace. But let's look back and see if we can separate the pretenders from the contenders.

Back in 2010, when BASF launched its Intrinsic brand fungicides to the marketplace, we had facts and data to back it up. First, and foremost, we had it on the label. EPA registered fungicides for disease control and plant health. That's a tall standard to equal right there, but in addition to that we published more than 20 pages of research on the plant health benefits Insignia SC and Honor Intrinsic brand fungicides provided both warm and cool season turf.

It's three years later and our portfolio has grown to include Pillar G Intrinsic brand fungicide in turf and Pageant and Empress Intrinsic brand fungicides for use in production and landscape ornamentals.

And the published research by BASF on how these products perform, of the benefits they provide, has grown to more than 70 pages. By the way, you can see for yourself by visiting www.intrinsicplanthealth.com. We have golf course superintendents just like you who have added Intrinsic brand fungicides into their spray programs and managed stress events including drought, temperature extremes and aerification. They've seen the benefits firsthand.

It's important to note that the common denominator in all these products is the active ingredient pyraclostrobin. This is proprietary chemistry from BASF. On the crop side of our business, products with pyraclostrobin don't just provide disease control, but also increases yields. This is proven and published research and real world results. There is something physiological that occurs to the plant, be it corn, soybeans, turfgrass or petunias that enables it to manage stress and stay healthy.

So it's three years later and we see from the others who claim these benefits lots of slick marketing pieces with me-too language, but just how much research have we seen that backs it up?

Exactly, and those guys are the pretenders.

The reliable standby of facts, data and research is still the measuring tool you should use when it comes to deciding what to use for taking care of your golf course turf.

Next month, we'll be sharing a secret to keep your turf healthy this summer. Here's a hint, it begins with including Honor Intrinsic brand fungicide in your spray program for Memorial Day weekend.

In addition, we're talking a bit about the next round of disease control and plant health innovations from BASF that will arrive later this year.

Until then, keep your turf healthy my friends.

Rich Kalik is Technical Specialist, BASF Professional Turf & Ornamentals

Let the

When it comes to plant health, there's one cultural practice that makes the difference between life and death—aeration.

BY BETH GERACI

For superintendents on golf courses far and wide, aerating is a necessary evil — a superintendent's ticket to healthy root systems. Without it, the lifespan of turf would be much shorter, roots would be dying and there would be far fewer golf courses around to play.

How superintendents get the most from their aeration techniques depends on the superintendent's methods and a golf course's location. But there's no denying that, universally, aeration is among the most important contributors to healthy turf.

"I compare aerifying to paying your taxes," says Garret Bodington, superintendent at Sebonack Golf Club in Southampton, N.Y., which is hosting the U.S. Women's Open in June. "If you don't pay your taxes you're going to get in trouble, and if you don't aerify you're going to get in trouble."

Bodington asserts that plant health products work in conjunction with aerifying to create better results. "You get quicker results when you put down fungicides and fertility products before you aerify," he says. "With the Intrinsic line, which I use, if you put it out before you aerify, they say your healing time will be shorter due to the fact that it strengthens your roots and leads to development of healthier roots in the long term, and that's what I've found."

Bodington has applied fungicides pre-aerification for a while now, but he really started seeing marked improvement from it in the last three years. "It really stems back to root development and to how quickly the roots bounce back," he says. "You see longer and thicker roots. It's noticeable."

During times of stress, such as in mid-July and early August, Bodington has found that even then "our roots have continued to flourish and do well."

Though Bodington applies plant health products before aerification, they can work just as well when applied post-aerification, he says.

No matter if plant health-labeled fungicides and fertilizers are applied pre- or post-aerification, Bodington says there's no denying aerifying itself is crucial.

"Aerification is vital to plant health," says Bodington, who has bunkers in the middle of his fairways, making aeration a challenge. "If you don't remove the plug or create a hole, you're stopping the ability of new plants to grow into that open spot."

Benefits

Aerating is important because it removes thatch, opens up the surface and lets oxygen flow to the root system. It also allows for water movement, says Bob Carrow, a professor in the Crop and Soil Sciences Department at the University of Georgia. To be healthy,

Bob Carrow

SHUTTERSTOCK (TURF) / ISTOCKPHOTO (CLOUDS)

air in

root cells require oxygen, otherwise they die back, he explains.

"If the root cells can't breathe, it's got to come by diffusion to reach the root cells," he says. "That's problematic if you get surface conditions where it starts to seal up the surface."

That sealing leads to a buildup of organic material on the turf's surface, and the turf won't dry during wet periods, he says. "Essentially you'll get so much moisture that it hinders air movement. You have to have larger pores going across that zone to have good air movement."

When Pat Gross of the USGA does site visits, he makes a point of showing committee members and non-superintendents where the healthy roots are growing. "They're growing where the air is," he says. "They need a balance of air and moisture to grow healthy roots. The main reasons for core aeration is, soils get compacted over time. Core aeration releases soil compaction and improves water infiltration into the soil," thereby creating a better avenue to the root system.

Effective aeration techniques are subjective, varying from course to course, says Tom Kaplun, superintendent at North Hempstead Country Club in Port Washington, N.Y. But "the one thing that's not subjective is that you're trying to promote gas exchange in the soil and encourage deeper rooting," he says.

Tom Kaplun

PHOTO BY: BOB CARROW

The darker brown area in the top 1 to 1.5 inches of the profile is the area where excessivie organic matter can accumulate and hinder gas (especially oxygen) exchange between the atmosphere and soil environments. To maintain ample gas exchange, this zone must have sufficient macropores (pore with diameters >0.075 mm). Macropores also are the means for rapid infiltration of excess water into the soil during rains.

This spring, Kaplun vertiquaked his course before he aerified to create that deeper rooting and better drainage with much success.

Aerating is futile without topdressing in conjunction with it, Carrow says. Bodington agrees, saying superintendents can achieve optimum results by supplementing a balanced fertility program with a sound topdressing program. "That's when you see the best results," he says.

If you don't add sand after a core aeration and "create conditions where you have good microbial decomposition of the organic matter," Carrow warns, "it's very easy to get more organic matter buildup."

The true test

Tony Girardi, superintendent at Rockrimmon Country Club in Stamford, Conn., knows all about organic matter buildup. And he feels so strongly about the importance of aeration that when he talks about it you can hear the passion in his voice.

"I am passionate about it, because I feel strongly that it's the best way to help with greens management," he says. "Organic matter displacement is critical to the overall health of green putting surfaces."

Tony Girardi

Girardi got a strong reminder of that in 2007. His greens were failing because organic matter in them was accumulating. "No water could get in," he says. "The turf was suffocating itself."

And it couldn't have come at a worse time. It was the high season, and rounds were booming. The golf course was busy "24/7," never leaving time for Girardi to perform agronomic practices, he says.

Girardi and his team had no choice but to reassess their techniques. "We had to press the 'restart' button and rethink how

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we were prioritizing our agronomic practices on the course," he says.

Girardi decided to send his soil samples away to a soil lab in Missouri to have them tested. He's glad he did; the test results not only gave him solid data on the soil's water-holding capacity and enabled him to devise a strong aerification program, but it also empowered Girardi in dealing with his green committee and membership.

"Aerifying disrupts play," he says. "Having the samples tested gives me solid scientific data that I can report to my green committee and say, 'This is why I need to aerify this many times a year.' You can't dispute it. You can say, 'This is what a scientific laboratory is saying.' Once I had all this scientific data, it demonstrated that we have a major issue and it's not something that's going to turn around overnight."

After he got the test results back, Girardi started aerifying aggressively, tapering off just this year. Now he aerifies once in the spring and fall and supplements those with two hydroject aerifcations a year.

Thanks to his ramped up efforts, as time has gone on Girardi has seen a decrease in organic matter and been able to aerify less invasively.

Thanks to aeration's cumulative effect, within the last two years he has seen measurable improvements, especially in the soil's water holding capacity and porosity.

"For us, the testing allowed us to identify exactly what we had to do," he says.

After Tony Girardi intensified his aeration program at Rockrimmon CC, he saw a dramatic improvement in the healthiness of his turf.

PHOTOS BY: TONY GIRARDI

All in the timing

It was late April, and the crew at North Hempstead Country Club had just finished aerating. One week later, superintendent Kaplun arrived at work to see huge divots in one of his fairways.

"I was a little upset when I saw that, because when you do aeration, you send communication out to members and let them know how long the recovery process will be, you let them know to be extra cautious," he says. "You get some golfers who obviously come out to use the golf course as a practice facility. They want to practice a certain shot. I understand that, and typically I don't have a problem with it."

In the spring, aeration at North Hemp-

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Kaplun's course during aeration.

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stead Country Club is done over three days and is an intensive process, Kaplun says. Kaplun aerates his fairways, tee boxes, greens, and this year even his roughs. He also aerates his greens in the fall and late summer.

It's not enough to just aerate in the spring or fall, Kaplun says. Both spring and fall aerations are "a necessary evil" to protect the turf from summer stress, says Kaplun, who stresses the importance of efficiency and timeliness in doing aerations, to both ensure plant health and allow the return of play quickly.

Gross says normal turf recovery after an aeration is 14 days. But he often sees superintendents make mistakes in the timing of their aerations, which leads to slower turf recovery.

"You want to aerate at a time of year when (turf) will recover the quickest," he says. "Doing it when it's convenient is a recipe for failure."

As silly as it sounds, Gross says, when aerating, superintendents need to think like plants. "You have to aerate at a time when plants are ripe for growth and development," he says. "It takes longer for the greens to heal when you don't aerate at the optimum time." Length of recovery also depends on the size of the hole, he says.

North Hempstead CC two weeks after aeration "We have been taking advantage of the cool nights and dry days by watering every three to four days heavily and fertigating straight ammonium sulfate," Kaplun says. "Everything is about 90-percent healed."

Gross adds that superintendents have done a less than stellar job of aerating greens in recent years. The reason for that isn't their technique so much as the quality of the equipment superintendents are using, he says. "You want a clean surgical cut," he explains. "That way, there's less impact for the golfers."

Even given all of this, says Kaplun, there's one thing about aeration that will likely never change. "Aerating is one of the most important aspects to plant health," he asserts. "You can spray as many chemicals and fertilizers as you want, but if your turf's not healthy, it's not going to matter."

PHOTOS BY: TOM KAPLUN

An American

Though Merion Golf Club is far from an everyday American golf course, some of their practices could be adopted from sea to shining sea.

BY SETH JONES

We hold this truth to be self-evident, that all golf courses are not equal.

And therefore, it is impossible to achieve the same conditions at an everyday course as to those at a club such as Merion Golf Club in Ardmore Pa., host of this year's United States Open.

However, this year's U.S. Open will demonstrate a few practices and characteristics that would be good and positive for any course in these great states. To wit:

The right to leave the sprayers in the shop.
The right to allow rough to be... well, rough.
The right to give all staff equal opportunity.

Allow us to explain...

Dream

IPM and sustainability

The U.S. Open may be looming, but Matt Shaffer, director of golf course operations, is still shaking off the effects of yesterday's day-long trip to Washington, D.C., where he represented the GCSAA on Capitol Hill for National Golf Day. He flips through a notebook that shows how many meetings were taking place, in awe of the scope of it all.

While he was taking one of those meetings in D.C., a Senator asked him to explain sustainability. Shaffer was happy to do it, but was also honest and direct (two words often used when describing the man) when he advised the Senator that it was the low budget courses that could better describe the practice of doing more with less.

"I said, 'Go talk to a guy who only has $400,000 a year (in the maintenance budget), he'll tell you all about sustainability.' If you don't have any money, you don't have inputs," Shaffer says, reflecting on his day in the nation's capitol. "And they still produce unbelievable conditions, those guys... granted, it's sweat equity."

Money is clearly not an issue at Merion. A look around the sparkling maintenance facility demonstrates that fact.

For example, it's got a green roof.

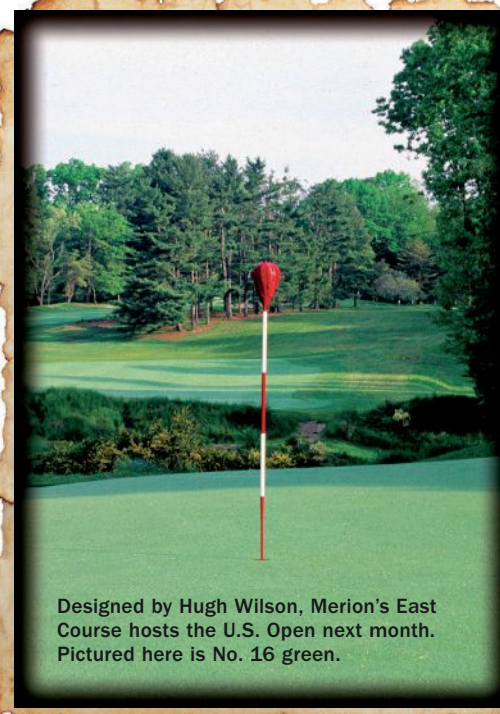
No, not the color green, but as in the fescue turf growing atop the building adjacent to No. 18 fairway, where Ben Hogan ripped a 1-iron to win the 1950 U.S. Open. It's brown today, but in general, it's green.

Integrated Pest Management is a religion at Merion. They don't water very much, so consequently they don't spray much. And they rarely fertilize, going months without spraying fairways. They spray greens every six weeks just because "we're paranoid," says Shaffer. As of this visit in mid-April, they hadn't put a fungicide on the greens since September 2012.

This method of maintenance is just fine with course superintendent Arron McCurdy. Starting at the course five years ago as an assistant-in-training, he's worked his way up the ladder to the top spot, and is Shaffer's right-hand man.

"I think that's why we get along so good. It's such a prestigious golf course, we have the funds to go out there and wing sprays around if we wanted to," McCurdy says. "You have kids, I have kids. I don't want to spray just to make myself feel better."

"We have this disease called yellow tuft, all over our greens, causing brown spots," Shaffer says, taking his hat off and mussing his gray hair as he speaks. "Our interns say, 'What are you going to do about that Mr. Shaffer?' I say what? They all laugh and say, 'Those brown spots?' I say that doesn't make any difference with the way it putts. I'm pretty sure by the time the Open is here everything's going to be one big brown spot, so you won't see it."



Designed by Hugh Wilson, Merion's East Course hosts the U.S. Open next month. Pictured here is No. 16 green.

ISTOCKPHOTO / JOHN R. JOHNSON-GOLFPHOTOS.COM

Over his five years at the course, McCurdy has learned that Merion's members appreciate playability above all else.

"They'd rather have a blemish on the green and have it firm and putt like glass than a beautiful green that they have to smash it to get it to the hole," he says.

Shaffer says members from across the pond have helped integrate this mood that the color green isn't everything.

"We have a lot of members from Scotland and Ireland and England," Shaffer says. "They come and they say, 'Finally, somebody in America gets it.' When our members listen to our members from overseas, they say what do you mean, 'We get it?' They say you're not overlush, oversoft, you're firm, hard, fast... Mr. Shaffer doesn't care about what you think it should be like."

A rough rough

The rough at Merion? Well, it's the pits.

"Here's the deal — we have pits," Shaffer says, excitedly. "Well, we like pits."

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Dave Petfield, agronomist, with Matt Shaffer, director of golf course grounds. The duo try to instill as much knowledge in the young crew as possible. "I try to coach them along and give them my experience," Petfield says of the crew. "They get ticked off if you don't include them."

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Once again, the young guys asked Shaffer if they were going to do anything about the bare spots in the rough. Tiger and Rory don't want to play out of that, and it won't look perfect on high-def TV, right?

"My guys asked, 'Are we going to seed the pits?'" Shaffer laughs. "Oh, no. I wasn't even going to spray weeds but there's so many of them. I want to make sure the USGA doesn't get embarrassed."

Shaffer switches from friendly to diabolical. Now he's contemplating the struggles the world's best golfers will have if they find themselves straying from the fairway.

"There's nothing worse than when you're playing golf and you get in that pit and there's four-inch grass around it," Shaffer says.

If it grows, it's allowed in the rough at Merion. They'll seed bentgrass, Bermuda, zoysia, ryegrass, turf type tall fescue, chewings hard, whatever.

Shaffer spots a particular clump of grass and pulls some of it out of the ground.

"There's my pride and joy — this is K-31, roughstalk bluegrass. Really hard to find. In the old days, when I used to grow in golf courses in the '70s, this was a standard grass," Shaffer says. "It's a tough grass. When you get in that, the shearing action on your wedge is really tough."

The idea is that in a seven-foot diameter, there are at least seven different lies. This will be different than many recent Opens, where there was a monostand of grass in the rough. Shaffer says it will be noticeable on TV.

"When you let it go... it's so bizarre looking. You'll see it

PHOTOS BY: SETH JONES

Petfield and the crew were busy aerating fairways in mid-April.

on TV, everyone will say what the freak is going on?" he laughs. "Everyone is so fastidious with trying to get it perfect. I'm positive this will not be a perfect Open."

Equal opportunity

There are quite a few turf degrees circulating the 36 holes at Merion Golf Club. All that turf knowledge in one place, things could get a little too competitive.

To keep a team atmosphere present, Shaffer has implemented a system where jobs rotate. One week an assistant is the boss, the next week he's holding the shovel.

Information and project coordinator Dave McDonald explains: "The system here is, one week you're in the hot seat, scheduling, getting everyone to their positions and getting their tasks done. The next week you're part of the team out there, getting directed. It switches back and forth. So there's a tremendous amount of respect for who the quarterback is that day," he says. "With that comes no egos. It's all teamwork, because one day you're the quarterback, the next you're waterboy."

Because the crew, from the first-year in-

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terns to McCurdy and Shaffer, all have a passion for turf, it's important that everyone gets a chance to see and learn about what is happening on the course, in the dirt, and even back in the maintenance facility's turf diagnostics lab.

Agronomist Dave Petfield, a superintendent for 18 years before coming to Merion, describes his youthful colleagues as "sponges." About a dozen times a year he'll look through the microscope to try to see what is going on with the turf. Word spreads quickly, and before long everyone is asking to take a peek.

"They want to know what's going on. They get ticked off if you don't include them. 'Hey, I heard you guys looked at this, is it still available to see?' If you say no, they're disappointed," he says. "I love it. I try to coach them along and give them the benefit of my experience."

Live Updates
For more on the U.S. Open, visit the Golfdom Daily (**golfdom.blogspot.com**) during the tourney.

Shaffer with general manager Christine Pooler and superintendent Arron McCurdy. "We have a great team here," Shaffer says.

PHOTO BY: SETH JONES

With so much talent at the club, it's important to keep everyone engaged.

"(Shaffer) delegates. He's not afraid to delegate, and he does not micromanage. He trusts you to your potential," says Fabian McLaughlin, administrative assistant. "And that's very highly appreciated because everyone here feels free to work. He delegates and then waits for the results."

"He's a teacher," McDonald says of Shaffer. "He calls himself a dirt farmer. He may have his boots in the soil, but his head is in the clouds when it comes to innovation."

The first tee shot of the 2013 U.S. Open will be taken on Thursday, June 13th. This may be the Open where superintendents around the nation can point to a shot on TV and tell their golfers that this course isn't just their land, but it's also our land.

It's the U.S. Open. Isn't America great?

Super Science

//**ANNUAL BLUEGRASS**

PHOSPHORUS FERTILIZATION EFFECTS ON *POA ANNUA*

By Beth Guertal, Ph.D., and Scott McElroy, Ph.D.

Annual bluegrass (*Poa annua* L.) is a common and persistent winter annual weed in southern landscapes. Previous research has indicated that phosphorus (P) may affect populations of annual bluegrass. Thus, the objective of this work was to evaluate the effect of P rate on *Poa annua*, seeking management methods for reduction of *Poa annua*.

Conducted twice in the greenhouse, this study evaluated rates of P (0, 50, 100, 200 and 400 lbs. P_2O_5 per acre) applied to three soil types (sandy clay, loamy sand and a sand/peat mix), with five replications of each. *Poa annua* was seeded into each pot, and collected data included number of germinated seedlings, plant height, days to first seedhead, panicles per seedhead and variability in weight of seed produced.

In general, plant size and seed production increased as P rate increased, while days to maturity decreased. The addition of P decreased the number of days to maturity. *Poa annua* grown in the sand-peat mix was slower to produce a first seedhead, produced fewer seed with a lighter weight, and had fewer seedheads when compared to the two native soils. Overall, the addition of any P produced larger and more productive *Poa annua*.

Contact Beth Guertal, Ph.D., at guertea@auburn.edu or Scott McElroy, Ph.D., at jsm0010@auburn.edu at Auburn University for more information.

PHOTO BY: BETH GUERTAL

A *Poa annua* plant fertilized with 200 lbs. P_2O_5 per acre.

ON THE MOVE

HOYLE JOINS KSU FACULTY

Jared Hoyle, Ph.D., has joined Kansas State University's Department of Horticulture, Forestry and Recreation Resources as an assistant professor and statewide turfgrass extension specialist. Hoyle earned his bachelor of science degree in horticulture science in 2006 and his master of science degree in crop science in 2009, both from North Carolina State University.

While in North Carolina, Hoyle focused his research on the impact of turfgrass mowing height and other cultural practices on crabgrass and brown patch incidence. He also evaluated rating methods commonly used in turfgrass weed science.

In 2012, Hoyle received his doctorate in agronomy and soils from Auburn University, where he explored factors that influenced thermal weed control. For the past year he has continued conducting turfgrass research projects as a post-doctoral research associate at the University of Georgia.

Hoyle enjoys cultivating relationships with turfgrass managers, who help him focus his research efforts on developing an applied research and extension program.

"THE EFFICACY OF A FOLIAR SYSTEMIC HERBICIDE APPLICATION DEPENDS ON MANY FACTORS, INCLUDING ITS ABILITY TO REACH THE PLANT'S LEAVES, RETAIN HERBICIDE ON THE LEAF SURFACE AND PENETRATE INTO THE LEAVES."

Deying Li, Ph.D.

(see full story on page 34)

//IMPROVING TENACITY

Improve the efficacy of Tenacity for creeping bentgrass control

By Deying Li, Ph.D.

Since the launching of Tenacity (mesotrione) as a turfgrass herbicide by Syngenta in 2009, many studies have been conducted by researchers to take advantage of this unique product. One of its uses is selective control of creeping bentgrass from other cool-season grasses, such as Kentucky bluegrass and perennial ryegrass.

Creeping bentgrass on putting greens, tees or fairways often escapes to surrounding areas of a different cool-season species. The results are undesirable visual quality, poor playing conditions and scalping.

The efficacy of a foliar systemic herbicide application depends on many factors, including reaching the plant leaves, retaining herbicide on the leaf surface, penetration into the leaves, movement to the site of action, length of activity in the plants, absorption by roots, persistence in soil, and soil characteristics. Therefore, any attempts to improve the efficacy of a foliar systemic herbicide should address one or more of these basic factors (Calhoun et al., 2005).

Tenacity is a systemic pre-emergent and post-emergent herbicide for the selective contact and residual control of weeds in turfgrass. It works by inhibiting p-hydroxyphenyl pyruvate dioxygenase (HPPD), an enzyme essential for the biosynthesis of carotenoids. Without carotenoids, excessive light energy destroys chlorophyll and causes new growth to appear white before necrosis and death (Giese et al., 2005).

A careful study of the Tenacity label reveals that besides uniform application, the label addresses factors of soil moisture; leaf surface retention and penetration (addition of a non-ionic surfactant); and persistence in the plants (repeated application requirement).

A view of the experimental area following treatment with Tenacity. Leaf tissue of Tenacity treated creeping bentgrass has turned brown.

PHOTO BY: DEYING LI

> "Temperature and sunlight intensity both impact the efficacy of Tenacity."

HYPOTHESIS AND RESEARCH OBJECTIVES

This led to the hypothesis of our current study. Since the herbicide prevents the synthesis of carotenoids that protect plants from intense sunlight, if the sunlight is not intense, the herbicide would not be as effective. Dead leaves of creeping bentgrass caused by an initial Tenacity application may block light penetration to the lower canopy. Could the removal of dead creeping bentgrass leaves by raking before subsequent application of Tenacity improve the herbicide efficacy? In addition to non-ionic surfactant (NIS), could other adjuvants, such as urea ammonium nitrate (UAN), improve the herbicide absorption (Dodds et al., 2007)?

EXPERIMENT AND METHODS

To test the hypothesis, an experiment was conducted in field plots that had an established stand of BrightStar perennial ryegrass overseeded with Penncross creeping bentgrass at the Agricultural Experiment Station, Fargo, N.D., in 2007 and repeated in 2008. The soil was a silty clay with 4.6 percent organic matter, 2 percent sand, 46 percent silt, and 52 percent clay.

Soil chemical analysis showed 68 ppm P, 320 ppm K, and pH 7.8. The

grass was mowed weekly at 2.0 inches. Nitrogen was applied at 2.0 lbs. per 1,000 sq. ft. per year from polymer coated sulfur-coated urea (43N-0P-0K) in two equal applications in May and September of both years. Potassium was applied at 3.5 lbs. per 1,000 sq. ft. per year from potassium sulfate (0N-0P-41.5K) in two equal applications in May and September of both years. Irrigation was provided to prevent drought stress.

The experiment was arranged in a split-plot design. Raking was the whole plot treatment and herbicide was the subplot treatment. Herbicide treatments included Tenacity at 0.8 and 1.0 oz. a.i. per acre applied singly and three times sequentially on a two-week interval with 0.25 percent (v/v) non-ionic surfactant (R-11) or 0.25 percent (v/v) non-ionic surfactant plus 2.5 percent (v/v) UAN solution that contained 28 percent N (Table 1).

The first treatment in 2007 was applied on August 17, and the first treatment in 2008 was applied on July 24. The single treatment was applied at the same time as the first application of the sequential treatments. The herbicide was applied with a backpack sprayer pressurized with carbon dioxide at 36 psi and equipped with flat-fan nozzles at 19 inches spacing held about 18 inches above the soil surface to deliver a spray volume of 10 gal. per acre.

The raking treatment was applied using a power rake set at 1.2 inches height prior to the first herbicide treatment and weekly thereafter. The clippings were manually collected and removed using a spring rake. Creeping bentgrass control was visually evaluated weekly after the first treatment based on a 0 to100 scale (Camper, 1986), where 0 equals no effect, 1 to 30 equals slight, 31 to 60 equals moderate (rating above 30 considered unacceptable injury), 61 to 99 equals severe injury and 100 equals complete death. Evaluation of creeping bentgrass survival also was conducted on May 29, 2008 and May 14, 2009.

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TABLE 1

Treatment list for creeping bentgrass control with Tenacity at different rates, timing, and adjuvant.

Tenacity (oz. a.i./ acre)	Non-ionic surfactant (NIS) (%)	Urea ammonium nitrate (UAN) (%)	Applications (no.)
0	0.25	0	3
0	0.25	2.5	3
0.8	0.25	0	3
0.8	0.25	2.5	3
1	0.25	0	3
1	0.25	2.5	3
2.4	0.25	0	1
2.4	0.25	2.5	1
3	0.25	0	1
3	0.25	2.5	1

TABLE 2

Effects of dead tissue removal by raking on creeping bentgrass control at different weeks after treatment with Tenacity (values averaged across different rates, timing, and adjuvant).

	Creeping bentgrass control (%)													
	1 WAT		2 WAT		3 WAT		4 WAT		5 WAT		6 WAT		Spring	
Treatment	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2008	2009
Rake	32a	36a	54a	56a	70a	70a	76a	78a	72a	73a	56a	60a	74a	72a
Non-rake	33a	39a	52a	52b	52b	61b	56b	70b	60b	71a	41b	57a	60b	61b

Values followed by a same letter within a column are not significantly different at 0.05 probability level separated by Fisher's protected least significant difference (LSD).

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The data for creeping bentgrass control were subjected to statistical analysis. Fisher's protected least significant difference (LSD) was used to compare treatment means.

RESULTS

Removing clippings and dead leaf tissue by raking prior to herbicide application resulted in better creeping bentgrass control three to six weeks after treatment in 2007, but only at three and four weeks after treatment in 2008 (Table 2). The raking effects on creeping bentgrass control also appeared the following spring of both years (Table 3).

The differences between the two years might be attributed to the lower average temperature in 2008 than in 2007, despite the solar radiation of 16.1 MJ m-2 in 2007 vs. 22.5 MJ m-2 in 2008 during the months of study. It indicates that temperature and sunlight intensity both impact the efficacy of Tenacity. Our observation in another study also showed low efficacy of Tenacity in creeping bentgrass control under low temperature conditions.

Sequential applications of 1.0 oz. per acre with UAN plus non-ionic surfactant at a two-week interval provided the highest observed creeping bentgrass control of 93 percent in 2007 and 97 percent in 2008 (Table 3). In both years, adding UAN to non-ionic surfactant improved Tenacity efficacy when applied at either low or high rates. Although other reports showed that three sequential applications of Tenacity can achieve 97 percent to 99 percent control 8 weeks after initiation of treatment (Jones and Christians, 2007), this study showed that, without raking or adding UAN to the spray solution, only 78 percent to 82 percent control was achieved.

Compared to other treatments, only three sequential applications of 1.0 oz. per acre applied at two-week intervals with both UAN and non-ionic surfactant provided complete control of creeping bentgrass in the spring evaluation one year following the field study (Table 3).

CONCLUSIONS

Tenacity at or below an annual total rate of 3 oz. per acre applied with non-ionic surfactant, whether in one application or in three sequential applications on

TABLE 3

Creeping bentgrass control at different weeks after treatment (WAT) with Tenacity at different rates, timing, and adjuvant with values averaged across rake treatments.

		Creeping bentgrass control (%)													
		1 WAT		2 WAT		3 WAT		4 WAT		5 WAT		6 WAT		Spring	
Tenacity	Adjuvant	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2008	2009
L3	NIS	20d	25d	38d	34e	44c	42c	50d	55d	49d	54d	48cd	54d	42c	25d
L3	NIS + UAN	32bc	37bc	39cd	35e	44c	46c	58c	63c	67c	72c	59c	64c	62b	70b
H3	NIS	27cd	32c	40cd	47d	60b	65b	60c	65c	71bc	77bc	78b	82b	70b	78b
H3	NIS + UAN	32bc	37bc	44c	49dc	71a	76a	71b	76b	86a	91a	93a	97a	97a	98a
L1	NIS	35abc	35bc	52b	53c	53b	58b	60c	65c	45d	57d	20f	30e	15e	25d
L1	NIS + UAN	30c	42ab	70a	63b	61b	66b	65bc	71cb	53d	59d	18f	28e	17e	28d
H1	NIS	39ab	47a	72a	76a	75a	81a	81a	86a	72bc	77bc	34e	50d	30d	44c
H1	NIS + UAN	43a	48a	70a	75a	77a	83a	81a	86a	79ab	81b	35de	51d	32d	40c

L3 and H3 = Tenacity applied at 0.8 and 1.0 oz. per acre, respectively, three times in 2-week intervals. L1 and H1 = Tenacity applied once at 2.4 and 3.0 oz. per acre, respectively. Values followed by a same letter within a column are not significantly different at 0.05 probability level separated by Fisher's protected least significant difference (LSD).

two-week intervals, provided only moderate creeping bentgrass control under the climate and soil conditions at our experimental site. Removal of dead clippings and adding UAN to non-ionic surfactant plus Tenacity provided satisfactory creeping bentgrass control with three sequential treatments at rates of 1.0 oz. per acre. Since little dead leaf tissue will be removed by mowing following an application of Tenacity, superintendents may need to remove dead leaf tissue by raking prior to sequential Tenacity treatments in order to improve efficacy.

Based on the results of this study, Tenacity should be applied at 1.0 oz. per acre in each of three sequential applications on two-week intervals using a non-ionic surfactant plus UAN with power raking. Power raking will remove debris before each Tenacity application and allow for the greatest control of creeping bentgrass.

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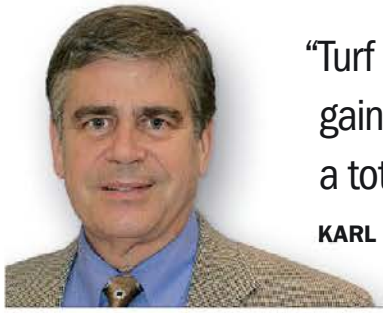

"Turf 'sunscreen' products are gaining in popularity as part of a total plant health program."

KARL DANNEBERGER, PH.D., *Science Editor*

Protecting turf from the sun's rays

Solar radiation consists of a broad spectrum of wavelengths, from very short (cosmic rays) to very long (radio waves). Light that's visible to the human eye makes up a narrow portion of the radiation spectrum, ranging from 380 to 775 nanometers (nm). For plants, that is the photosynthetic active range.

The visible light spectrum consists of violet, blue, green, yellow, orange and red wavelengths. Long wavelengths, greater than 775 nm, are not as powerful as shorter wavelengths. For the most part, long wavelengths contribute to the heat load of the plant.

Wavelengths shorter than 380 nm, such as ultraviolet (UV), X-rays, gamma rays and cosmic wavelengths, are powerful enough to cause chemical changes. Shorter wavelengths also are powerful enough to break bonds in organic molecules and cause mutation.

In humans, too much exposure to ultraviolet rays is the main cause of melanoma. The best way to prevent melanoma is to cover exposed skin, wear a hat and use sunscreen.

But humans aren't the only ones who need protection from ultraviolet radiation; plants need it, too. And turf "sunscreen" products are gaining in popularity as part of a total plant health program. Pigment-based products are gathering the most attention, but dyes also are being used. Pigments are relatively insoluble and need to be applied as a suspension, while dyes are water soluble.

If you handle a pigment you will notice that the stains that occur on your hands, pants or shoes are much more difficult to remove than a dye that is easily washed off with water. That distinction has practical importance for superintendents on the job.

Pigments absorb, transmit and reflect specific wavelengths of light. The color we see when we look at turf is a specific pigment that's reflecting light. The plant contains pigments, primarily anthocyanin and carotenoids, that provide protection to the plant under bright conditions and UV light. The expression of these pigments may be observed during spring, when high light intensities are present for photosynthesis but temperatures are below optimum, causing an overload of sunlight (photoinhibition).

In response, anthocyanin and carotenoids may respond as a protective mechanism. Anthocyanin and carotenoids manifest themselves as turf leaves that are shades of blue, purple or red. Thus, the purple-colored turf patches that appear in spring are the result in many cases of these pigments.

Pigments also can be made synthetically by re-acting a dye with a metallic salt — typically copper. Synthetic pigments reflect green light, transmit red and blue light, and absorb red and blue light, along with UV.

There are a number of questions about how these synthetic pigments influence turf health. For example, they coat the leaf acting like an anti-transpirant, which can reduce water use, but do they also reduce photosynthesis? Do synthetic pigments increase, decrease or have no effect on canopy temperatures? And if the pigments have an effect, how much of an effect do they have?

Do they provide UV or plant protection? If they do provide UV protection, will adding them to a chemical compound such as an herbicide or fungicide reduce the breakdown of these and other chemicals to UV light?

These are just a few questions that we don't have a lot of turf science to know. The good news is, research is being conducted across the country to answer these and several other questions.

We here at The Ohio State University are also continuing work on natural pigments with graduate student Dominic Petrella, who is following up work done by former student Edward Nangle. We'll keep you up to date on our findings.

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

A multi-site contact fungicide for dollar spot control

Mike Agnew, Ph.D., is a senior field technical manager for Syngenta Turf and Landscape. Agnew is active in the development of many of Syngenta's plant protectants, especially fungicides. He can be reached at michael.agnew@syngenta.com.

Q Secure is new to the turf market. What makes it unique?

Secure (fluazinam) is a multi-site contact fungicide that inhibits fungal respiration at several sites in the respiration pathway. It is the first multi-site contact fungicide registered for dollar spot control since Daconil. Secure will be a very effective tank-mix partner with single-site fungicides for dollar spot control.

Q Which diseases is Secure most effective in controlling?

Secure is very effective in controlling dollar spot on greens, tees, fairways and roughs. It is most effective on fairways, because the higher mowing height means more turf canopy is present to intercept the fungicide. And a lower mowing frequency on fairways means less fungicide is removed when mowing. Secure also will control DMI- and benzimidazole-resistant strains of dollar spot and is excellent on brown patch and on leaf spot diseases of bermudagrass.

Q What are situations where Secure is not a good fit in disease management programs?

Secure is effective on foliar diseases. As a contact fungicide, it is not effective on root diseases. Secure is excellent as a preventive fungicide and as a tank mix partner with a curative fungicide.

PHOTO BY: JOHN R. JOHNSON/GOLFPHOTOS.COM

Q Do you recommend Secure and Daconil be tank mixed?

We are currently investigating this potential use of Secure and Daconil. We need to clearly define the benefits before making any recommendations.

Q What application strategy do you recommend with Secure?

For dollar spot control in cool season grasses we recommend Secure be applied prior to the turfgrass showing symptoms of dollar spot infection. Superintendents should apply Secure at 0.5 oz. per 1,000 sq. ft., tank mixed with a single-site fungicide every 14 days throughout the dollar spot season. Uniform coverage of the turfgrass canopy is critical, and research has shown that 1 to 2 gallons per 1,000 sq. ft. of spray volume provides excellent dollar spot control. Following this program will result in excellent control of dollar spot in fall. A superintendent is limited to a total of 258 fl. oz. of Secure per acre per calendar year. Twelve applications at 0.5 fl. oz. per 1,000 sq. ft. are equal to 258 fl. oz. per acre.

An additional benefit of Secure is that while providing excellent dollar spot control, it also helps in dollar spot resistance management. Applications of Daconil that were formerly used for dollar spot control and resistance management can now be shifted to snow mold control applications while staying below the yearly Daconil application cap.

Q Are there any precautions that should be taken when applying Secure?

Before using Secure for the first time, superintendents should carefully read the label and pay close attention to the precautions listed on the label. Those who used it last year should reread the label this year so the information is fresh in their minds.

Clark Throssell, Ph.D., loves to talk turf. Contact him at clarkthrossell@bresnan.net.

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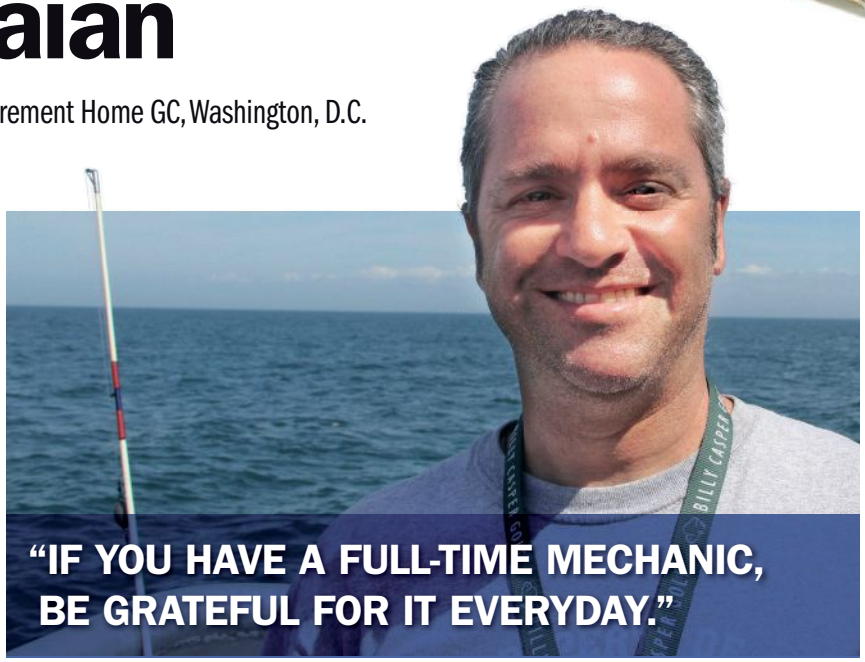

"IF YOU HAVE A FULL-TIME MECHANIC, BE GRATEFUL FOR IT EVERYDAY."

Mike, what can I get you to drink? An ice cold beer. Preferably Busch Light, if they've got it.

Tell me about your course? It's a 9-hole course, located at the Armed Forces Retirement Home, about two miles north of the U.S. Capitol building in D.C. It's a really cool property. It's home to President Lincoln's cottage, where he spent his summer months during his presidency, and a lot of time during the Civil War. The property itself has been a national landmark since 1974. When President Clinton was in office, he spent a lot of time playing here.

Before I mess it up, give me the phonetic pronunciation of 'Annaian.' I bet telemarketers trip all over themselves with it… The proper pronunciation is *uh-NYE-en*. But throughout my life, I've heard all sorts of pronunciations. '*Uh-nanny-en*?'… '*Anny-anny-en*?' And it's never spelled properly. It's Armenian, and it's actually quite common.

What do you like to do when you're not working? I'm an avid musician. I'm a drummer, so I spend a lot of time playing music. Right now I'm not playing with a band, but I still like to get out there and play. And I'm an avid outdoorsmen, so I like hiking in the mountains.

I bet you remember the first record you ever bought with your own money. I do remember, it was back in 1981, it was Grandmaster Flash and the Furious Five. Today I'm into everything, I'm a big Grateful Dead fan, Foo Fighters, jazz, blues, funk, reggae…

Mother's Day is around the corner. Will you be buying flowers? Every year I do buy flowers for my mother, but it's in tribute — she passed away almost 14 years ago. She loved her gardening. I do vegetable gardens each year. Every year when I'm doing my vegetable garden I add marigolds. They were her favorite flowers, and they also draw insects away from the veggies.

What one thing, if your maintenance budget allowed for it, would make your life instantly better? If I had the budget, a full-time mechanic would make my life even that much better. I have a part-time guy now, and he's great, but if I had the room in the budget to be able to bring a full-time mechanic on? My efficiency would be even better.

Best Saturday Night Live cast member ever? By far and away Chris Farley. The Chippendales skit with Patrick Swayze? That's an all time great.

What's one thing you love to do in D.C.? If someone's visiting, there's so much history… so we go to the monuments. But if I'm on my own, every Sunday there's a drum circle that takes place in Meridian Hill Park. It's an open gathering of folks who bring random drums. You sit down, five or six people start a drum circle, within two or three hours later, you literally have hundreds of people drumming or just dancing and having a good time.

As interviewed by Seth Jones, April 26th, 2013.

MAIN PHOTO BY: SETH JONES / ISTOCKPHOTO

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