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# Golfdom

04.22

## *Southern charm*

A Q&A with Southern Hills Superintendent Russ Myers on hosting the 2022 PGA Championship

2022 PGA SOUTHERN HILLS PREVIEW

## *Plus*

The problem with the Stimpmeter

Drone progress documenting turf stress

Long term impact of inputs on *Poa annua*

A NORTH COAST MEDIA PUBLICATION VOL. 78 // NO. 4

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COVER PHOTO BY: JOHN AMATUCCI PHOTOGRAPHY

# Golfdom

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"We went with 'Southern charm' as our cover headline this month, but I gave as much consideration to Southern Comfort, the smooth whiskey. 'Comfortably different' is Southern Comfort's motto. It could be Myers' as well."

**SETH JONES,** *Editor-in-Chief & Associate Publisher*

# Back in the hood

I thought I'd get a rise out of Russ Myers, Southern Hills superintendent, when I asked him about January 2021. You might remember, it was a few weeks after the events in Washington, D.C., on Jan. 6 when the PGA of America announced that they were no longer going to Trump National Bedminster in New Jersey for the 2022 PGA Championship. Almost lost in the ruckus was the new location: Tulsa, Okla., at Southern Hills.

It was the Midwesterner in me that made me jump at the news when I saw it. The PGA Championship in my part of the world, at a recent Gil Hanse restoration? This was as exciting as when the tournament visited Bellerive in St. Louis in 2018, or Whistling Straits in Kohler, Wis., in 2015. I started getting text messages from friends, asking if I was going (yes!), and of course, did I have an insider track on tickets? (no!)

I asked Myers what it was like to walk a mile in his Adidas when he learned that Southern Hills was the new home of the 2022 PGA Championship. Over chips and salsa, Myers didn't bite; the only spice was in the salsa.

"From the minute I was leaving LA Country Club, I always assumed Southern Hills would host more majors, and I assumed the club wanted to host them. It was just a matter of … how do you get there?" Myers says. "For me, it was a sense of validation. We hadn't hosted one since '07. But I didn't go celebrate. I knew it would get some buzz around here. But I wasn't jumping up and down and going crazy because I expect us to do this."

Myers — and his crew at Southern Hills — are very chill. They have an expectation for excellence, but they don't grip so hard at it that they make it seem like what they are doing is difficult. As we in the industry know, it is.

As an example of how chill Russ and his crew are, look at their attire. What is Russ wearing on the cover? A hoodie. They were all in hoodies while I was there. There are four other staffers photographed in the story — all in hoodies. I remember when we assigned Tulsa, Okla.-based photographer John Amatucci to shoot this month's cover. *Golfdom* Art Director Pete Seltzer sent John samples of previous *Golfdom* PGA Championship preview covers as a reference point. Amatucci nervously called Pete, and Pete called me. "Seth, John says that Russ is ready for the shoot, but he's … wearing a hoodie." I laughed. "Yup, he's in the right place then."

We went with 'Southern charm' as our cover headline this month, but I gave as much consideration to Southern Comfort, the smooth whiskey. "Comfortably different" is Southern Comfort's motto. It could be Myers' as well.

I've never used an emoji in my life (true!), but if I had to describe Russ Myers' attitude and personality, it could be summed up by the thumbs-up emoji. It's the most frequent reaction I get from him when I text him. When I hung out with him last fall, that was also his demeanor in general.

For this month's cover story, I kept it as a straight-up question and answer with Russ. Myers has had an interesting life, especially over the past two years. He and his crew were preparing for the 2021 Senior PGA Championship when they learned they were also getting the 2022 PGA Championship. Then the area got blasted by Winter Storm Uri, killing acres and acres of turf.

"I still have trouble talking about it," Myers told me in a rare moment of seriousness. But then, thankfully, he did talk about it. He was again lighthearted when he warned me: don't quote him with any words longer than three syllables.

"Because if people read that, they'll think it wasn't really me," he laughed.

Don't let them fool you, they may be a bunch of boys in their hoods, but they're ready for this PGA Championship.

**Email Jones at:**
**sjones@northcoastmedia.net.**

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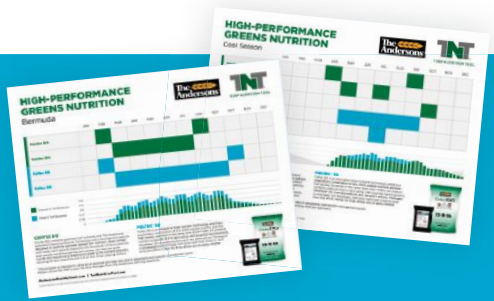


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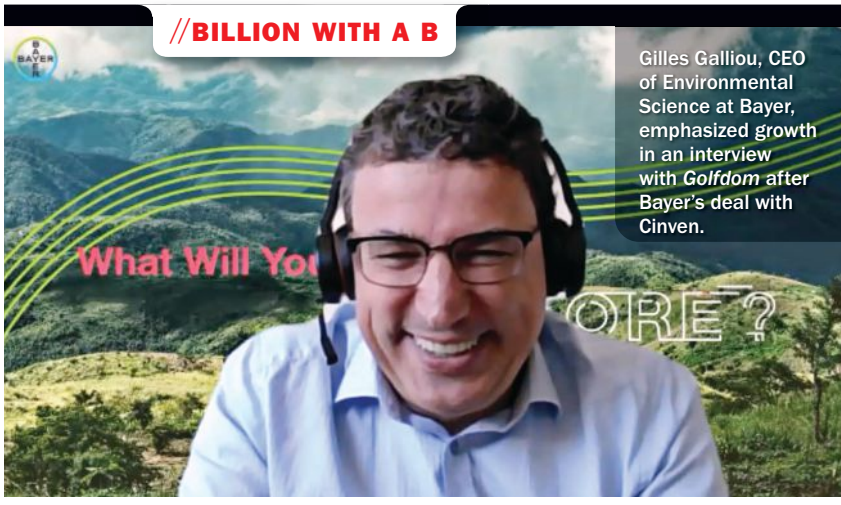
# Starter

NEWS, NOTES AND QUOTES

//BILLION WITH A B




Gilles Galliou, CEO of Environmental Science at Bayer, emphasized growth in an interview with *Golfdom* after Bayer's deal with Cinven.

## BAYER SELLS TO CINVEN

ENVIRONMENTAL SCIENCE SOLD TO LONDON-BASED COMPANY FOR $2.6 BILLION

**By Seth Jones** // *Editor-in-Chief*

$$$ Bayer announced that the company will sell its Environmental Science Professional business, which includes the company's turf and ornamental branch, to Cinven for $2.6 billion.

"It's an important moment for the company. This partnership will allow us to invest and grow in our market," Gilles Galliou, CEO of Environmental Science, told *Golfdom*. "My No. 1 focus is on business continuity. We have to serve our customers, we have to register new products."

The transaction with Cinven, a London-based private equity company, is expected to close in the second half of the year. The Bayer brand will continue to be used by Environmental Science in the interim. Once the transaction is closed, the name of the company will change.

Beyond the turf and ornamental division, the purchase also includes Bayer's professional pest management portfolio; vegetation management products; vector control; and ranch and pasture products.

"This market is showing a lot of growth, a lot of opportunity," Galliou says. "We want to build a company that is totally dedicated to the market. You know our competition — those businesses are very opportunistic, they are small compared to the (Bayer) Crop Science business. What we are building here is a business totally dedicated to those markets. We're not interested in crop (protection), in any other agricultural markets. By being dedicated, 100-percent focused on this market, we are in a position to produce additional innovation, additional growth, additional partnership."

The acquisition by Cinven does not include glyphosate. Bayer will continue

*Continued on page 8*

//SEED MONEY

## DLF SEEDS MAKES ACQUISITION

**DLF acquired the assets of OreGro Seeds, a forage, cover crop, and turfgrass breeding company located in Albany, Ore.**

**"This investment not only complements our expansive global research and product portfolio, but also adds significant operational capacity and staff to support customers," said Claus Ikjaer, CEO for DLF Pickseed USA. "This is a strategic development to bolster our seed innovation, service and support."**

**The acquisition includes three warehouse facilities totaling 75,000 square feet, equipped with blending and packaging capabilities. The company will also incorporate the research activities of OreGro into its North American and global research platform. Additionally, DLF has welcomed twenty of OreGro's former employees to the DLF family.**

//SOUTHEASTERN SALES

## GROVE JOINS AQUATROLS

**Ian Grove is the newest Southeastern U.S. territory manager for soil surfactant company Aquatrols. Grove will be responsible for overseeing the company's business in South Carolina, North Carolina, Virginia and West Virginia. Grove joins the Aquatrols team from SiteOne, where he gained extensive experience in industry sales. Prior to his role at SiteOne, Grove worked in sales at Harrells and Agrium Advanced Technologies. Grove also holds over a decade of experience as a superintendent for the PGA Tour.**

Ian Grove

**"Ian will make a great addition to our team. His extensive sales background and previous experience as a superintendent will serve his territory well. I am excited to see what he will accomplish," says Greg Sinner, Aquatrols' North American sales manager.**

PHOTO BY: WELLGLAD / ISTOCK–GETTY IMAGES PLUS / GETTY IMAGES (GOLFBALL); *GOLFDOM* STAFF (GILLES GALLIOU)

//IN THE SPOTLIGHT

# PGA Tour celebrates Sawgrass crew

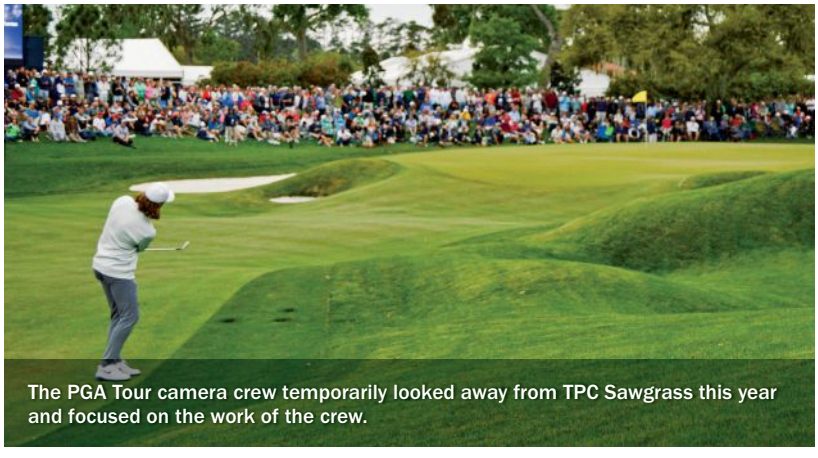
Harsh weather became an issue at the 2022 Players Championship at TPC Sawgrass, Ponte Vedra Beach, Fla., delaying the tournament to a Monday finish, won by Cam Smith.

The PGA Tour's camera crew set their eyes upon the maintenance crew as they went to work with squeegees, blowers and shovels in an effort to get the course back in playable condition. Jeff Plotts, director of golf course operations for the course was featured giving a speech on the PGA Tour's Twitter feed, drawing 75,000 views.

"This kind of challenge is what makes us," Plotts told the crew. "Everybody else is staying in, staying dry and staying comfortable. But you're out there putting it on the line for them and getting wet and muddy and cold. ... I can't express the gratitude we have for you to volunteer ... these are the experiences you'll grow upon and you'll remember the '22 Players forever."

While most commenters praised the work of the crew, some bemoaned the idea that the players were competing for a purse of $20 million but the crew was using volunteers to help. Turf Twitter came to the rescue.

"Volunteers come to learn, to meet new people in their industry, make lifelong connections, see ideas they can use at their course, see how tournaments operate and much more," wrote Ralph Kepple, CGCS, director of agronomy at East Lake GC in Atlanta. "These experiences and connections can launch a career on a new trajectory. That's the 'payment.'"



The PGA Tour camera crew temporarily looked away from TPC Sawgrass this year and focused on the work of the crew.

PHOTO BY: *GOLFDOM* STAFF

//GOLF TRAGEDY

# GOLF TEAM IN FATAL ACCIDENT

Nine people were killed, with two more in critical condition, following a head-on car accident in West Texas.

The University of the Southwest golf men's and women's team were traveling home following a golf tournament when the accident occurred. Six students and the coaches of the University of the Southwest and a coach of a New Mexico university were among the deceased. The accident was caused by a truck that crossed into oncoming traffic, hitting the team van. The driver of the truck also died.

//HOPE WE WIN!

# *GOLFDOM* RECOGNIZED BY PRESS EDITORS

**The American Society of Business Press Editors (ASBPE) recognized *Golfdom* as regional finalists in their 2022 Azbee Awards of Excellence competition. The Azbee Awards honor the best in business-to-business media.**


***Golfdom* was recognized in two categories: Cover design, front cover photography, for the magazine's "Behind the beauty" October 2021 cover; and letter from the editor for "Keeping up with the Jones," the monthly column from Editor-in-Chief Seth Jones. The national awards will be announced next month.**

//30-YEAR VET

# PURSELL AGRI-TECH ADDS ABETZ

**Bill Abetz, a 30-year veteran of the green industry will join Pursell Agri-Tech. Abetz will serve markets including golf and sod as director of turf and ornamentals. The company said he will help deliver Pursell's complete controlled-release fertilizer product portfolio to channel partners and end-user customers.**

**"It is a privilege to be part of this team and have the opportunity to usher in Pursell Control as the new standard in controlled-release fertilizer coating technology," said Abetz. "I look forward to demonstrating how our products reduce the environmental impact of fertilizer while improving overall plant quality and driving down total cost."**

**Bill Abetz**

**Abetz brings hands-on experience in nutrient management as a former assistant golf course superintendent and nursery operations manager, plus more than 20 years in chemical and fertilizer sales and product development.**

**"We're excited to welcome Bill to the Pursell team and know that his experience, knowledge and passion will further enhance our ability to fulfill the unique and specialized needs of the turf and ornamentals markets," said Nick Adamchak, president and CEO of Pursell Agri-Tech.**

## Ask Thad

**By Thad Thompson**
Superintendent
Terry Hills GC, Batavia, N.Y.

**I'll bite, when does concern set in for you with snow/ice cover on your turf? Also please provide your choice sauce for Buffalo Wings?**
*— Dan Francis, @francisdmarion, superintendent, Wildwood GC, Middletown, Ohio*

In January 1999, I started at The Seneca Falls Country Club. After my initial assessment, I determined that there was approximately 4 inches of ice on the No. 7 green, a low-lying green that water naturally drains toward. I rallied my new assistant and mechanic and we headed out with sledgehammers, ice chippers and shovels. To make a long story short, two-thirds of the green died anyway, and we had lots of mechanical damage that was mostly cosmetic.

About six years ago at Terry Hills, it was 60 degrees in January and we received 2 inches of rain. The next morning was zero degrees and stayed that way until March. We had the dreaded white puddles of death on several greens. Most came back within a few weeks, the 20th green needed aerification, seed and topdressing while the poor old 15th green needed about 400 square feet of sod. In 34 seasons, these are the only two instances of ice damage that I have seen.

In my opinion, removing ice at the wrong time exposes the turf to even harsher elements. The most important thing about cold weather greens going into the winter is that they naturally harden off and prepare themselves for the change of seasons. Extreme swings in winter weather are unavoidable at times and communication and an action plan go a long way in explaining what's happening to a membership.

Buffalos don't have wings, "boneless wings" are chicken nuggets and specialty sauces are for chain restaurants. In Western New York, they're wings. The sauce is Frank's Red Hot. If it's too spicy, cut it with butter. Celery and blue cheese are the only acceptable sides. If you order carrots and ranch, everyone will know you just got to town.

*Got a question for Thad? Tweet to* ***@TerryHillsMaint*** *and* ***@Golfdom*** *or email Thad at* ***thadthompson@terryhills.com***

//SHOW ME THE MONEY

## GCSAA ANNOUNCES TURFGRASS RESEARCH GRANTS

The Golf Course Superintendents Association of America announces the funding of five new research grants this year. These projects are supported through the GCSAA Foundation research endowments and the organization's Chapter Cooperative Grant Program.

The GCSAA announces three endowment research projects: an O.J. Noer Research Endowment project; a Dr. Michael Hurdzan Endowment and a Robert A. Moore Endowment.

The projects were selected by a committee that included two members of the GCSAA Board of Directors, superintendents, university researchers and other professional scientists. The five new research initiatives will receive a total of $149,957 from a GCSAA Foundation block grant, with an additional $62,500 in matching funds from participating GCSAA chapters. For more on these projects, visit **Golfdom.com**.

*Continued from page 6*

to sell the product to professionals.

"It's our commitment as we transition from being the distributor of Roundup to not being the distributor, we will make sure the market is properly taken care of," Galliou says. "We'll make sure Bayer has all the keys, all the relationships, all the knowledge to continue the sale of glyphosate products without any glitches."

For more on this story, including a video interview with Galliou, visit **Golfdom.com**.

## #TurfTweetoftheMonth

*Follow us @Golfdom*

***Kevin Kallas***
@CubbieKK
Superintendent
Saddle Rock GC, Aurora, Colo.

Of all the things I have done and still want to do in my life, never thought being at the state capital speaking up for my profession in front of the CO Senate Ag Committee would be one of them. Definitely not like the field trip I took in sixth grade.

@RMGCSA @GCSAA
#didntblackout

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"I still haven't worked out exactly what happened, but you read it here first: The Stimpmeter is not a good way to measure greens speed."

**ALAN FITZGERALD,** *superintendent, LedgeRock GC, Mohnton, Pa.*

# Mr. Stimpy isn't a liar, but …

Each year I take a look back at the previous year and give myself a grade. How well did it go overall? How was the turf? Anything else?

Overall, 2021 was probably a B+/A-. Like every superintendent, we are exceptionally hard critics of ourselves which in turn makes criticism from others harder to take. We beat our heads over: "Did I really miss that," "Argh! I saw that and forgot about it" or the inevitable "I wish I could, but don't have the resources."

That last one is a tough one as we still try to achieve "it" with what we have and it's also my favorite, as it creates some interesting thought processes and superintendents finding ways around the problem.

Like everyone, staffing was the big one as we went from fine to just barely having enough as the year passed. The grade shifts back and forth on this a bit as we manage to work miracles with a smaller staff so it doesn't really show — at least in the short term. However, the never-ending equipment supply issue softened the blow as there would have been barely enough people to run everything anyway. It was an A+ for getting it done, but a solid B as the team suffered from the balancing act through the year. B+ overall.

I'll give another A as I reached my goals for the course and two big personal ones: becoming a Master Greenkeeper and passing my CGCS exam.

## Grading turf

How about the turf? Conditions were good besides some tees having damage (largely from only having one old tee mower to get through the year). We battled two tropical systems in a week without an issue and my first experience with a major lightning strike was one that I would like to forget. The team worked miracles, so we barely missed a beat. B+

Due to the golf schedule, spring aeration was earlier than usual, so recovery was slow, and like a petulant teenager, the slow-wakening-in-spring L93 only magnified the issue. Once the greens were back up to speed all seemed well until the "greens aren't LedgeRock fast" complaints started.

## Stimpmeter says?

However, Mr. Stimpy was saying they were exceeding that metric with readings of 13 to 13.5 feet every day, outside of Philly, in July. Then the conversation changed to, "there's no roll-out." That comment made a few light bulbs go off.

I also sensed this "no roll-out" when I putted but dismissed it since I'm an average putter. More importantly, my buddy Mr. Stimpy was telling me different. The only difference was the height of cut was 0.015 inches higher than usual.

I still haven't worked out exactly what happened, but you read it here first: The Stimpmeter is not a good way to measure greens speed. After all, speed is distance/time and all that Mr. Stimpy measures is distance. Yes, it works to check consistency from green to green, but that is it. Greens speed doesn't travel. It's your distance on your turf and that's it. Once fall aeration was out of the way (along with those pesky tropical systems) we shaved them back down to normal and the greens speed was 13 to 13.5 feet. I heard, "This is how they should be," "They're finally back" and "They're so much faster now."

Mr. Stimpy wouldn't lie, would he? He didn't. He is just being asked for something he cannot provide. So "roll-out" is my new metric. I'm not yet sure how to actually test it as it has to do with ball resistance on the turf and acceleration and deceleration as it rolls off Mr. Stimpy.

I am no longer going to rely on a three-foot stick. But just like Maverick in Top Gun, I now have a new need for speed, or more accurately, a new way to measure it.

**Alan FitzGerald (alan@ledgerockgolf.com) is superintendent at LedgeRock GC in Mohnton, Pa.**

# The Golfdom FILES

FROM THE ARCHIVE

This month's cover story is a conversation with Southern Hills Superintendent Russ Myers about preparing to host the 2022 PGA Championship. In this month's *Golfdom* files, we look back at the August 2007 issue where Senior Editor David Frabotta wrote on how Myers and his then staff of 31 prepared for the 2007 event. For the full article, visit **golfdom.com/exclusive.**

# Southern man

**By David Frabotta**


In the heart of the Bible belt surrounded by encroaching suburban hustle, a historic golf club remains steeped in traditional charm. A sentry guards the handsomely landscaped entrance gate to Southern Hills Country Club, the first site to host a fourth PGA Championship.

But the historic club has its share of modernity as well. A $25-million, facility-wide renovation features massive upgrades to the entire Tulsa, Okla., property, including new USGA-style greens and U3 bermudagrass in the fairways and rough.

Its golf course maintenance staff is fairly new, too. About 20 new faces joined the staff following the New Year to bolster the 31 existing crew members, almost all of whom began at the course prior to hosting the 2001 U.S. Open.

One of the freshest faces is Russ Myers, the new superintendent of the Perry Maxwell masterpiece. He's only had since last Labor Day to prepare for his first Major Tournament as superintendent, but he's no rookie to the demanding tournament tempo.

He's been around dozens of championships, including four Masters during his tenure at Augusta National, and he's volunteered at about 20 other championships throughout his career, including U.S. Opens, Walker Cups, U.S. Amateurs, U.S. Senior Opens, British Opens and a PGA Championship.

"I immediately fell in love with the focus that goes into maintaining a golf course at a certain level of perfection," Myers say about his four years at Augusta National Golf Club, where he progressed from intern to assistant-in-training. "That's why I pursued Southern Hills. I wanted to obtain the unique experience of being evaluated on the world stage. I always knew it was a good fit for me and what I really liked."

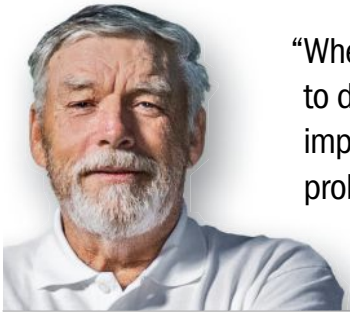
Taking the helm less than one year away from a Major at a course conditioned at a championship caliber meant he could "sit back and let my managers continue doing the good jobs they were doing already," he says. "The course was probably ready to hold a championship the day I got here."

That's a compliment to his predecessor John Szklinski, who oversaw the golf course renovations in 1999 and 2004.

But Myers has already had a chance to put his stamp on the classic course. He's overseen the completion of various course upgrades, including the installation of a subsurface ventilation system and 36 fan locations, which involved four miles of conduit and about a dozen transformers.

And while Myers might be held to task if something goes awry, he's quick to give the credit of the successes to the maintenance staff. That relationship of trust and freedom to make decisions builds a respect and camaraderie that's clear to see when Myers talks with his crew. He's collaborative when discussing spray formulations, and he's sympathetic to the drudgery that oftentimes occupies a laborer's days and weeks. And with his extended championship staff of 52 and about 100 volunteers trickling in for the big week, Myers says no one can oversee that many people to any great extent. They have to be trusted and empowered to make decisions. And they are.

"Russ delegates and leaves a lot of the daily decisions on the course to us after we talk about the possibilities," says Jeremy Dobson, who was promoted from spray technician to assistant superintendent after the 2001 Open. "With such a large staff and as many new people as we have, that's important because you want as many people to know everything that's going on in order to produce the best-possible course."



"When confronted with a problem, take the time to determine the cause ... But also be sure to implement steps to reduce the chance of the problem reoccurring."

**JIM MOORE,** *retired director of education and outreach, USGA Green Section*

# Some lessons stink

This is one of a series of columns detailing lessons I have learned the hard way — that is, by virtue of mistakes made during my career. This lesson is about looking for causes rather than just symptoms.

Back in the day (1981 to be exact) I was superintendent at Ridgewood Country Club in Waco, Texas. Getting the job at RCC was a huge step for me and I really felt the pressure to fix problems immediately. I was particularly proud of the improvements we were making in the fairways which seemed to get better by the day, probably due to the huge quantities of ammonium sulfate I was pouring on the turf.

You can imagine the disappointment and outright anger I felt driving into the club and seeing huge areas dug up. The damage was widespread with almost every hole affected. Apparently, every skunk in the county decided to have a party on my beautiful fairways.

My first reaction was to kill every last one of them.

## Away we go

Our equipment inventory included four ATVs that we used to pull small carts, greens mowers, etc. They were also perfect for hunting skunks. That night, armed with shotguns, and possibly a beer or two, my green chairman and I jumped on the ATVs and set out to exterminate. ATVs, shotguns and beer — what could go wrong?

A skunk problem is a symptom of a larger turf issue. A lesson to remember is to treat the cause, not the symptom.

As it turned out, three things went wrong.

First, we killed so many skunks that by the next morning the entire property smelled horrible.

Second, in the process of speeding around the golf course more than a few live shotgun shells bounced out of our rides. I had to send the crew out to scout the entire course to gather them all up before they got hit by a mower.

Third, we hardly dented the skunk population as evidenced by the damage that occurred the next night. For a week I rode around the course at night trying to fix this problem to no avail.

## Symptom vs. cause

One of my crew was a man we all called Pop since he was in his late 70s and had worked at RCC for over 30 years. It was Pop who first pointed out to me that I should be trying to kill the grubs rather than the skunks. I was fertilizing so hard I had apparently hidden most of the grub damage that would have otherwise been obvious.

After treating for grubs, the skunk damage dropped to almost nothing.

I know this is an obvious example of treating the symptom rather than the cause, but even experienced superintendents can make this mistake. Consider the greater incidence of disease and subsequent heavy use of fungicides on greens surrounded by trees limiting good air movement. Or, how about all the signs and ropes used to keep carts out of wet areas, when installing additional drainage might eliminate the need for them altogether. Yet another example might be relying on labor-intensive hand watering of dry areas that are the result of poor coverage by irrigation heads.

## My lesson for today

When confronted with a problem, take the time to determine the cause of the problem. A fellow named Albert Einstein summed this dilemma up nicely:

*"If I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions."*

You may have to treat the symptom in the short term but also be sure to implement steps to reduce the likelihood of the problem recurring.

**Jim Moore is the retired director of education and outreach for the USGA Green Section. Now retired, he lives on the family farm in McGregor, Texas, and can be reached at jfcmoore@gmail.com.**

PHOTO BY: JIM MOORE

# THEY'RE SUCKING THE LIFE OUT OF YOUR ROOTS.

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The Golfdom Conversation

# Southern charm

A Q&A with Southern Hills Superintendent Russ Myers on hosting the 2022 PGA Championship

BY SETH JONES

The PGA Championship, the U.S. Open and the Open Championship — when a golf course has the honor of hosting one of these majors, there are years of advance notice to prepare. For example, the Lower Course at Baltusrol GC in Springfield, N.J., already has the 2029 PGA Championship on the calendar. The crew working at soon-to-be-completed PGA Frisco in Texas gets to host the futuristic year of 2034's PGA Championship.

It was last January when the team at Southern Hills learned that their proud course would be the new home of the 2022 PGA Championship after the PGA of America made the decision to pull the tournament from Trump National Bedminster. The sudden change in event location wasn't enough to get much of a reaction out of Superintendent Russ Myers and his crew. In Myers' mind, they're always ready to host a major.

Myers hosted the 2007 PGA Championship at Southern Hills (see this month's *Golfdom* Files on page 11.) He also has volunteered on crews for U.S. Opens, Open Championships, Walker Cups, U.S. Senior Opens and a PGA Championship. He worked on the crew at four Masters Tournaments. And he worked at 2023 U.S. Open host Los Angeles CC for a six-year stint before returning to Southern Hills in 2016.

In this question and answer, Myers discusses preparations for the 2022 PGA Championship, the effects of Winter Storm Uri and how he's maintained a full crew.

**Golfdom:** It's January 2021, you're geared up for the Senior PGA Championship in May … then you learn you're getting the 2022 PGA Championship. What was your emotion when it became official?

**Russ Myers:** From the minute I was leaving LA CC, I assumed Southern Hills would host more majors. To me, it was just a sense of validation that my beliefs and the beliefs of the members here were accurate. We hadn't hosted one since '07, and maybe there was a belief it wouldn't happen. It's exciting for Tulsa and the state of Oklahoma. But if we wouldn't have gotten it? My life is full; I've got kids. I didn't go celebrate, but I was honored the PGA thought we could do it. I took it as a, 'darn right, we should do this.'

**Golfdom:** What does the timing of the PGA Championship in May mean

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to your operation, and how you can be best prepared to host a major early on the calendar?

**Myers:** It's not like you're prepping leading right up to the event. It's almost like baking the perfect wedding cake. You bake it and then put it in the freezer for six months until the tournament.

That's been the real difference with this May championship for us. With Bermuda, we've got 30 days from the emergence from spring dormancy until the tournament. Thirty days that time a year is maybe ten fairway mows. It's just making sure you've got everything in line to avoid the negatives: spring dead spot, traffic wear, etc.

It's a different dynamic for us. Our play steamrolls right through into the fall, but the grass stops growing, so it's just sitting there dormant, and you're playing on it.

**Golfdom:** You were five months away from hosting the Senior PGA Championship and then boom, Winter Storm Uri blasts Texas and Oklahoma. What did that storm do to Southern Hills?

**Myers:** It wasn't the cold temperatures as much as it was the winds. The winds coming from the north caught anything that was elevated out of the ground and killed it if it was cut at fairway height. We lost a total of 5 acres scattered across the course.

That was pretty substantial. Five acres is nothing you can't handle in a very short order if it's in one area. But when it's spread out everywhere and you've got to make it mesh well and move your lines to make sure it blends in? It was one of the great efforts I had ever been a part of as a crew.

It was pre-dawn to after dark every single day. No days off. We went from COVID, and hours were restricted to keep people safe and separated, to putting the gas pedal down.

We went into last fall telling guys not to dig anything up, and the next thing you know, you've got five acres of sodding where every camera is going to shine, and every player is going to play. And it's hard to imagine you're going to hide that in such short order.

**Golfdom:** What was the golf season like here in Tulsa last year?

**Myers:** It was pedal down; it didn't ever let up. It was an odd year, I don't like to use it as an excuse, but we started April 7, 2021, with 5 acres of in-play critical low-cut fairway dead. We crash-coursed for 24 days of sodding nonstop, making sure it's perfect and trying to put smoke and mirrors together to get ready for the May Senior PGA Championship.

Post-tournament, we immediately had to get ready for this year's PGA Championship. We had to get ahead. Whether it was a tree that needed to come out, or a fairway that needed to change for gallery purposes, we had to do all of that along with our normal stuff. The list is long. You just couldn't take a breath.

**Golfdom:** Have you been able to maintain the crew you need for such an undertaking?

Myers with mechanics Curtis Williamson (seated) and Roy Bradshaw. Bradshaw has worked at Southern Hills for 36 years.

Assistant superintendents Blake Willems (left) and Robert Frizzell. "It's a strong group out here and we're getting better every day," Myers says.

PHOTOS BY: JOHN AMATUCCI PHOTOGRAPHY (FAR LEFT AND PAGE 14-15); *GOLFDOM* STAFF (LEFT)

Southern Hills recently underwent a restoration supervised by Gil Hanse and construction from Heritage Links. The new greens feature PrecisionAire and hydronic heating/cooling systems in the subgrade.

PHOTO BY: JOHN AMATUCCI PHOTOGRAPHY

## The Golfdom Conversation

**Myers:** The short answer is we're overstaffed right now. We're as strong of staffed as we have been over the last 15 years of my career. It's exceptional, and a lot of it is because the core of the crew stayed the same. We were able to target better on the new hires while still taking care of our existing core.

**Golfdom:** I haven't heard of many places that were staffed even close to where they need to be. What have you done to make it so you're overstaffed?

**Myers:** Our normal winter numbers are around 32; for a long time, that's been the number, probably since 2002. We started budgeting for 35 a few years ago but never really got there, but I think right now we're at 38 full-time.

Scott Bordner (director of agronomy, the Union League of Philadelphia), got me looking more at using high school kids again, maybe five or six years ago. It worked out great, but there were also some challenges with it in the shoulder months with school late and leaving early. And I think the balance of that is a few more full-time and a few less of the summer/high school or wherever you're getting your part-time or seasonal (labor). My HR director, Molly Saleh, has worked really hard at it and done a good job. We're capable of sustaining that and giving guys their scheduled days off.

And we're making it very clear we're not looking for a quick fix here. We need them to look at golf course maintenance the same way. They may not do it for 25 to 30 years, but they might do it for five or ten and then move on and do something else. But at least they see it as a way to raise a family and make a living.

We have to accept that it requires a certain pay rate. We've got guys who want to be here and have got their days off, and they're fresh. You can accomplish stuff when you're not trying to figure out what you're going to skip today. It makes a big difference.

**Golfdom:** Who are some of your key guys on the crew who have been with you for a while?

**Myers:** The equipment manager, Roy Bradshaw, has been here 36 years and has played almost every role in this operation, from foreman to assistant superintendent to now equipment manager. I've got three assistants. One worked with me out in LA, Doug Cocanour; Blake Williams, he has been here since before I got here. And we recently promoted Robert Frizzell. They are exceptional.

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*Continued from page 17*

There are 12 guys who have worked here for the last 12-, 15-plus years. Without them, I don't know where we would be. It's a strong group right now that's getting better every day.

I've also got a really good group of what we call apprentice superintendents. They would easily be assistants at good clubs all over the country, but they have stayed with us for varying reasons. They are really the X-factors because they can lead the crew if they need to, and they will clean toilets if you ask. They're just adaptable and extremely valuable.

**Golfdom:** What are some of your favorite tools to get the job done? Any new tricks up your sleeve since the last go-round?

**Myers:** The biggest thing that's happened here is we put in the hydronic system under the greens. It's just changed the world for the greens. It's like growing them in ideal weather all the time. And we don't lose those four or five guys that are really critical that would have been locked on a hose nonstop for three and a half months. They're free to make the place better in other ways.

I'm not the most creative guy. I like to stick with what works. I'm like Nick Saban. I mean, if I can run it down the right shoulder, I won't stop running it there until it doesn't work anymore. We're Signature (XTRA Stressgard), Daconil, Floratine sprays religiously, knocking that through the summer, and we roll in Segway and Insignia (SC) every 21 days for our root-borne diseases.

Probably the biggest recent thing that's been nice for us, knock on wood, is the Maxtima product for spring dead spot. That has been really effective for us for three straight years. When you're looking at a May championship, if you get spring dead spot, you're not going to make it go away in time for that tournament. So, it's been comforting to see the quality of that.

**Golfdom:** What will be your emotion when the final putt drops on Sunday?

**Myers:** That's a good question. I don't know. I don't want to sound cliché, but we're trying to present this course to the world all the time. It'll just have more cameras on it for that week. I want the great part of this to be routine without running my guys into the ground. Our members will be bringing more guests because of the PGA Championship. But if I pull our calendar up for the next seven years, there's a Trans-Miss, the Big 12, the Junior Masters for local Oklahoma kids. These events are really special to me. It's all about expecting it to be at this level. If we can do it, that just needs to be the mentality.

*Hosted by Mike Kenna, Ph.D.* | *mpkenna@gmail.com*

# SuperScience

// PLANNING MAKES PERFECT

## A MANAGEMENT PLAN FOR PUTTING GREEN SURROUNDS

*By Adam Moeller and John Petrovsky*

Most golfers miss a fair number of greens during each round, which makes the green surrounds a very important part of the course. Green surrounds can also be a major source of frustration for golfers and superintendents alike because it can be difficult to maintain quality turf in these high-traffic, high-visibility areas. Producing consistent lies in the rough throughout an entire course is virtually impossible, but most agree there should be healthy, weed-free grass in the green surrounds. Unfortunately, this is easier said than done.

### SURROUNDS MANAGEMENT PLAN

In our recent *Green Section Record* article, we discuss creating a management plan tailored to the specific needs of the rough in the green surrounds. The term "green surround" isn't found in turfgrass textbooks or the *Rules of Golf*. So we defined the green surround as rough around the greens. Collars, approaches and other closely mown areas around greens all require different management inputs and techniques than rough areas, so we excluded them from this article.

Green surrounds require a different management program than other areas of the rough because of the architectural features and heavy traffic in these areas.

A specific management plan is an essential step toward improving the performance and reliability of turf in this area. Too many courses treat the rough in the green surrounds like rough in other areas, but the intensity of play and traffic in these areas necessitates a specialized program.

Our article focuses on traffic management, mowing practices, fertility, pest control and establishing grasses that are better suited to surrounds. The key takeaways for the article include:

- Green surrounds are one of the most heavily used parts of a golf course, and they face unique maintenance challenges.
- Concentrated traffic, tight spaces and tree issues are some of the most common reasons green surrounds struggle.
- Depending on design features and available labor, superintendents may need specialized equipment to manage green surrounds successfully.
- Improving the condition of green surroundings requires increasing resources or prioritizing this area over other rough areas.

If a budget increase is not possible, create a hierarchy for the different rough areas on the course based on the amount of play they receive instead of maintaining them all at the same level. It would help to prioritize green surrounds over tee surrounds and primary rough. G

For the entire article, please visit Improving Playability in Putting Green Surrounds. *USGA Green Section Record*. Feb. 4, 2022. **https://www.usga.org/content/usga/home-page/course-care/green-section-record/60/02/improving-playability-in-putting-green-surrounds.html**

**Adam Moeller is an agronomist in the Northeast Region and director of the Green Section Education. John Petrovsky is a manager in the Green Section Education and a former golf course superintendent.**

**This project was funded in part by the USGA Green Section.**

PHOTO BY: USGA GREEN SECTION

## NEWS UPDATES

### ANTI-PESTICIDE BILL INTRODUCED IN SENATE

A bill in the U.S. Senate, introduced by Sen. Cory Booker (D-NJ), could change golf course management through the ban, elimination, or restriction of many plant and pest control products superintendents rely on to maintain healthy turfgrass, trees and ornamental plants.

Booker's bill, S. 3283 — also known as the Protect America's Children from Toxic Pesticides Act — would ban: several classes of pesticides including organophosphates and neonicotinoids; any product currently banned or otherwise prohibited by Canada, the European Union, or any EU country and would eliminate pesticide preemption laws in every state by allowing local governments to ban and restrict pesticide products, thereby creating a patchwork of differing regulations.

The Golf Course Superintendents Association of America (GCSAA) urges members to send messages to their senators in opposition to the bill using an online form on the GCSAA website.

The bill would gut the Federal Insecticide, Fungicide, and Rodenticide Act, which has provided consistent federal regulation of pesticide labeling, distribution, sale and use since 1947.

//EYES ON ABG

# What is the long term impact of inputs on annual bluegrass in greens?

*By Kaiyuan Tang, Timothy T. Lulis, Travis R. Russell, and John E. Kaminski*

In the northern U.S., golf course putting greens often consist of mixed populations of annual bluegrass (ABG, *Poa annua* L.) and creeping bentgrass (CBG, *Agrostis stolonifera* L.) (21). Creeping bentgrass is the initial and desired turfgrass species in these mixed populations due to its tolerance of low mowing heights, relatively high disease resistance, and good traffic tolerance (8).

Often considered a weed due to its invasive nature (2,13), ABG establishes in CBG to become a mixed-species putting green. Annual bluegrass is undesirable due to poor heat and drought tolerance in summer and low cold tolerance in winter (4,14,21,23). Additionally, ABG tends to have more chronic disease and pest issues than CBG (6).

With varying results, golf course managers try to suppress ABG from CBG putting greens using many chemical and cultural management strategies, such as adjusting soil pH, plant growth regulators (PGRs) and nitrogen fertilizer programs. However, annual bluegrass is challenging to control when established within other turfgrass species due to its prolific seed production, large seed bank and ability to germinate over a wide range of time and under diverse environmental conditions (12).

## FERTILITY TO MINIMIZE ABG

Past research found nitrogen fertility to be an effective strategy to minimize ABG competitiveness within CBG. Concentrating nitrogen fertility applications to the summer months favors the growth of CBG, as ABG growth is more vigorous in the spring and fall months (6). Creeping bentgrass has a lower nitrogen requirement than ABG, reducing annual nitrogen applications may further suppress ABG (22).

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Research provided and funded by USGA.

Managing soil pH within a range of 5.5 to 6.5 favors CBG growth (22). Iron treatments reduce ABG shoot growth more than CBG (24). Others found iron sulfate ($FeSO_4$) may or may not decrease ABG in CBG putting greens (7,17). Applications of methiozolin on ABG control were similar or increased when mixed with iron sulfate (9).

Additional research evaluated the influence of nitrogen fertility and PGRs as independent and combination treatment applications on ABG control. Golf course superintendents routinely apply trinexapac-ethyl (TE), flurprimidol (FL), and paclobutrazol (PB) to favor one species over another. Applications of TE improve both ABG and CBG turfgrass quality (15). However, repeated applications of FL and PB reduced ABG in mixed-stands with CBG (3,11). Ethephon in combination with TE reduced ABG seedhead cover (1).

Our earlier work (10) evaluated low and high nitrogen rates, iron rates and PGRs on ABG control in a CBG putting green from 2010 to spring 2012. In this short-term study, the percentage ABG was less under the lower nitrogen rate (0.5 lb. per 1,000 $ft^2$ annually). ABG populations decreased with iron rates under low nitrogen, but no differences among iron rates in plots receiving high nitrogen (3 lb. per 1,000 $ft^2$ annually). Flurprimidol was the most effective treatment for ABG control in this study. However, turf treated with FL had reduced quality ratings on greater than 50 percent of the rating dates than turf treated with TE or no PGR.

The long-term influence of these strategies on ABG control in mixed-species putting greens is unknown. Long-term nitrogen applications impact soil organic matter (OM) development on golf course putting greens (18). Cultural practices to manage OM such as vertical mowing and aerification could reduce the density of desirable turf, disturb the top-soil surface, and bring ABG seeds to the surface, favoring germination (6). Lower seasonal nitrogen fertility may slow OM development, reducing the necessity for disruptive cultivation practices, and thus result in a reduction of ABG (10).

We conducted this research to continue the work from 2010 to 2012, previously reported (10). The objective of this study was to determine the long-term influence of nitrogen, iron and PGRs on ABG populations, turfgrass quality and soil characteristics in a mixed-species putting green of ABG and CBG.

## MATERIAL AND METHODS

A 7-year field study was initiated from 2012 to 2018 at the Joseph Valentine Turfgrass Research Center in University Park, Pa. After publishing the results from the initial two years (2011 and 2012) of the study (10), we continued the trial for seven more years to evaluate the long-term treatment impact.

Initially established in 2010, the experiment is on an existing research putting green consisting of 'L-93 × CBG (75 percent) and ABG (25 percent). The soil texture was sand with an initial pH of 7.2, 1.8 percent OM, cation exchange

capacity of 15.3 milliequivalents per liter per 100 g. of soil, 5.5 lb. phosphorous per 1,000 ft² (Melich-3 test), and 2.9 lb. potassium per 1,000 ft².

We mowed the putting green 5 to 6 days per week to a height of 0.1 inches using a walk-behind greens mower (Flex 21, The Toro Company). Sand topdressing was applied every 1 to 3 weeks during the growing season at a rate of 80 lb. per 1,000 ft². We made an average of ten sand topdressing applications per year between 2012 and 2018.

The surface and soil disruptions were limited to solid-tine cultivation to a depth of 2.5-inches in May and October of each year. Irrigation management did not allow the turfgrass area to wilt, and we implemented a preventative disease program.

The study was arranged in a two-by-three-by-three factorial with four replications in a randomized complete block design as previously described (10). Individual plots measured 3-by-6 feet. The main treatment factors included two levels of nitrogen, three levels of iron sulfate ($FeSO_4$) and three PGRs, including Primo MAXX (TE), Cutless MEC (FL), and no PGR (See Table 1 for rates and product information).

## Research Takeaways

- The long-term application of management programs influence annual bluegrass.
- Annual bluegrass can be reduced by reducing seasonal nitrogen.
- Flurprimidol resulted in significant reductions in *Poa annua*.
- Iron reduced annual bluegrass early in the study, but the long-term influence was low.
- Where annual bluegrass is desired, higher seasonal nitrogen and TE should be used.

We used ammonium sulfate as the sole N source throughout the study. It was applied at rates between 0.5 and 3 lbs. per 1,000 ft² at various times to evenly distribute the total nitrogen for each treatment in nine applications throughout the growing season ( See Table 2 application rates and timing).

Plant growth regulator and $FeSO_4$ treatments were initiated in late April or early May of each year and reapplied approximately every three weeks for a total of nine applications annually. All treatments were applied using a CO2 backpack sprayer equipped with a Teejet flat fan nozzle.

Percentage ABG and turfgrass quality were evaluated monthly from April through October. Percentage ABG was rated using a 3 × 6 foot rating grid with 253 intersections and recording the presence of ABG at each intersection for each plot. Percentage coverage was

Continued on page 22

Continued from page 21

calculated by dividing intersections with ABG present by 253.

We visually assessed turf quality on a 1 to 9 scale, where 1 = brown or dead turf, 7 = minimum acceptable quality level for a golf course putting green, and 9 = optimal uniformity, density and green color. Monthly evaluations of percentage ABG and turf quality were combined and averaged each year from 2012 to 2018. Annual data also were combined to obtain a total average across the entire study.

We collected soil samples from each plot on 17 Nov. 2014 and 5 Oct. 2017, and soil characteristics, including pH, OM, and Mehlich-3 extractable elements, were determined (Brookside Laboratories). We estimated OM by weight loss-on-ignition (20). Soil pH was measured in a 1:1 (soil/water) solution using a pH meter (16). National Weather Service (**https://weather.gov/**) provides the meteorological data for the experiment location.

Data were analyzed using the MIXED procedure of SAS (19) and means separated according to Fisher's protected LSD test ($P \leq 0.05$). Nitrogen, iron, PGRs, and year are the main treatment factors, and their interactions are the fixed effects, with replication treated as a random factor within the model.

## RESULTS

A significant four-way interaction of nitrogen x PGR x iron x year influenced ABG populations throughout this experiment. Averaged across all treatments, annual ABG populations were highest in 2012 and 2015 (44 percent) and lowest in 2016 (23 percent) (Table 3). Generally, the greatest ABG population was observed in 2012 and tended to decrease until 2018 under each treatment combination, but there are several exceptions (Table 3).

A three-way treatment interaction (PGR x iron x year) and a two-way interaction of (N x year) occurred for turfgrass quality. For PGR treatments, FL resulted in lower turfgrass quality compared with plots treated with TE or no PGR across all $FeSO_4$ treatment rates in four of the seven years of this study (data not shown). In the other three years of the study, there were no statistical differences between PGR treatments. The influence of $FeSO_4$ was minimal within PGR treatments for the study.

High N combined with TE or no PGR treatment resulted in a higher ABG population from 2015 to 2017 (Table 3). The highest ABG population (80.5 percent) was in plots treated with high N combined with TE and no $FeSO_4$ treatment in 2016, whereas the lowest ABG population (1.7 percent) was under high N combined with no PGR and no $FeSO_4$ in 2017.

Nitrogen influenced ABG populations in each year of the study. From 2012 to 2014, the percentage of ABG decreased from 38 to 14 percent under low N fertility and from 49 to 31 percent under high N fertility (Figure 1a). Nitrogen influenced turfgrass quality every year except 2013, with the high rate resulting in increased quality compared to the lower rate (Figure 1d).

Differences in percentage ABG between N treatments became much greater in subsequent years. From 2015 to 2017, ABG populations in low N fertility ranged from 14 to 16 percent, whereas high N rate treatments during this period had ABG populations from 42 to 49 percent (Figure 1a).

The high N rate resulted in greater ABG populations than the low N rate from 2012 to 2017, but these differences were reversed in the final year (Figure 1a). In 2018, the percentage of ABG in high-N-rate treatments decreased to 16 percent and was less

**TABLE 1**

**Nitrogen (N), plant growth regulator (PGR), and ferrous sulfate ($FeSO_4$) treatments[a] applied to a mixed stand annual bluegrass and creeping bentgrass putting green.**

| Ammonium Sulfate[b] Total N per year | | PGR | | $FeSO_4$ rate per application[c] | |
|---|---|---|---|---|---|
| lb. 1,000 ft$^{-2}$ | kg ha$^{-1}$ | Tradename | Rate | lb. 1,000 ft$^{-2}$ | kg ha$^{-1}$ |
| 3.0 | 147 | Cutless MEC (SePro Corp.) | flurprimidol (FL) 0.09 oz a.i. 1,000 ft$^{-2}$ or 0.28 kg a.i. ha$^{-1}$ | 0 | 0 |
| | | | | 0.25 | 12 |
| | | | | 1.0 | 49 |
| | | Primo MAXX (Syngenta Corp.) | trinexapac-ethyl (TE) 0.14 oz a.i. 1,000 ft$^{-2}$ *or* 0.043 kg a.i. ha$^{-1}$ | 0 | 0 |
| | | | | 0.25 | 12 |
| | | | | 1.0 | 49 |
| | | None | | 0 | 0 |
| | | | | 0.25 | 12 |
| | | | | 1.0 | 49 |
| 0.5 | 24 | Cutless MEC (SePro Corp.) | flurprimidol (FL) 0.09 oz a.i. 1,000 ft$^{-2}$ or 0.28 kg a.i. ha$^{-1}$ | 0 | 0 |
| | | | | 0.25 | 12 |
| | | | | 1.0 | 49 |
| | | Primo MAXX (Syngenta Corp.) | trinexapac-ethyl (TE) 0.14 oz a.i. 1,000 ft$^{-2}$ *or* 0.043 kg a.i. ha$^{-1}$ | 0 | 0 |
| | | | | 0.25 | 12 |
| | | | | 1.0 | 49 |
| | | None | | 0 | 0 |
| | | | | 0.25 | 12 |
| | | | | 1.0 | 49 |

[a] All treatments were applied using a $CO_2$ backpack sprayer (50 psi) equipped with a TeeJet flat fan nozzle (TP8015E) and adjusted to deliver 5 gallons per 1,000 ft$^2$. All products were tank-mixed and applied by making two passes across each plot.

[b] 21-0-0 N-P-K, S-SUL Sprayable Ammonium Sulfate, American Plant Food Corporation

[c] Ferrous sulfate, Crown Technology; heptahydrate 20 percent Fe

than that in the low-N-rate treatment (22 percent, Figure 1a).

We observed slight differences in percentage ABG among $FeSO_4$ rates in most years (Figure 1b). ABG populations were generally similar or lower in plots treated with iron each year. The main effects of $FeSO_4$ had little impact on turfgrass quality, and differences among rates were only present in the final year (Figure 1e).

Plant growth regulators influenced ABG populations throughout the trial. Applications of FL significantly lowered ABG compared with the TE and no PGR treatments each year (Figure 1c). The greatest differences in percentage ABG occurred between 2015 and 2017, where populations in FL-treated plots averaged 5-7 percent ABG, whereas plots treated with TE averaged 41-48 percent. Some differences among PGRs were present for turfgrass quality, and plots treated with FL generally resulted in reduced quality compared with plots treated with TE or no PGR (Figure 1f).

We observed a significant three-way interaction of N × iron × PGR for ABG data pooled across all years. Under low N treatments, TE applications resulted

Continued on page 24

**TABLE 2**

**Seasonal nitrogen applications were made annually between 2012 and 2018.**

| | Seasonal N Programs | | | |
|---|---|---|---|---|
| Applications | Low | High | Low | High |
| | lb. N 1,000 $ft^{-2}$ $application^{-1}$ | | kg N $ha^{-1}$ $application^{-1}$ | |
| 1 | 0.125 | 0.5 | 6.1 | 24.4 |
| 2 | 0.125 | 0.5 | 6.1 | 24.4 |
| 3 | 0.0 | 0.2 | 0 | 9.8 |
| 4 | 0.0 | 0.2 | 0 | 9.8 |
| 5 | 0.0 | 0.2 | 0 | 9.8 |
| 6 | 0.0 | 0.2 | 0 | 9.8 |
| 7 | 0.0 | 0.2 | 0 | 9.8 |
| 8 | 0.125 | 0.5 | 6.1 | 24.4 |
| 9 | 0.125 | 0.5 | 6.1 | 24.4 |
| **Total N** | **0.5** | **3.0** | **24.4** | **146.6** |

[a] Applications were initiated in late April to early May each year, and applications were reapplied at the listed rates approximately every three weeks throughout the season.

**TABLE 3**

**Percentage annual bluegrass (ABG) as influenced by the interaction of nitrogen rate × Fe sulfate ($FeSO_4$) × plant growth regulators (PGRs) × year in a mixed stand creeping bentgrass green from 2012 to 2018.**

| | | | Annual Bluegrass[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N rate | PGR | $FeSO_4$ rate | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| lb. 1,000 ft$^{-2}$ per year | | lb. 1,000 ft$^{-2}$ per application | % | | | | | | |
| 3.0 | FL | 0 | 39 a[b] | 31 a | 26 a | 11 a | 10 a | 9 a | 14 a |
| | | 0.25 | 36 a | 27 a | 16 b | 8 a | 7 a | 6 a | 7 b |
| | | 1.0 | 37 a | 26 a | 10 b | 9 a | 10 a | 9 a | 9 b |
| | TE | 0 | 60 a | 47 a | 50 a | 69 a | 70 ab | 60 ab | 29 a |
| | | 0.25 | 58 a | 37 a | 33 b | 65 a | 75 a | 64 a | 16 b |
| | | 1.0 | 57 a | 40 a | 34 b | 56 a | 62 a | 52 a | 17 b |
| | None | 0 | 58 a | 43 a | 45 a | 71 a | 81 a | 70 a | 23 a |
| | | 0.25 | 51 a | 36 a | 33 a | 50 b | 57 b | 48 b | 15 b |
| | | 1.0 | 48 a | 35 a | 32 a | 63 a | 75 a | 64 a | 12 b |
| 0.5 | FL | 0 | 32 a | 27 a | 20 a | 4 a | 2 b | 2 b | 11 b |
| | | 0.25 | 25 a | 18 b | 11 b | 4 a | 3 a | 3 a | 17 a |
| | | 1.0 | 22 a | 17 b | 8 b | 5 a | 4 a | 3 a | 18 a |
| | TE | 0 | 51 a | 39 a | 15 a | 23 a | 26 ab | 23 a | 30 ab |
| | | 0.25 | 44 a | 33 a | 15 a | 24 a | 24 b | 21 b | 33 a |
| | | 1.0 | 43 a | 30 a | 14 a | 29 a | 31 a | 26 a | 23 b |
| | None | 0 | 45 a | 34 a | 20 a | 17 a | 21 a | 18 a | 22 ab |
| | | 0.25 | 44 a | 30 a | 13 a | 16 a | 19 a | 17 a | 27 a |
| | | 1.0 | 37 a | 27 a | 14 a | 16 a | 17 a | 14 a | 21 b |

[a] Annual bluegrass was rated using a 3-by-6-foot rating grid where the presence of ABG at grid intersection was divided by total grid intersections.
[b] Means followed by the common letter within a specific treatment are not significantly different ($P < 0.05$) according to Fisher's protected LSD test.

Continued from page 23

in 6 percent higher ABG compared with the nontreated (Figure 2). Regardless of the N rate, FL consistently produced the lowest ABG populations. We did not see differences among $FeSO_4$ treatments within each PGR treatment under low fertility. However, under high fertility, $FeSO_4$ lowered ABG populations within each PGR.

We observed slight differences in OM among the N main effects (Figure 3a). Soil nitrogen rate influenced soil iron, and there was an iron x year interaction. For the main effect of nitrogen, soil Iron was lowest within plots treated with high N (Figure 3b).

Nitrogen rates also influenced soil pH with a two-way interaction of N × year. In 2014, soil pH was higher within low nitrogen plots (7.39) compared with high nitrogen plots (7.26), but there were no differences in 2017 (Figure 3c).

In general, soil iron increased with increasing iron rates in 2014 and 2017. However, in 2014, no differences were observed between plots receiving $FeSO_4$, or in 2017, plots receiving 0.25 lb. per 1,000 ft$^2$ applications and plots receiving no $FeSO_4$ (Figure 4).

## DISCUSSION

In this long-term study, the lower nitrogen rate and FL applications had reduced ABG populations. The result agrees with the findings from the initial two years of the study (10). The long-term impact of these two treatments demonstrated that ABG populations decreased to a low level around 2014 or 2015, where it remained stable for 3 to 4 years.

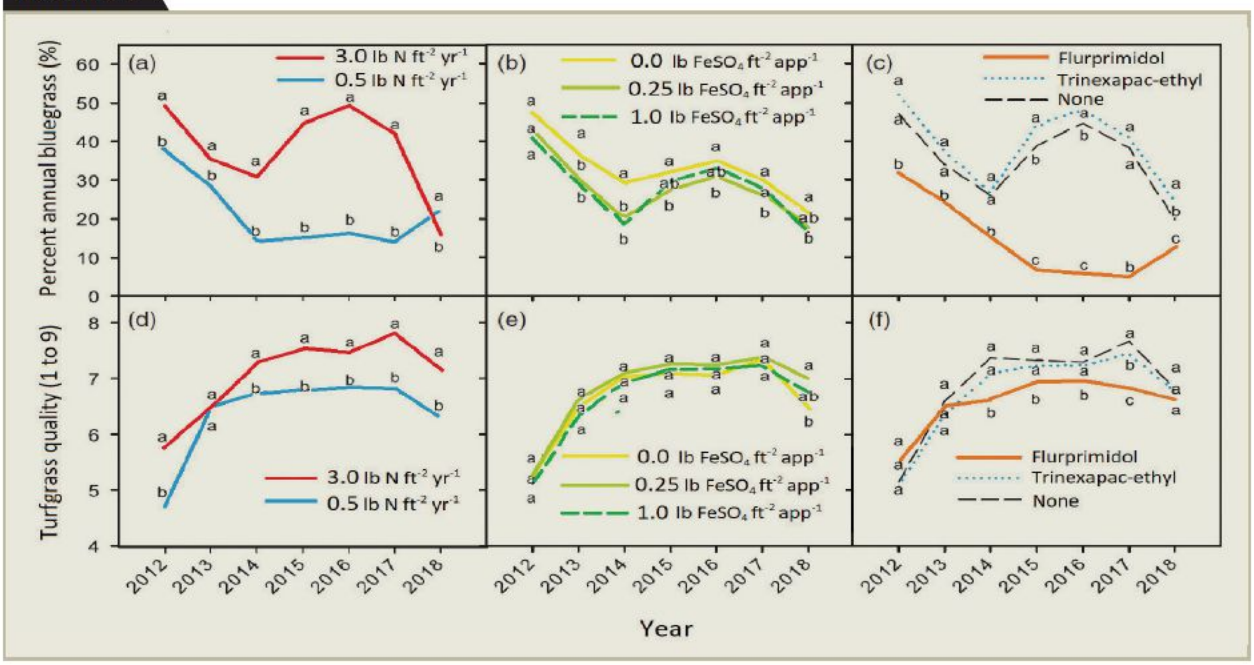
These results concur with previous studies that demonstrated lower ABG populations in CBG putting greens with low nitrogen fertility and FL applications (3,6). The lowest ABG population in this study was found within turfgrass stands receiving the low N rate in combination with FL.

Although the application of $FeSO_4$ resulted in decreased ABG populations in the initial two years of the study (10), its influence was less impactful long-term. This finding indicates the contribution of iron to ABG control may occur in the first few years of application but that the long-term impact may be less influential. Regardless, the effect of iron supports previous findings that high rates provide more reduction of ABG shoot growth than for CBG (24).

Annual bluegrass populations varied from year to year. After several years of applications, ABG populations remained relatively stable until 2018, during which treatments generally resulted in higher ABG populations

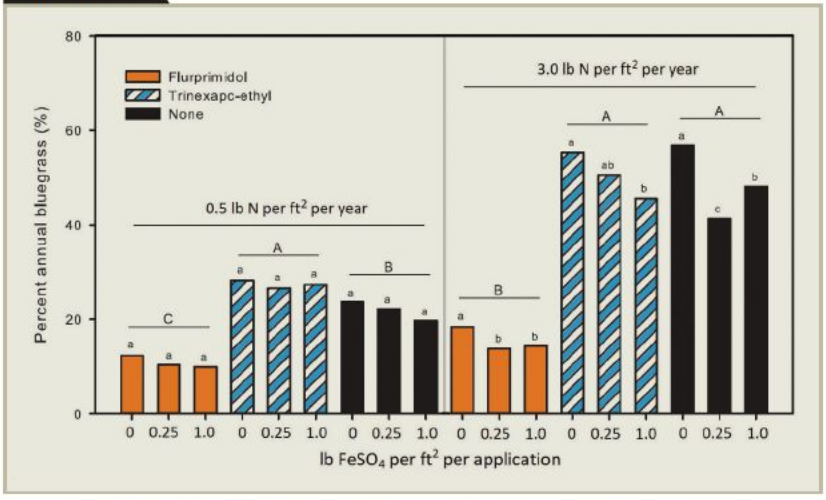
Continued on page 26

**FIGURE 1**




Percentage annual bluegrass as influenced by (a) N rate, (b) Fe sulfate rate, and (c) plant growth regulators in a mixed stand creeping bentgrass green and turfgrass quality as influenced by (d) N, (e) Fe sulfate, and (f) plant growth regulators from 2012 to 2018. Means not sharing any letter are significantly different by the LSD test ($P < 0.05$).

**FIGURE 2**




Percentage annual bluegrass in a mixed creeping bentgrass putting green as influenced by nitrogen, iron sulfate, and plant growth regulators from 2012 to 2018. Capital letters indicate significant effects on percentage annual bluegrass as influenced by the main effect of plant growth regulators (PGRs) within each N rate. Lowercase letters signify significant effects of percentage annual bluegrass as influenced by iron sulfate across each nitrogen and PGR treatment. Means not sharing any letter are significantly different by the LSD test ($P < 0.05$).

**Continued from page 24**

(e.g., high N and the PGRs TE and none) exhibiting a sharp decline in percentage ABG. Weather conditions may explain some changes in ABG populations at the end of the experiment.

Higher precipitation in 2018 may have caused nutrient leaching within plots, thus creating lower N availability within the high nitrogen treatments. However, we did not notice any significant decline in turf quality, scald in the summer months, or that possible occurrence of ABG winterkill. Despite these potential environmental factors, their role for reduced ABG populations in 2018 remains unclear.

Turfgrass quality was generally lower under low N and FL treatments. Low N fertility could reduce turf quality for both ABG and CBG (2,22). Additionally, the negative impact of FL on turf quality is well documented and agrees with previous reports (3,5).

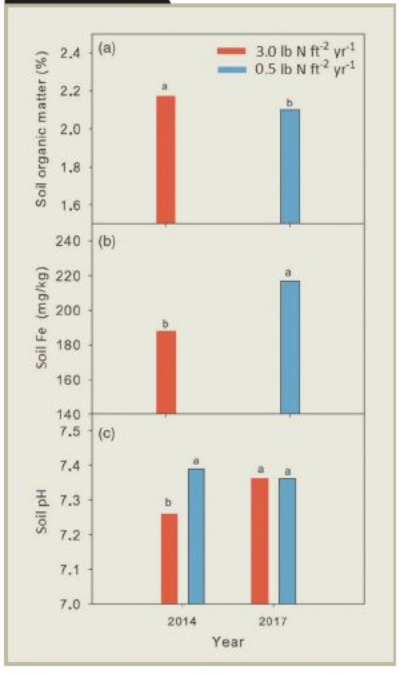
In the 2010 and 2011 research, turfgrass quality was acceptable (≥7) but decreased to between 5 and 6 in 2012 (10). This decline in quality may be due to a reduction in soil OM in the first two years of this study, from 1.8 percent in 2010 to 1.6 percent at the end of 2011. Poor turfgrass quality within the low N plots may have been due to the mineralization of nutrients in the soil in the first two years of the study. Exhausting these resources may have taken 2 to 3 years before negatively impacting turf quality. We did not see soil iron accumulate in plots treated with 1.0 lb. $FeSO_4$ per 1,000 $ft^2$ when sampled in 2017.

In summary, our results confirm that varying N, PGRs, and iron rates influence ABG populations within mixed stands of CBG. Over many years, the influence of repeated $FeSO_4$ applications became less influential to ABG populations.

The most significant impact on ABG populations was from applications of FL in combination with relatively low seasonal N rates. Still, we observed reductions from FL under the higher seasonal N treatment. Superintendents should use caution when initiating these programs, as turfgrass quality decreased in the third year of this long-term study.

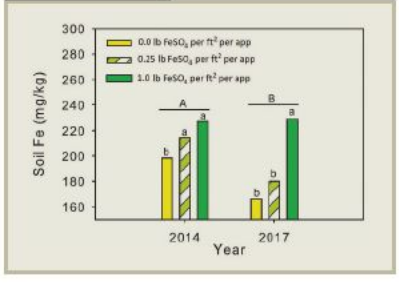
These findings agree with anecdotal reports of turfgrass decline 3 to 4 years into similar programs. However, later in this study, turfgrass quality was at or below an acceptable level within

**FIGURE 3**




Soil organic matter, pH, and soil Fe as influenced by nitrogen rate. No year interaction was observed for soil organic matter and soil iron; therefore, data from both years were combined. Means not sharing any letter are significantly different by the Fisher's protected LSD test ($P < 0.05$).

**FIGURE 4**




Soil iron as influenced by iron sulfate rate in 2014 and 2017. Means not sharing any letter are significantly different by the LSD test ($P < 0.05$). Capitalized letters above the underline represent significant effects between years.

treatments that effectively reduced ABG populations.

Superintendents may be willing to accept slight reductions in visual quality to eradicate ABG. Regardless of the influence of treatments in this experiment over nine years, other factors such as weather influenced seasonal fluctuations in ABG populations.

## Acknowledgments

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**Save your turf** Experts recommend removing up to six inches of asymptomatic turf around each necrotic ring spot area.

# How to eliminate necrotic ring spot this spring

To reduce or completely remove necrotic ring spot, treat the turf when the weather is cool and wet.

*By Chris Lewis*

If your course has Kentucky bluegrass, you've likely encountered necrotic ring spot (NRS) at some point in time as it's mainly a disease of that specific turfgrass. Experts also say it's less commonly found on other types of turf.

Not only that, but experts say it thrives in wet environments, especially those frequently irrigated. To help you slow NRS's growth — possibly even eliminate it — Tom Hsiang, Ph.D., plant pathologist and professor at the University of Guelph's School of Environmental Sciences, shares methods you can deploy.

## WATER LESS, CUT HIGHER

According Hsiang, superintendents must reduce the irrigation on their courses' Kentucky bluegrass. And at the same time, they should also maintain higher mowing heights for Kentucky bluegrass, noting the lowest should be no less than two inches tall.

NRS is a perennial root disease that's persistent on the same patch of infected turf every year. Not only does it attack and grow on roots, but it also causes unsightly rings that are difficult to remove, as damage usually occurs before the disease is ever visible.

"It develops slowly and might not appear for months after roots were first infected," Hsiang says.

**Tom Hsiang**

It's vital to prevent NRS from developing in the first place. But if it's already too late for your course, you have yet another option for removal: physically dig out and remove disease patches. If you choose to do this, you should also remove some non-symptomatic turf around each ring; Hsiang recommends up to six inches.

Additionally, apply fungicides with azoxystrobin, iprodione, trifloxystrobin, fluxapyroxad or pyraclostrobin. Make applications in April or May when soil temperatures range between 55 and 65 degrees Fahrenheit.

"Far too often, fungicides are applied when symptoms are first seen during the summer," Hsiang stresses. "They generally have little effect because the fungus may be dormant at that time. Deliver fungicides to the root zone area at the proper time of year and you will reduce, or even eliminate, your course's NRS long term."

PHOTO COURTESY OF: TOM HSIANG

## The Andersons

**BEN PEASE**
Turfgrass agronomist

NRS can be misdiagnosed as localized dry spot, during its early stages, as symptoms of both issues often occur during the summer. Initial visual symptoms are leaf dieback beginning at the tip, followed by a collapse of the entire plant. Roots will be stunted or necrotic. Patches begin at 6 to 8 inches in diameter and enlarge or coalesce over time. As the turf recovers, a distinctive "frog-eye" pattern emerges of healthy green turf in the center, surrounded by dead turf. Cultural practices can be employed to minimize the visual effects of infection. Because NRS is a root stunting disease, any practices to promote deep rooting will decrease infection symptoms. Steps to relieve summer stresses will also help. Chemical control is possible via liquid or granular fungicide applications. Multiple applications will likely be needed for extended control, the most effective of which are thiophanate-methyl or various DMI and QoI fungicides. Granular control options include 3336 DG Lite and 0.72G Prophesy DG Pro.

## Greene County Fertilizer Co.

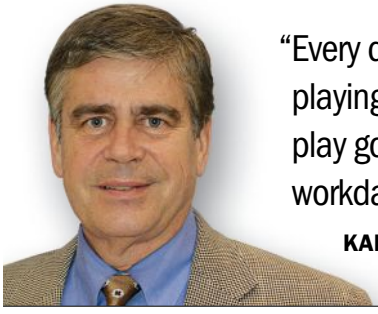
**JOHN PERRY**
President, founder and CEO

Necrotic ring spot can be a frustrating disease to deal with in turfgrass, especially when we are talking about areas of high traffic or high play. There are only a few fungicides that have shown very positive results in trials, and one of those is fenarimol. The timing of the application is critical. If applied too early the effectiveness of the fungicide will be worn off before the disease propagates. If applied too late in the season, the application will have little to no effect. Beginning in mid-to-late spring, fungicide applications tend to have the best efficacy. Proper fertilization, aeration of the infected spots and carefully monitored irrigation practices are your best defenses. Another excellent choice, if conditions persist, is to plant resistant cultivars as areas are recovering. Other options that have shown anecdotal results are acidic pH changes and biostimulants to enhance root development. As always, the best defense is proactive cultural practices.

## DLF Pickseed/Seed Research of Oregon

**LEAH BRILMAN, PH.D.**
Director of research and technical services

Necrotic ring spot is a difficult disease to manage in Kentucky bluegrass. As a root infecting fungus, the symptoms often appear after the disease has significantly damaged roots. The usual recommendation is to plant resistant cultivars. However, ratings for resistance have been extremely variable from site to site. Most cultivars (stated as resistant) are no longer available and National Turfgrass Evaluation Program (NTEP) ratings haven't been conducted since 2010. Consider initially overseeding blends with cultivars that have shown resistance in NTEP trials. Additionally, overseed with perennial ryegrass or turf-type tall fescue — which have resistance. To help mediate damage, utilize moderate nitrogen and add sulfur to your stand. Also, apply fungicides during spring when soil temperatures are appropriate, and water in well.



"Every day is a good day when you are playing golf — unless it rains. You don't play golf because you think of it as a workday."

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

# Top five golf pet peeves

A great benefit of working in the golf industry is that the customer, or golfer, is excited to be there.

Surveys and studies have identified how golfers' excitement and anticipation builds ranging from the ideal drive time to a golf course to the expectation of entering a golf club.

Golf is a game people approach with a high degree of excitement and anticipation. Every day is a good day when you are playing golf — unless it rains. You don't play golf because you think of it as a workday.

This is not to say that when you work in golf or play golf, things can become annoying, rude or frustrating.

## IT'S NOT ALL SUNSHINE AND ROSES

From a maintenance perspective, there are a few things that golfers do that are annoying. I'll focus on what golfers can do to the turf, not what is annoying to the other golfers in their group.

That is an entirely different topic.

❶ **Putting green putzing.** A good place to start is the practice putting green. Increasingly, I have noticed golfers — especially the better players when practice putting — will stand in the same position, hitting the same putt over and over again. The vast majority of golfers who hit a few practice putts prior to teeing off are not an issue. It is the golfer who stands in the same place for what seems like an hour, hitting the same putt.

In summertime conditions, the result is severe turf thinning and death under the shoes. Recovery is slow during the summer.

## NO SPRAY ZONE

Moving to the course, I find several annoying things.

❷ **Spray it somewhere else.** I really don't understand why some golfers apply insect repellent while standing on the putting green. Insect repellent symptoms often appear as healthy green footprints surrounded by a brownish, rather circular area. Fortunately, the turf often recovers with new leaf growth. Still, golfers should apply the insect repellent in the parking lot or, if necessary, in the rough.

❸ **It's a green, not an ashtray.** A small burn area caused by a lit cigar placed on a putting green is not only annoying but just poor golf etiquette. Even the action of flicking ashes onto the putting green can cause turf injury. I think a significant number of cigar-smoking golfers are not aware that cigar holders for golfers are available, many for less than 10 dollars.

❹ **Common courtesy.** Not fixing ball marks is a common annoyance. Fixing a ball mark has been part of golf etiquette since I think the first ball mark was made. Fixing a ball mark is one of the really cool things about walking onto a green.

Making a ball mark represents a decent golf shot has been hit with a degree of spin.

I can excuse the previous annoying issues to some extent because the golfer may not know or be aware of the issue.

❺ **Respect the green.** But, taking a divot on a green is one of the worst things a golfer can do. In this case, it is destruction of property. This type of damage shows a total lack of respect for the course and club. Repairing this type of damage takes time, money and effort.

## PRIDE IN PERFECTION

Most of the annoying or rude things mentioned above take place on the putting green. Putting greens are where you strive for maintenance perfection, no matter the course's budget or history.

Unfortunately, the closer you strive to perfection, the more your imperfections show. We could eliminate much of the small annoyances and frustrations agronomically if golfers looked at greens as a point of pride.

I have only mentioned a few agronomically annoying things that occur on a golf course. I'm interested in hearing the annoying things or behaviors you have observed.

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

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### 2 | POGO Mapper

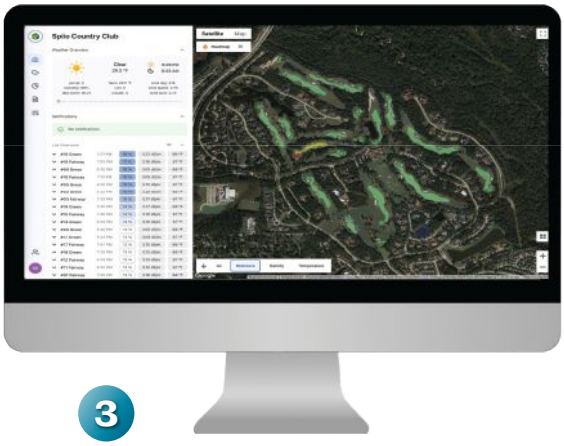
**POGO**'s new irrigation assessment tools utilize the POGO Mapper or POGO Pro+ insight tool to map irrigation systems while giving analysis insight otherwise not possible. With easy-to-use TurfPro Mobile app technology, the POGO system assesses irrigation distribution uniformity and underlying conditions of turf in seconds while giving clear insight into irrigation performance.

*TurfPro.com*

### 3 | Spiio golf course precision irrigation platform

**SPIIO**'s new precision irrigation platform enables golf course superintendents and agronomists to monitor and control course conditions at a glance. The platform delivers data-driven guidance to optimize water and chemical efficiency, reduce labor and fine-tune playability. Spiio uses cellular in-ground data collection sensors to measure soil moisture, temperature, salinity and light metrics each hour and then stream that data to the cloud/mobile platform.

*Spiio.com*

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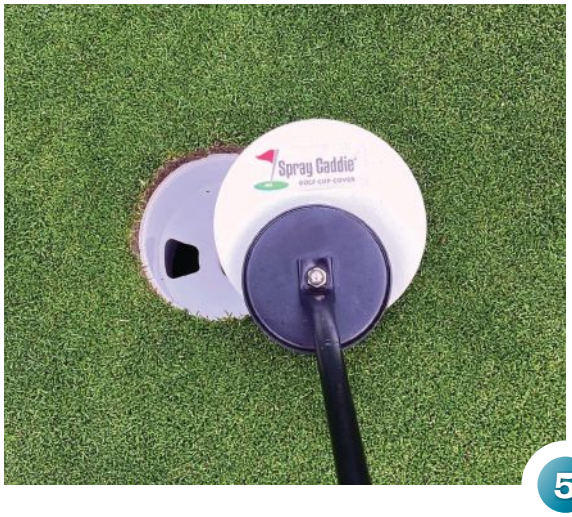


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## 4 | ProSpec Electronics MIL-AMP200BT

The MIL-AMP200BT Bluetooth amplifier from **PROSPEC ELECTRONICS** is simple to use, making it ideal for both private and fleet golf cars. While small, the amplifier delivers powerful audio. Helpful for fleet use, the amplifier incorporates a unique Bluetooth identifier. This small weatherproof sticker placed in a visible but protected part of the golf cart ensures the user's mobile device pairs to the right vehicle.

*ProSpecElectronics.com*

## 5 | Spray Caddie Golf Cup Cover

The Spray Caddie Golf Cup Cover keeps the golf cup clean during topdressing and liquid spray applications. **SPRAY CADDIE** shields staff and golfers from touching chemicals and other liquid spray applications that could discolor the inside of the cup. It prevents the accumulation of sand in the golf hole during topdressing on golf greens. The cover is suitable for standard golf greens and multi-hole practice facilities. It works for any sand or liquid spray application such as a colorant, fertilizer, herbicide, PGRs and more.

*SprayCaddie.com*

## 6 | Hunter Pilot Network

**HUNTER INDUSTRIES** has joined forces with POGO to bring new sensor and visual insight integrations to its Hunter Pilot Network. The network allows superintendents to achieve optimum irrigation efficiency with more informed scheduling adjustments using real-time soil moisture, salinity and temperature data. Users also understand turfgrass performance between irrigation cycles and can identify and address problem areas with color-coded graphics that highlight turf in need of immediate attention.

*HunterIndustries.com*

# Getting to the root of your beetle problem

Doug Richmond, Ph.D., says superintendents should monitor larvae-prone areas of the course to help predict infestation levels each year.

*By Christina Herrick*

Japanese beetles are primarily found in the eastern part of the United States and about as far west as Oklahoma, says Doug Richmond, Ph.D., professor of entomology at Purdue University. Adults feed on more than 400 different plants. The larval stage of the beetle is most problematic for turf. Adults lay eggs in the turf and as the eggs hatch, the larvae tunnel into the soil to feed.

"They feed on all kinds of things: organic and inorganic soil components and thatch," he says. "But in the process, they eat an awful lot of plant roots. In doing so, they can damage a lot of turf."

## TURF SYMPTOMS

Feeding damage, Richmond says, looks a lot like other grub damage in turf, where the turf presents several different symptoms before its eventual collapse and death.

"The turf becomes an off color, more of a purplish color and starts to become very wilty at first," he says. "Then it doesn't respond to irrigation well because there aren't any roots. Then the turf collapses and turns brown."

Doug Richmond

Richmond encourages superintendents to look for the presence of damage caused by raccoons, skunks or turkeys. He says those hungry animals and birds will typically identify an infestation source before the turf displays any other visible signs of distress.

Patches of turf known to have Japanese beetle larvae damage can serve as a litmus test for pest pressure in a given year.

## MONITORING

Richmond says Japanese beetle adults typically lay eggs by late July or early August. The pest tends to favor the same locations every year.

Richmond encourages superintendents to use those pest-prone patches to help predict infestations every year. Monitor those areas and make decisions on treatment based on those patches.

"In a given year, they're monitoring a patch," he says. "They say 'Well, we're not seeing many Japanese beetles in this patch this year. And this patch traditionally has problems.' Then it's very likely that they're not going to have a problem that year. But if they're seeing populations that are five, 10 Japanese beetle larvae or more per square foot, then there is a much higher probability that problem is going to be more widespread."

## TREATMENT

Richmond says if populations are high superintendents should consider insecticide use to protect high-value areas.

"These hotspots are useful for making predictions about the likelihood of seeing damage on a broader scale," he says.

Richmond says superintendents will often decide to protect just the high-value parts of the course such as fairways and higher-profile rough areas. But, since larvae are feeding below ground, it's hard to understand just how widespread an infestation may be.

"Acelepryn is probably the most popular control at this point," he says. "It's an excellent grub insecticide. We know that it has a good, long residual activity. It gives them a real nice broad window of application. They can easily fit that application into their operations anytime from mid-June until even late August, September, and still get good efficacy."

Richmond says superintendents may think about preventative sprays with a high rate as early as May. This application would target multiple pests, such as billbugs or black turfgrass ataenius, with one treatment.

While superintendents water in the insecticides to ensure the active ingredient hits the soil, Richmond cautions that extreme rain events may impact how long a residual lasts and what kind of protection the original spray provides.

"If you make an application and within 24 hours you get five inches of rain, is that material going to be there for the long haul?" he asks. "By making early preventive applications, they also open themselves up to the possibility of degradation over time."

PHOTO BY: DOUG RICHMOND

"Regardless of your thoughts about UAV technology, there is potential. A successful UAV service must provide daily information documenting turfgrass stress."

**MIKE KENNA, PH.D.,** *Research Editor*

# Remote sensing technology is humming along slowly

In November 1994, I had the opportunity to travel with Jim Watson, Ph.D., Toro Company, to the John C. Stennis Space Center. Stennis Space Center is a NASA rocket testing facility on the Mississippi-Louisiana border.

We were there to visit with the Space Remote Sensing Center. They combined aerial photography with global positioning (GPS) and geographic information systems (GIS). Remember, this was before you could use your smartphone map for driving instructions.

A year later, I wrote a story for the October 1995 issue of *Grounds Maintenance.* The subhead for the story was, "The future holds great promise for golf-turf management. Using new remote-sensing technologies and software, golf courses have a greater potential for pinpointing problems."

The future promise has come about very slowly.

## SCOUTING POSSIBILITIES

One potential use was to identify a problem before seeing it with our own eyes. Infrared and multispectral sensors are camera tools that show plant health. However, the camera system back then was large and fit in the belly of a small airplane. Drone or unmanned aerial vehicles (UAV) were several years down the road.

For example, near-infrared reflectance (NIR) provides a normalized difference vegetation index (NDVI). Using a ratio of the spectral data depicts healthy areas in green, while yellow, red or brown are under stress.

By this time, a startup company, Links Diagnostics, Inc. (LDI), was mapping Congressional Country Club, Bethesda, Md. LDI wanted a course near Washington, D.C., and the venue would host the 1997 U.S. Open. The WHoleView image from an LDI flyover showed colorful differences in turfgrass health.

The technology was pretty exciting, but nobody knew the cause of turf stress depicted in the maps. The USGA started to support research to provide ground truth for the NDVI images. Researchers showed NDVI has a positive relationship with tissue nitrogen, shoot density, green coverage and above-ground biomass.

## MOUNTED SYSTEMS

Several university agricultural engineering teams were developing imaging systems mounted on tractors. The group at Oklahoma State University developed the Greenseeker to provide NDVI estimates. Toro Precision Sense uses the Greenseeker to determine turfgrass stress relative to soil moisture.

In 2006, UAVs for non-military ventures expanded quickly. The same year the Federal Aviation Administration issued its first commercial drone permit. Several affordable hobby drones entered the scene a few years later. Many had a GoPro, or similar camera mounted to the bottom.

Turfgrass researchers mounted sensors to produce NDVI images of turf drought stress. Breeders used UAVs to evaluate thousands of individual plants in nurseries.

Work at Virginia Tech University mapped spring dead spot outbreaks on golf fairways. The goal is to know where to spray preventative fungicides in the fall before the disease does its damage. The researchers also are starting to map early dollar spot outbreaks.

## TAKING FLIGHT

At the GCSAA Conference and Trade Show, several companies had various UAV services. One large UAV could apply a pesticide to a specific area mapped on the course. Still, one of the more popular UAV services is traditional aerial photos or video.

Regardless of your thoughts about UAV technology, there is potential. A successful UAV service must provide daily information documenting turfgrass stress. It would be cool to see how the golf course changes daily over a week like rainfall radar maps. Then it would be up to the superintendent to interpret what is causing the changes.

Mounting sensors on drones or mowers to provide a different course view is exciting. In the long term, this technology help scout the course for pest problems and plan IPM strategies. Targeting soil nutrient or moisture samples will help manage fertilizer and water better. It is just humming along slowly.

**Mike Kenna, Ph.D., retired director of research, USGA Green Section. Contact him at mpkenna@gmail.com.**

# The 19th Hole

## Shaun Marcellus

**SUPERINTENDENT** // Wanumetonomy G&CC, Middletown, R.I.

**What are you having?**
Tito's-Sprite. A double!

**Tell me about your family.** I've been married since 2015. I have a beautiful wife named Stephanie, and we have two daughters, Paige and Isla.

**What is the "Ultra for Isla?"** My youngest daughter, Isla, has had some heartache — she was diagnosed with stiff person syndrome last January. It's one-in-a-million. She's the first case in Rhode Island and the youngest at Boston Children's Hospital they've ever seen. Her whole right side stiffened up, hard as concrete. It's been a pretty stressful 2021. I also lost my father last year. I thought 2020 was hard, but I'd take that year all over again. Isla's godmother is Mary Latza, Stephanie's maid of honor. She and her husband are big marathoners. They do Ironmans. Ultraman is like two Ironmans in three days. They're crazy! She decided to promote Isla and try to raise money and awareness for stiff person syndrome because it's so rare. (Editor's note: to donate, visit **StiffPerson.org/Ultra-4-Isla/**)

**What's your favorite tool to get the job done?** My team and my dog. My dog brings the best energy to the club and perks everyone up. Sven and my team are my best tools.

**What should I know about the club?** There are three things: It's the shortest, hardest, most fun golf course I've ever played; we are the only Seth Raynor club in Rhode Island and I have the best members. They treat you like family. We bought a house our second year here, and my greens chairman organized 15 members to help my pregnant wife and me move into our house. My father passed away in June, and members set up a GoFundMe for a scholarship for my father's high school basketball team, and they raised $5,000.

**What is your favorite golf moment?** I have a picture of it! Cutting cups with my daughter during the Presidents Cup on the 13th green at Liberty National. My wife got a picture of Paige and me. I asked the set-up guy if he minded if I let my 1-year-old daughter come out and watch, and he said, "bring her out!" I got a lot of pictures of that, the flag and the city in the background.

**You're a big Eagles fan — what are your game day traditions?** Being in Rhode Island, I don't get the full effect. I'm supposed to be eating chowder and shrimp. But I do have Paige trained; we sing the Eagles' fight song before the game and on every touchdown. We also make our own cheesesteaks or hamburgers, hot dogs and sausages.

**I know how big a Seth Raynor fan you are.. do I even crack your top 10 Seths?**
Yeah, you're in the top. I don't know that many Seths. You're in the top four!

As interviewed by Seth Jones, March 11, 2022.

**//BEST ADVICE**

"I'VE HAD GREAT MENTORS. GREG JAMES AT LIBERTY NATIONAL ALWAYS SAID, 'KISS – KEEP IT SIMPLE STUPID.' JIM RONEY AT SAUCON VALLEY TOLD ME, 'IT'S HARDER HERE SO WHEN YOU LEAVE IT'LL BE EASIER THERE,' WHEN HE WAS PUSHING US AND PREPARING US FOR OUR NEXT JOB."



PHOTO OF SHAUN BY: *GOLFDOM* STAFF (LEFT); / COURTESY OF SHAUN MARCELLUS (TOP);


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