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Queen of the Hill

At Bay Hill Club and Lodge, Senior Assistant Superintendent Alexandra Hills and her team make the Arnold Palmer Invitational shine

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SUPER SCIENCE

DEPARTMENTS

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GOLFDOM (ISSN 1526-4270) is published monthly except for a combined November-December issue. *Golfdom* is published by North Coast Media LLC, IMG Center, 1360 East 9th Street, 10th Floor, Cleveland, OH 44114. **Subscription rates:** For US, Canada and Mexico, 1 year $58.95 print and digital; two years $88.95 print and digital. All other countries, 1 year print and digital $109.95, 2 years $169.95. For air-expedited service, include an additional $75 per order annually. Single copies (prepaid only) $10 plus postage and handling. For current single copy or back issues, call 847-513-6030. **Periodicals postage paid at** Cleveland OH 44101-9603 and additional mailing offices.

POSTMASTER: Please send address change to *GOLFDOM*, PO Box 2090, Skokie, IL 60076. Printed in the U.S.A.

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"Flynn knew that for the project to be successful, he needed someone to run point on the renovation ... Without hesitation, Flynn chose Senior Assistant Superintendent Alexandra Hills."

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

Celebrating Women in Turf

The 2023 Arnold Palmer Invitational at Bay Hill Club and Lodge in Orlando, Fla., was an exciting tournament to watch. It had a star-studded leaderboard with several players all within a stroke or two of each other for the lead down the stretch. On top of that, the course looked immaculate.

A month earlier, in February, during the GCSAA Conference and Trade Show, Chris Flynn, CGCS, director of grounds at Bay Hill, hosted 300 GCSAA members at the course. Flynn and his team gave an educational tour of the property while focusing on tournament prep. Some fortunate superintendents even got to play the course that week.

It's always more fun to watch a tournament on TV when you've played the course yourself. Who can resist providing their own commentary to whoever is within earshot — of how you played the hole that's on screen at that very moment?

Well, at least the successful holes ... never mind the double bogeys.

In 2018, Bay Hill undertook a $3.5 million renovation, replacing an outdated irrigation system from the 1960s. At the time, it was the largest golf course irrigation renovation performed in the country, and throughout all of it, the course remained open.

Flynn knew that for the project to be successful, he needed someone to run point on the renovation and to learn the new system during installation. Without hesitation, Flynn chose Senior Assistant Superintendent Alexandra Hills.

"Alex is simply an all-star," Flynn says. "She has proven to be a leader with just about everything she gets involved with. I'm extremely fortunate to work alongside her and to play a role in her career journey."

Just like Bay Hill and its team were happy to host the GCSAA and conference attendees, Flynn and Hills were happy to help us here at *Golfdom*. When we reached out to Hills to ask her to be a part of our Women in Turf issue, her response was, "I'll do anything to promote the women in this industry."

Flynn told me that he relies on Hills for every facet of the operation at Bay Hill.

"Her strong work ethic and 'do whatever it takes' attitude has made her an invaluable member of our team," Flynn says. "Aside from the time she puts into work, along with being a mother of two, she also finds time to give back by serving on the (Florida Golf Course Superintendents Association) Assistant Committee and being a leader in the Women in Turf movement."

In this issue, we are happy to celebrate the Women in Turf Team with a story written by two women in the industry: *Golfdom* Editor Christina Herrick and *Golfdom* Digital Editor Sydney Fischer. Their story begins on page 16.

Email Jones at:
sjones@northcoastmedia.net.

WE'LL BE BACK IN JUST A FEW WEEKS!

What's better than receiving one issue of *Golfdom* in your mailbox? Receiving two different issues of *Golfdom* in the same month.

In just a few short weeks, you'll see your favorite magazine in the industry (maybe even the world!) hit your mailbox again with a special spring bonus issue that we're calling *Golfdom's* **Tour Guide**.

This issue will spotlight multiple professional tournaments around the country. It will also include a complete list of every tournament and its host superintendent.

This is our first try at this, and I'm excited to see how it turns out. A lot of work has gone into this issue. We can't spotlight everyone, but if you are a candidate for coverage and want to be included in 2024, reach out to me!

Bold prediction: this will be one of the most popular issues in the industry in just a few short years.

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NEWS, NOTES AND QUOTES

//OFFICIALLY OFFICIAL

STUEDEMANN ACCEPTS GRAFFIS AWARD AT GCSAA SHOW

Rees Jones presents Businessperson of the Year award to former TPC Deere Run superintendent

BY *GOLFDOM* STAFF

At the 2023 GCSAA Conference and Trade Show, Rees Jones, "The Open Doctor," founder of Rees Jones golf course design, along with *Golfdom* Editor-in-Chief Seth Jones, presented Alex J. Stuedemann, CGCS, his 2022 Herb Graffis Businessperson of the Year Award.

"I'm humbled to receive such a great honor that represents such a strong individual that brought so much to our industry," said Stuedemann. "Hopefully with what I've done so far in my career, I can continue to help build people up that maybe one day will receive this award."

Golfdom named Stuedemann, former director of golf course maintenance at TPC Deere Run in Silvis, Ill., and a current director of TPC agronomy for the PGA Tour, winner in recognition of his work in providing high-level playing conditions and mentoring others throughout his career.

In his eight-plus years as director of golf course maintenance at TPC Deere Run and five more as assistant superintendent, Stuedemann led 14 John Deere Classic tournaments. Stuedemann also made stops at TPC Twin Cities and TPC San Antonio over the course of his career.

Stuedemann joins ten others, including *Golfdom* columnist Alan FitzGerald, CGCS, MG, as those honored with the award named after *Golfdom* founder and World Golf Hall of Fame member, Herb Graffis.

Rees Jones (left) and *Golfdom* Editor-in-Chief Seth Jones (right) present Alex J. Stuedemann the Herb Graffis Businessperson of the Year Award.

//TIME FOR NEW BUSINESS CARDS

SYNGENTA MAKES INTERNAL MOVES

Syngenta established a new position and appointed a new Midwest district sales manager.

The company named Todd Loecke to the role of head of key accounts. In this newly created position, Loecke will manage key accounts across several of Syngenta's businesses including turf and ornamentals and pest management.

Todd Loecke

Syngenta also promoted Troy Rippy to Midwest district sales manager, the position Loecke previously held.

Troy Rippy

Rippy, a former superintendent at Eagle Glen GC in Columbia City, Ind., joined Syngenta in 2006 as a territory manager in Indiana and northwest Ohio. In his new role, Rippy will lead a team of nine territory managers covering the central region of the U.S.

//HE SOUNDS FAMILIAR

GCBAA ADDS SAM DUININCK

Members of the Golf Course Builders Association of America (GCBAA) recently elected Sam Duininck, director of business development for Duininck Golf, to the association's board of directors.

Sam Duininck will step in for Judd Duininck, general manager of Duininck Golf, who completed his two-year term as president of the GCBAA in February 2021.

A fourth-generation member of the family business, Sam Duininck started his career in golf construction as a laborer on new construction and remodeling projects throughout the U.S. He became director of business development in 2021 and helped open Duininck Golf's Atlanta office in 2022.

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

//SURVEY SAYS ...

GCSAA releases findings of pest management survey

The Golf Course Superintendents Association of America (GCSAA) released its survey findings on pest management practices.

The most frequently used pest management practices, according to the report, included weather monitoring, scouting, employing pesticide resistance management strategies, improving turfgrass health, implementing cultural practices and spot treatment of damage.

The survey found 50 percent of courses surveyed use 13 of the 17 practices listed. GCSAA said the high use of various pest management practices reflects efforts to reduce the use of pesticides as the sole treatment for turfgrass pests in the industry.

GCSAA surveyed more than 1,400 superintendents for the survey. Travis Shaddox, Ph.D., owner of Bluegrass Art and Science, and J. Bryan Unruh, Ph.D., from the University of Florida, collected and independently analyzed the survey results.

"Environmental stewardship is vital to the future of the golf industry, and GCSAA continues to offer tools and resources to assist facilities in employing environmental best management practices," said Rhett Evans, GCSAA CEO. "The purpose of the Golf Course Environmental Profile is to provide data that not only shows how practices have improved but also where continued improvement is needed."

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Ask Thad

BY THAD THOMPSON
Superintendent
Terry Hills GC, Batavia, N.Y.

How do you handle winter play in the snowy Northeast?

— Scott Winkleman, Greenskeeper, Foxfire GC, Baldwinsville N.Y.

Terry Hills is a public course with ties to our community, but make no mistake, we are a business and a business exists to make money. If there's no snow on the ground, we are open for play.

The Buffalo area is known for snow, but we probably don't get as much as you might think. We've had a few significant storms this season, but they melted off quickly. Still, winter can be a challenge. The days are shorter and the low sun angles make for a different experience than in the summer for the player and superintendent alike.

We pull all our tee markers and let our golfers choose what tee they want to use to start the hole. I left one set of tees out for winter and everyone used them. If you want concentrated wear instead of distributed wear, leave a few out.

We use our normal greens. Crazy right? We have a full set of winter flags and flagsticks. I cut the pin on the very front of every green for several reasons: it reduces traffic on the green; shortens the length of the course and reduces ball marks.

Our golfers play on frost. There, I said it! Early fall and late spring frosts, when the grass is succulent and actively growing are a concern, but after 15 years here, I've never seen any major damage.

This goes against everything I've learned. I know there is the potential of root shear with the top inch unfreezing and the rest of the playing surface remaining frozen but once again, I've never seen any evidence that this has ever occurred.

The course will never be confused with what it looks like in the peak summer months. The No. 1 comment we get is, "I'm just glad to be out!"

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

Starter

//MICHIGAN'S FINEST

GOLF ASSOCIATION HONORS MICHIGAN SUPERINTENDENT

The Golf Association of Michigan (GAM) recently awarded Michael Morris, CGCS, director of building and grounds at Crystal Downs CC in Frankfort, Mich., its Superintendent Award of Merit.

Michael Morris

The GAM says the award honors a super who demonstrates leadership, professionalism, good character and high standards of conduct.

"I try to provide the best experience members could have and I have been proud to try and do that for this many years," said Morris. "I've been blessed to work with tremendous thinkers and leaders at Crystal Downs, that have afforded me the opportunity to learn and collaborate with great leaders from around the country."

//GOING, GOING, STILL GOING

USGA publishes Distance Insights Report

The USGA and the R&A released its annual distance insights report, which shows a continued increase in hitting distance.

As a part of the report, the two associations proposed a model local rule (MLR), which gives competition organizers the option to require the use of golf balls tested under modified launch conditions.

The USGA and R&A say the MLR is intended for use only in elite competitions and, if adopted, will have no impact on recreational golf. The expected drop in hitting distance is 14 to 15 yards on average for the longest hitters.

The report also found the overall trend of golf courses becoming longer has adverse consequences, including increasing the cost and time to play, limiting the advancement of sustainability efforts and reducing the challenge of courses — in some cases creating a risk of them becoming obsolete.

The USGA and the R&A believe the long-term trend of increased hitting distances and course lengthening threatens golf's sustainability and undermines the core principle that a broad and balanced set of playing skills should remain the primary determinant of success in golf.

//PUT IT IN NEUTRAL

Singapore course is the world's first carbon-neutral golf club

Sentosa Golf Club in Singapore said it recently became the first carbon-neutral golf club in the world. The club said it offset 5,000 tons of CO_2 as part of a sustainability initiative.

The club was also the first in Asia to introduce carbon products in the form of biochar into its agronomy program. Other initiatives include a new irrigation system and equipment to help reduce carbon.

"Since we began to share the importance of our sustainability journey back in 2018, we have always been focused on becoming an industry leader and inspiring others to follow suit by implementing eco-friendly initiatives to help reduce our overall carbon footprint," Andrew Johnson, general manager and director of agronomy at Sentosa GC, said.

Sentosa GC said its efforts to achieve carbon neutrality are part of its commitment to the UN Sports for Climate Action Race to Zero initiative.

PHOTO COURTESY OF SENTOSA GOLF CLUB

//DOUBLING UP

FMC MAKES TWO NEW HIRES

FMC recently named Shawn Beam as North American sales manager for turf and ornamental and Alan Eife as programs manager and data analytics specialist.

Beam previously served as FMC's herbicide product manager. He has a decade of experience in the crop protection industry, including international business experience in Canada and Japan.

Shawn Beam

Eife was a demand planner for FMC and held the same position at Johnson Controls. Other past roles include supply planner for Scholastic and identity and access management for AIG.

Alan Eife

Golfdom Gallery

WE CAME.
WE SAW.
WE TOOK PICTURES.

1 Bill's boy *Golfdom* Group Publisher Bill Roddy's son Connor (left) realized the industry his old man works in is pretty awesome … and now finds himself as an assistant-in-training at Pinehurst Resort. *Golfdom* Editor-in-Chief Seth Jones and Rain Bird's National Sales Manager Tony Whelan celebrated the occasion with Connor at the Holly Inn. We're all rooting for you, Connor!

2 Meet up in Morristown *Golfdom* Associate Editor Rob DiFranco (right) snaps a pic with Klaus Hahn, Greenworks Commercial North America president, at the battery-powered equipment manufacturer's new Morristown, Tenn., facility.

3 Coming up aces Todd Bohn, director of agronomy, Desert Mountain, Scottsdale, Ariz.; (left) and Kevin Robinson, CGCS, superintendent at Pinehurst Resort, celebrate Bohn's first ever hole-in-one, on Pinehurst No. 2's ninth hole. While the ball was in the air, a caddie said, "that's going to be expensive." Bohn replied, "I'm not that lucky." Well …

4 They've got game The *Golfdom* team loves their sports beyond golf, and that includes NBA basketball. Pictured at a recent Cleveland Cavaliers game are (left to right) North Coast Media President and CEO Kevin Stoltman, *Golfdom* Art Director Pete Seltzer, *Golfdom* Editor Christina Herrick and Jones.

5 Too tall, too slow It's not so much that Herrick (middle) is short, but that her friends, Alan FitzGerald, CGCS, MG, at LedgeRock GC, Mohnton, Pa., and Jones, are tall. Still, she reminded them that she could still beat them both in a foot race of any distance.

PHOTOS BY: *GOLFDOM* STAFF

The Golfdom FILES

FROM THE ARCHIVE

It's not too difficult to remember a time when cell phones were considered a groundbreaking new technology in golf course maintenance.

But, even then, rudimentary cell phones only allowed superintendents to make phone calls. To get the full suite of amenities we enjoy now on our phones, they needed five-plus devices — including a pager, a camera and more.

Take a look back to 2001 as *Golfdom* profiled three superintendents who embraced what was new and see how it helped them become better agronomists. For the full article, visit **golfdom.com/exclusive.**

A glimpse into the future

BY FRANK H. ANDORKA JR., *Managing Editor*

Chris Sykes runs down a mental checklist of all the technological devices he carries before checking on Cherokee CC in Knoxville, Tenn., where he is the superintendent.

Cell phone: check. Digital recorder: check. PalmPilot: check. Walkie-talkie: check. Pager: check. With the inventory complete, Sykes breathes a sigh of relief. Now he's equipped to face whatever challenges the golf course throws at him.

"There's so much to remember every day between taking care of the golf course and managing my staff that I can't imagine how superintendents used to do it before technology advanced to where it is today," Sykes says. "I have 500 computer files that I use to help me do my job. Without a way to access them on the course, I'm not sure what I'd do."

Though technology is only another tool for the profession, it's streamlining maintenance operations so superintendents can spend the bulk of their time practicing what they enjoy most: the art of golf course management.

Sykes embraces technology as an integral part of his career, and he doesn't understand why more of his colleagues don't take advantage of it.

"If you stick yourself in the past, you will be left behind as the industry moves forward," Sykes says. "The superintendents who learn how to harness the power of technology will be those who progress professionally."

Perhaps the most important technological innovation of the past 30 years was the introduction of personal computers to the industry.

According to the 2001 GCSAA Leadership survey, 41 percent of superintendents ranked computers as the most important piece of personal technology they use in their work. PCs revolutionized the way superintendents conduct business, says Bob Collins, CGCS and superintendent at Cripple Creek Golf & CC in Bethany Beach, Del.

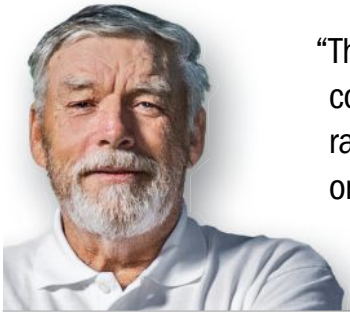
"Nearly all superintendents have computers now, and with the advent of email and the web, computers are almost indispensable," Collins says.

Superintendents can save time because they don't have to recreate routine documents every year, he adds. Having computer files also makes record storage easier, Collins says.

David Stone, superintendent at The Honors Course in Ooltewah, Tenn., says he uses his computer primarily for word processing and budget spreadsheets. He also keeps files of the instructions he gives his crew so he can monitor their progress on jobs.

"It's been an incredible help to me in streamlining the process," he says.

The prevalence of computers inspired the development of computerized irrigation systems; global positioning system (GPS) maps of golf courses; and the use of websites and email to disseminate turf information to industry colleagues at lightning speed. These technologies allow superintendents to perform tasks, from water applications to staff budgeting, more efficiently and effectively than before.



"The courses we play daily are about as comparable to golf on television as Formula 1 racing is to our daily commute — unless you are on I-635 in Dallas after midnight."

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

Don't believe everything you see on TV

Bifurcation — the point at which something divides into two parts — isn't a word that you hear every day. But recently, golf's leadership and royalty have gnashed their teeth over the word.

The reason why? It's possible that we'll see the bifurcation rules of golf as an effort to rein in the increasing length of pro golfers. If that happens, there will likely be one set of rules for the pros and another for us mortals.

My first reaction to that news is, "big deal." I already can't relate to 350-yard drives. In the words of Bobby Jones after watching Jack Nicklaus win the 1965 Masters: "Nicklaus played a game with which I am not familiar."

Unfortunately, that's not the only effect.

There has never been a greater difference between the courses we see on TV and those we play daily.

Most of us remember when *THE* reason to watch The Masters was the immaculate conditions of the course itself. Right or wrong, Augusta set the bar for what every golfer wishes they could play.

Compare the photos above and below ... are they really still the same game?

But today, virtually every course on the Tour is near perfect with blemish-free fairways and handcrafted bunkers and greens that reach a level of uniformity that was once unimaginable.

For those courses, practices like air-conditioned root zones and sand-capping of the entire course make perfection achievable.

The courses we play daily are about as comparable to golf on television as Formula 1 racing is to our daily commute — unless you are on I-635 in Dallas after midnight.

Unfortunately, I believe bifurcation has become more apparent on a local level.

As financial pressures grow, wealthy clubs are more able to weather the challenges of today.

Now, I'm not saying only country club folks will continue to enjoy the game. Give me some good putting greens and a cold beer and I'll have fun on any course.

I am saying the gap in quality and course appearance between public and private will continue to grow. Possibly to the point that it will feel like two different games.

As challenging as this will be agronomically, the most difficult task will be getting the daily-fee golfer to understand why their course looks less and less like the country clubs they see on TV.

Jim Moore is the retired director of education and outreach for the USGA Green Section. While with USGA, Moore made more than 1,000 consulting visits to golf courses in the U.S., Mexico and Germany. Now retired, he lives on the family farm in McGregor, Texas. He can be reached at jfcmoore@gmail.com.

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At Bay Hill Club, Senior Assistant Superintendent Alexandra Hills sees that the sky is the limit

PHOTO BY: BRIAN CARLSON

Queen of the Hill

BY SYDNEY FISCHER

No one path to a career in the golf course maintenance industry is the same. Alexandra Hills' journey started in the stables.

Hills grew up riding horses. In college, she worked at Grand Cypress Equestrian Center in Orlando, Fla.

Plans change

Hills went to college to pursue a sports management degree. But as the economy took a downturn, the Grand Cypress Equestrian Center became a casualty.

"They had to close the equestrian center, and I needed a job," Hills says. "(Grand Cypress) had an opening in golf maintenance, and since I already worked outside, I thought I could at least take the job while I was finishing school."

Little did she know at the time, the trajectory of her life had quickly changed.

"I fell in love with it," she says, recalling her first few weeks on the course. "My boss at the time said that if I was serious, I should go and get my turf degree. So that's what I did."

When in Florida

Fast forward to 2023 and Hills, senior assistant superintendent at Bay Hill Club and Lodge in Orlando, Fla., works alongside Chris Flynn, CGCS, director of grounds (for more from Flynn, see page 6.) Together, the duo hosts the Arnold Palmer Invitational.

Hills says the 40-person crew has fine-tuned how to prepare the course down to a science. Even with that confidence, 2022 had its fair share of challenges. Bay Hill suffered damage from several hurricanes that hit the Florida coast last year.

"Last year was really rough," she says. "We had to bump our seed back a week before the hurricane came through, so we ended up seeding the week before Thanksgiving. This was also one of the coldest winters I've been through."

Despite switching up the routine, Hills says the course avoided major damage, other than a few holes under water.

Women at work

At the 2023 Arnold Palmer Invitational, Bay Hill hosted 25 volunteers, including several members of the Women in Turf Team, a group of female turfgrass professional who volunteer annually on the crew for the U.S. Women's Open.

"This was the most women I've had come and volunteer at our tournament," Hills said.

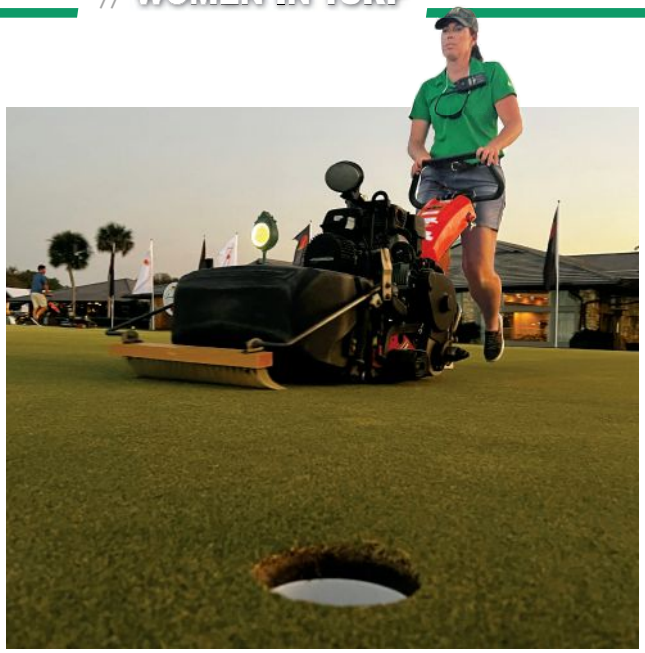
Breaking the Turfgrass Ceiling , a 14-part docuseries created by Sheila Schroeder, Ph.D., a professor from the University of Denver, highlight the Women in Turf Team (see sidebar, page 20). The series showcases 30 female turfgrass professionals at the 2022 Women's U.S. Open, including Hills.

"It's one of those things that until you're in it and you feel the electricity, it's hard to explain," she says. "It's just a sisterhood that you can't replace."

Hills says that showing more women in this profession opens the doors to more opportunities for younger generations.

"I have a daughter, and I want to make sure that she knows that she can do anything that she wants to do," she says.

Continued on page 18



Alexandra Hills understands the responsibility that comes with her title at Bay Hill Club, host of the Arnold Palmer Invitational.

Continued from page 17

Rules to live by

Hills says she has a few rules she tries to live by, starting with remembering to stay humble.

"One of my bosses once told me, 'Never be greater than what you would say is your lowest job (is on the course), because that's when you need to retire,'" she says. "He told me I should always be willing to fill in and never to ask my guys to do anything I wouldn't do."

Alongside humility, Hills says it's important to keep an open mind in this industry, as it might lead to some pleasant surprises.

When she first started on a golf course, Hills didn't think she'd ever work at a PGA Tour stop. Now she says she can't imagine working at a course that doesn't host events.

"There are so many avenues that you can go down, whether you stay in the industry or do sales," she says. "It's such a broad industry and there are so many things you can take from it. The sky is the limit."

The power of togetherness

The golf course wasn't welcoming at first, but Morgan Creighton was emboldened by a group of fellow female turf pros. Now she's helping lead others.

BY CHRISTINA HERRICK

For Morgan Creighton, an assistant golf course superintendent at Woodside GC in Airdrie, Alberta, Canada, a love of the outdoors and a high school summer job at a golf course started her down a path in turf management.

Creighton says she planned to study education in college but decided she'd rather be outside than inside a classroom. She enrolled in classes at Olds College and graduated with a bachelor's degree in applied turfgrass management.

Morgan Creighton

She bounced around between a job in forestry, a stint at a 9-hole golf course and another at a multi-course facility in Calgary. During her time in the industry, she experienced what many women, unfortunately, experience — workplace harassment.

"You're always warned that it's something that can happen," she says. "I can put up with a lot and I internalized a lot. And then I saw this person doing it to one of the summer students. I don't like seeing other people having to go through things."

When she spoke to the course's human resources manager about the harassment, her colleagues treated her differently and blamed her for coming forward.

"I was working at a place where I was made to feel like I was less of a human because I was female, that I would never amount to anything," she says. "I've known numerous females who leave the industry because of it. The only reason I didn't is this is my postsecondary education. ... It took me going through five different golf courses to find a place that is constructive. I'm not saying that all of them are bad by any means, but I'm now at a place that truly works for me."

Finding inspiration in numbers

Around this time, she was accepted for and attended Bayer's (now known as Envu) inaugural Women in Golf event, a supportive and positive environment.

"I went from feeling like I was worthless because I was female

Continued on page 20

PHOTO COURTESY OF ALEXANDRA HILLS

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Continued from page 18

to feeling the most empowered I have ever felt," she says. "It was amazing, and it's something that I never really experienced before. I wanted to find a way to allow other women in the industry to be able to have that kind of connectivity that we created during those two days in North Carolina."

Creighton founded the mentorship program Women in Turfgrass Management. The program matches three or four students interested in turfgrass management, enrolled in a program or a recent graduate of a turf program with other women in the industry, including assistant superintendents, educators, architects,

Continued on page 22

From Olympic Club to Pine Needles

Web docuseries shines a spotlight on women volunteers at the U.S. Women's Open

Behind every good story is a good storyteller.

In this case that storyteller is Sheila Schroeder, Ph.D., a professor of film studies and production from the University of Denver. In 2022 Schroeder traveled to the U.S. Women's Open at Pine Needles, Southern Pines, N.C., armed with a camera, a student assistant and support from several industry entities.

At first, her goal was to promote Women in Turf volunteers and the work they accomplished at Pine Needles over social media. When she returned to Denver, that plan changed.

"When we got home we started logging all the footage, and I thought, 'Oh, my goodness … we have a treasure trove of stories," Schroeder says.

The result of those stories is a 14-part web docuseries called Breaking the Turfgrass Ceiling. The entire series is posted on YouTube. The series documents what started at the Olympic Club in San Francisco in 2021 and continued at the 2022 U.S. Women's Open at Pine Needles. The series showcases 30 female turfgrass professionals and tells their stories.

"It's behind-the-scenes at Pine Needles," Schroeder says. "I was lucky enough to go, embedded with the Women in Turf Team."

Support for the project came from the University of Denver, GCSAA, PureSeed, Vereens, Rain Bird, Syngenta and Toro. Schroeder is unsure if there will be a season two of the series, but she does know that the Women in Turf Team will volunteer at Pebble Beach Golf Links for the 2023 U.S. Women's Open.

"Women in the turf industry are here to stay," she says. "Hopefully this series raises awareness and raises opportunities for women in turf."

PHOTO BY SHEILA SCHROEDER (TOP); COURTESY OF KIMBERLY GARD

PHOTO COURTESY OF MORGAN CREIGHTON

The Women in Turfgrass Management program matches three or four turfgrass students with women established in the green industry. The program recently held an in-person event and golf scramble.

Continued from page 21

industry affiliates and superintendents as mentors.

Every six weeks, Creighton and the students in the program come together to create a list of discussion questions for each student to take back to the mentorship groups — anything from how superintendents use growing degree data to negotiating a higher salary.

This year is the first year that five students in the mentor groups graduated and will transition into roles as mentors. She says she's also expanding the mentorship program to the U.S. to connect more women in the industry. (Creighton welcomes any women interested in the program to reach out to her through email at **womeninturfgrassmanagement@gmail.com**.)

"To see how (the graduates) are changing and how they've used everything that they've gained over the last few years to be able to help the new students, it's really quite amazing to see," she says.

Worth the effort

For women considering a job in turfgrass, Creighton says, it's absolutely worth it.

"Sometimes you have to put in the effort and work until you find a place that's compatible with you," she says.

After a summer job on a golf course maintenance crew, Morgan Creighton says she knew she wanted to work in turf.

PHOTO COURTESY OF MORGAN CREIGHTON

And for males reading this, Creighton points to research Devon Caroll, Ph.D., did as a doctoral student at the University of Tennessee. Caroll found that despite comprising 51 percent of the workforce, women make up less than 10 percent of the turf industry.

"If we're talking about a labor shortage, well, there's half of the workforce that we're not tapping into," Creighton says. "My advice (to men) would be to be open and willing for change."

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

Super Science

// **SELECTION SUNDAY**

WHAT MAKES A DISEASE-RESISTANT BENTGRASS POPULAR?

By Mike Kenna, Ph.D.

In Spring 2017, the USGA Davis Research Program invited several turfgrass pathologists to discuss dollar spot, new disease-resistant bentgrasses, forecast models, resistant strains of dollar spot and alternative management practices.

Paul Koch, Ph.D., assistant professor of plant pathology at the University of Wisconsin, then organized more than 20 turfgrass pathologists and breeders to attend a follow-up meeting at the 2018 Golf Industry Show and worked with attendees to develop an application for a federal grant to continue the discussion.

In April 2019, Koch and his colleagues received a grant from the USDA's National Institute for Food and Agriculture for their project *Biology, Etiology and Management of Dollar Spot in Turfgrass.*

Most recently, the working group met at the 2023 GCSAA Conference and Trade Show in Orlando, Fla., where it discussed the results of a survey conducted with support from the USGA.

The survey — conducted in March 2022 — aimed to identify factors superintendents use when selecting bentgrass cultivars to develop strategies for increased adoption of disease-resistant cultivars.

More than 90 percent the 208 of superintendent respondents reported having creeping bentgrass or a mixture of annual bluegrass and bentgrass on their putting greens, while 46 percent have fairways with bentgrass or a mix of annual bluegrass.

Only 26 percent of those who responded say they completed a course renovation with bentgrass cultivar in the last 10 years. More than 80 percent say they are happy with the performance of the new bentgrass cultivar selected.

Only 38 percent of those respondents changed their disease management practices. Of those that did shift practices, 71 percent reported a decreased use of fungicide on their course.

At the 2023 GCSAA Conference and Trade Show, the group discussed how to best disseminate the results of the survey. All agreed that an Extension publication in multiple national, regional, and local trade publications was an appropriate method.

Ming-Yi Chou, Ph.D., the incoming assistant Extension professor at Rutgers University, will lead the writing of this Extension publication.

I look forward to reporting more on the bentgrass survey once the Extension publication is available. To learn more about the project and see a complete list of participants, please visit the project website at **nimss.org/projects/view/mrp/outline/18590**.

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

NEWS UPDATES

PROFILE PRODUCTS NAMES NEW CEO

Shane Porzio, Ph.D., will replace Jim Tanner as CEO and director of the board of directors at Profile Products.

Most recently, Porzio served as acting president for Profile Products. Before that, he was senior vice president and global head of the food and performance materials divisions at Vantage Specialty Chemicals.

Shane Porzio

"My focus will be continuing to execute the strategy we have in place, while maintaining our history of innovation focused on advancing sustainability," Porzio said.

Jim Tanner

Tanner held leadership roles with Profile Products since 1991. In retirement, Tanner will join the board of directors to advise the Profile Products team and pursue other personal endeavors.

"It is because of our culture and our commitment to each other that we have experienced unprecedented growth," Tanner said. "I'm confident Shane will continue the growth of our company into the future."

> "ALL FUNGICIDE-TREATED PLOTS HAD FEWER INCIDENCES OF DOLLAR SPOT THAN UNTREATED PLOTS THROUGHOUT MUCH OF THE STUDY."
>
> **Daniel Earlywine and G.L. Miller, Ph.D.**
> *(see story on page 24)*

//I'D BUY THAT FOR A DOLLAR

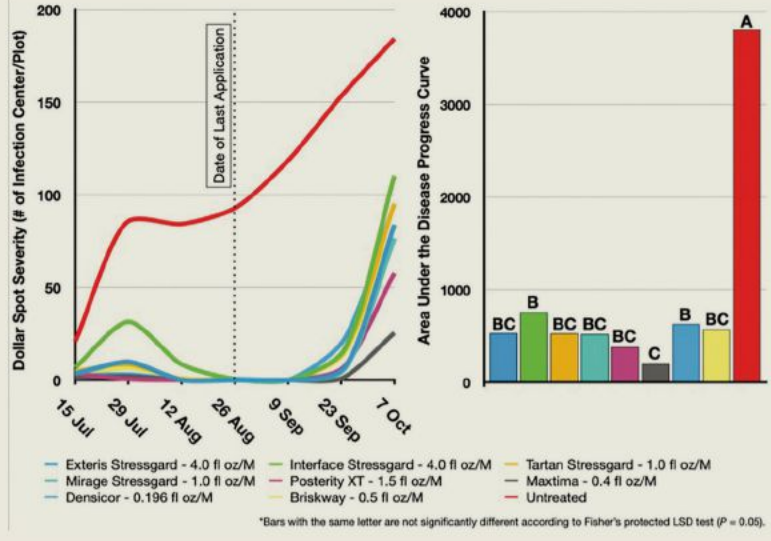
Fungicide effectiveness for disease control on creeping bentgrass fairways

By Daniel Earlywine and G.L. Miller, Ph.D.

NOTE: *In these studies, we applied treatments at 14-day or 21-day intervals and did not rotate them. This common method in field fungicide evaluation trials doesn't appropriately mirror actual practice on golf courses, mitigate fungicide resistance development or adhere to labeled season usage limits. We did not apply any fungicide treatments within the labeled season usage rate in these studies. For example, Maxtima's label recommends application four times at the 0.4 fl. oz./1,000 sq. ft. rate, whereas in these trials, the same plot received eight or more treatments of Maxtima (BASF, mefentrifluconazole). Additionally, we inoculated and subjected plots to environmental conditions that resulted in extremely high disease pressure. Last, when comparing products examine the labeled use rate, amount of active ingredients and application intervals. These are key aspects to consider when evaluating product evaluation trials and developing a fungicide program at your facility.*

FIGURE 1

Efficacy of various fungicides applied on a 14-day interval on dollar spot in a creeping bentgrass fairway.



In 2021, we conducted three fungicide trials to evaluate preventive dollar spot (*Clarireedia* spp.) and brown patch (*Rhizoctonia solani* AG2-2 IIIB) control at the University of Missouri Turfgrass Research Facility in Columbia, Mo. We conducted all trials on Penneagle II creeping bentgrass grown on native Mexico silt loam soil. We also mowed plots at 0.675 inches two times weekly from early April to mid-October.

We applied nitrogen as Signature fertilizer (18-2-18) on April 9 at 0.5 lb. N/1,000 sq. ft. From April 28 to May 26, every two weeks, we applied NBN-30 (30-0-0) at 0.1 lb. N/1,000 sq. ft., Primera One (20-20-20) at 0.01 lb. N/1,000 sq. ft. and Primo Maxx (tranexamic-ethyl, Syngenta) at 0.125 fl. oz./1,000 sq. ft. From June 11 to Sept. 17, we reduced NBN-30 (30-0-0) to 0.05 lb. N/1,000 sq. ft. and Primera One (20-20-20) to 0.005 lb. N/1,000 sq. ft. We applied Zipline (Aquatrols) at 8.0 fl. oz./1,000 sq. ft. to reduce localized dry spot on Aug. 18 and Sept. 17.

On June 11, rye grain (*Secale cereale L.*) infested with the dollar spot and brown patch pathogen was uniformly applied using a broadcast spreader at a volume of 1.22-inches^3 and 1.52-inches^3, respectively. We left rye grain on the turf surface for three days before mowing.

April 15 was the initial date for Trial 1, followed by May 6 for Trials 2 and 3. We arranged 5-by-5-foot plots in a randomized complete block design with four replications for all three trials. We applied products in water equivalent to 1 gal./1,000 sq. ft. with a CO_2-powered sprayer at 26 psi using four TeeJet 8004 flat fan nozzles.

We assessed disease severity every 14 days from initial symptom development, with brown patch severity assessed as a visual estimate of the percent symptomatic area and dollar spot assessed by counts of infection centers per plot. We subjected data to variance and means separation analysis using Fisher's protected LSD ($P = 0.05$). The area under the disease progress curve combines disease severity ratings and overall rating dates and we calculated that with the trapezoidal method.

TRIAL 1: MULTIPLE FUNGICIDES AT 14-DAY INTERVALS

We applied fungicides at 14-day intervals from May 6 through Aug. 26.

TABLE 1

Efficacy of various fungicides to control brown patch in a creeping bentgrass fairway.

Treatment, formulation, and rate per 1,000 sq. ft.	Application code[w]	Brown patch severity (percent)[z]							AUDPC[y]
		June 17	July 15	July 29	Aug. 12	Aug. 26	Sept. 9	Sept. 23	
Exteris Stressgard 0.271SC 4.0 fl. oz.	ACEGIKMOQ	0.0c[x]	1.8c	1.0bc	0.0b	0.0b	0.0b	0.0b	49.0b
Interface Stressgard 2.27SC 4.0 fl. oz.	ACEGIKMOQ	0.0c	2.5b	1.3bc	0.5b	0.3b	0.0b	0.0b	63.0b
Tartan Stressgard 2.4SC 1.0 fl. oz.	ACEGIKMOQ	2.3a	5.3c	3.8bc	0.5b	0.5b	3.0b	0.0b	224.0b
Mirage Stressgard 2SC 1.0 fl. oz.	ACEGIKMOQ	0.0c	2.3c	1.8bc	0.8b	0.0b	0.0b	0.0b	73.5b
Posterity XT 1.48SE 1.5 fl. oz.	ACEGIKMOQ	0.0c	2.8c	0.0c	0.0b	0.5b	0.5b	0.0b	59.5b
Maxtima 3.34SC 0.4 fl. oz.	ACEGIKMOQ	0.0c	5.5c	5.0b	0.0b	0.5b	1.8b	0.0b	178.5b
Densicor 4.0SC 0.196 fl. oz.	ACEGIKMOQ	0.0c	5.8c	2.8bc	0.0b	0.8b	0.5b	0.0b	136.5b
Briskway 2.72SC 0.5 fl. oz.	ACEGIKMOQ	1.3ab	5.5c	0.0c	0.0b	0.5b	2.0b	0.0b	140.0b
Untreated Control	————	0.8bc	12.3a	11.0a	6.8a	13.0a	13.0a	16.8a	1078.0a
LSD		1.0	4.7	4.3	2.8	3.1	3.1	3.1	180.6

[z] Brown patch severity is based on a scale of 0 to 100 percent (0 = no incidence, 100 = entire plot completely covered).
[y] AUDPC is a quantitative measure of brown patch intensity with time over each rating date from June 3 to Sept. 23 and was calculated using the trapezoidal method.
[x] Means (n = 4) within columns followed by the same letters are not significantly different according to Fisher's protected LSD test (*P* = 0.05).
[w] Application code indicates date of application: A: May 6, C: May 20, E: June 3, G: June 17, I: July 1, K: July 15, M: July 29, O: Aug. 12, Q: Aug. 26.

We first observed dollar spot and brown patch in plots on June 3. Dollar spot severity escalated in the middle of July and progressed throughout the season. All fungicide-treated plots had fewer incidences of dollar spot than untreated plots throughout much of the study. Interface-treated plots saw more dollar spot than other fungicide-treated plots on July 29 and more than on Maxtima, Densicor (Envu, prothioconazole), and Briskway (Syngenta, azoxystrobin and difenoconazole) treated plots on July 15 (Figure 1).

Maxtima treated plots had lower dollar spot AUDPC values than Densicor and Interface-treated plots, caused by an extended window of control for four weeks (Sept. 23) and six weeks (Oct. 7) after we suspended the fungicide applications on Aug. 26 (Figure 1).

All treated plots had lower brown patch severity than untreated plots. Maxtima-treated plots had higher brown patch severity than Posterity XT and Briskway-treated plots on July 29. Otherwise, fungicide treatments resulted in similar levels of brown patch control throughout the trial (Table 1).

TRIALS 2 AND 3: 21-DAY INTERVAL APPLICATIONS

Dollar spot was first observed on May 13 in Trial 2 and June 3 in Trial 3. Application date ranges for the two trials differed, with Trial 2 treatments spanning from April 15 through Sept. 9 (eight total treatments) and the Densicor treatment in Trial 3 only being applied

Continued on page 26

Research Takeaways

- Several fungicide products applied repeatedly on 14-day and 21-day intervals provided adequate control of dollar spot and brown patch on a creeping bentgrass fairway.
- On a 14-day interval, Maxtima-treated plots (4 oz./1,000 sq. ft. rate) had fewer dollar spot infection centers than other treatments 4 to 8 weeks after the final application. We also noted this extended activity on applications at a 21-day interval.
- Densicor repeatedly applied on 14-day, and 21-day intervals also provided dollar spot and brown patch control.
- Pay attention to seasonal usage limits on the label and use strong fungicides strategically during highly disease conducive weather conditions.

Continued from page 25

from May 6 through Aug. 19 (six total treatments). For this reason, we should not compare treatments in these two trials against each other.

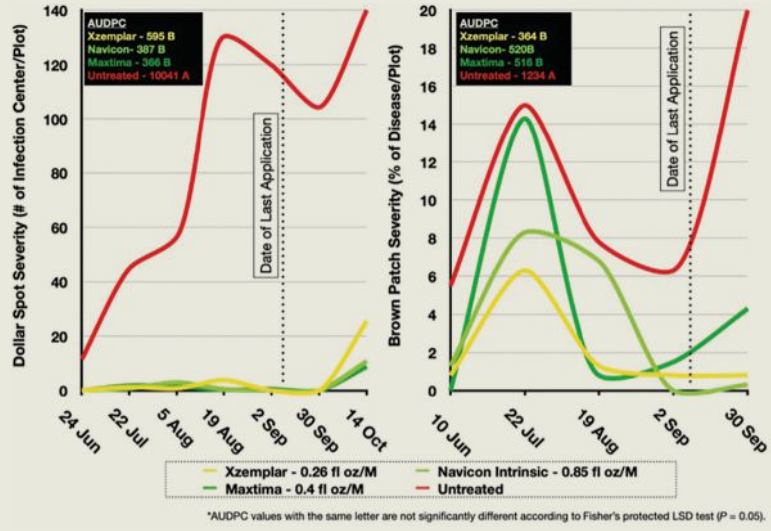
In Trial 2, all treated plots had significantly less dollar spot and brown patch than untreated plots throughout the study. Residual control after the final application on Sept. 9 lasted until mid-October (Figure 2). The brown patch in the Navicon-treated plots was not different from the untreated control on Aug. 19. No differences were found between any of the treatments and the untreated control on July 22.

In Trial 3, Densicor-treated plots applied on a 21-day interval had less dollar spot and brown patch severity than untreated control plots throughout the entirety of the trial (Figure 3). In both trials, dollar spot and brown patch AUDPC values were lower in treated plots than in the untreated control plots.

Daniel Earlywine, research specialist, PARC Research and Consulting, Columbia, Mo., and G.L. Miller, Ph.D., assistant professor, Department of Botany and Plant Pathology, Purdue University. Contact Miller for more information at turfpath@purdue.edu.

FIGURE 2

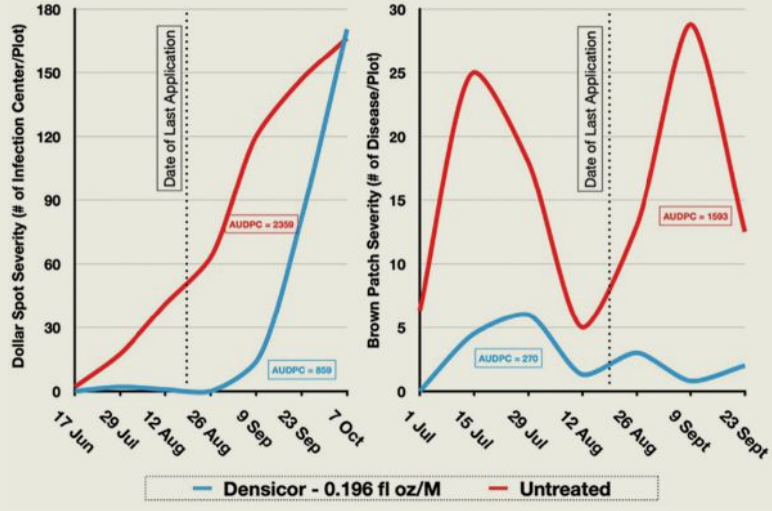
Efficacy of fungicides applied on a 21-day interval on dollar spot in a creeping bentgrass fairway.



*AUDPC values with the same letter are not significantly different according to Fisher's protected LSD test ($P = 0.05$).

FIGURE 3

Efficacy of Densicor applied on a 21-day interval on dollar spot in a creeping bentgrass fairway.



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Earlywine, Daniel; Miller, G. L. 2022. Evaluation of multiple fungicides for preventative summer disease control on fairway height creeping bentgrass, 2021. PDMR: Plant Disease Management Reports. 16: p. T005

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Being proactive matters when managing necrotic ring spot. Experts say it's crucial to treat turf before signs of damage appear.

Why prevention is key to managing necrotic ring spot

To get a leg up on this persistent disease, reduce irrigation and maintain higher mowing heights

By Chris Lewis

As a perennial root disease, necrotic ring spot (NRS) not only grows on roots — it attacks them as well. It's also a highly-persistent disease, growing on the same patch of infected plants year after year.

Kentucky bluegrass is more vulnerable to NRS than any other type of turfgrass, leading to rings that superintendents struggle to remove. The primary reason? The damage already occurred in the turfgrass before visible signs of the disease. Additionally, NRS grows slowly, resulting in apparent damage several months after infecting the roots.

"The rings will become larger year by year," says Tom Hsiang, Ph.D., plant pathologist and professor at the University of Guelph's school of environmental sciences. "Hence, it's important to prevent NRS from developing in the first place."

Tom Hsiang

CONTROL METHODS

Hsiang says superintendents can remove diseased areas and asymptomatic turf from the course.

"If superintendents wish to physically dig out and remove disease patches, which can be up to half a yard across, they should also take some nonsymptomatic turf from outside the ring (perhaps up to 6 inches outside the ring)," he says. "This will ensure infected asymptomatic turfgrass is taken away, too."

To contend with NRS, Hsiang advises superintendents to decrease the irrigation on their course's Kentucky bluegrass while maintaining higher mowing heights. After all, wet environments, including regular irrigation, enhance NRS. Therefore, by diminishing their irrigation, superintendents will reduce NRS as well.

Superintendents need to remember that NRS will develop and infect roots during cool and wet periods, particularly throughout the spring and fall in northern climates. Yet, they usually won't notice its symptoms until summer, when drought stress often occurs.

"If superintendents apply fungicides when symptoms are first seen, they generally have little effect because the fungus may be dormant at that time," Hsiang adds. "If they react faster by applying fungicides sooner, their respective course's NRS will decrease, leading to a healthier turfgrass."

PHOTO COURTESY OF: SYNGENTA

Envu

JESSE BENELLI, PH.D.
Greens solutions specialist

To treat necrotic ring spot (NRS) preventively, superintendents should consider making two applications, usually just after Easter and then again right around Memorial Day weekend, as soil temperatures should be around 60 degrees F by then. They can use any combination that includes DMI fungicides and strobilurin, such as a DMI QoI combination. I suggest spraying and then watering it in immediately. Ignore labels that suggest watering in fungicides within seven days. Instead, superintendents should water in each application quickly as they can — to 1/10 of an inch, to ensure it's down into their soil profile. They can treat their course's NRS when they treat fairy ring, as the timing of each application is similar.

The Andersons

BEN PEASE, PH.D.
Turfgrass agronomist

To prevent NRS fungicide resistance, it's important to have proper fungicide timing and placement. Fungicides need to reach the roots, often requiring irrigation for movement into the root zone. While NRS mostly occurs in cool, wet conditions during the spring or fall, preventing drought stress and core aeration to reduce thatch may decrease disease development. Furthermore, it will increase the likelihood the fungicide reaches the root zone. To diminish NRS, superintendents can rotate fungicide chemistries and application techniques (spray or granular). They can also easily use granular fungicide and fertilizer products on a spot-treatment basis, such as 6-0-12 or 23-3-5 with thiophanate-methyl and iprodione. In addition, fungicide-only granular options are available, such as azoxystrobin with propiconazole.

Prime Source

BRET CORBETT
Product development manager

A root-infecting fungus known as *Ophiosphaerella korrae* causes NRS. Typically not detrimental to Kentucky bluegrass and annual bluegrass, the disease does have a significant impact. Moderate to severe outbreaks will cause unsightly appearances and affect playing surfaces. This is especially true on golf greens with mixed annual bluegrass and creeping bentgrass. For effective fungicide control, superintendents should apply them when environmental conditions favor the pathogen (60 to 70 degrees F). It's important for resistance management to rotate between different active ingredients. Actives that have good activity on NRS include thiophanate-methyl, propiconazole, fenarimol, iprodione, myclobutanil azoxystrobin and propiconazole. To improve fungicide performance, superintendents should consider executing their irrigation after they apply fungicides to ensure the root zone receives them.

Syngenta

LANE TREDWAY, PH.D.
Technical services manager

The risk for fungicide resistance to occur in the NRS pathogen is very low. There has never been a documented case of fungicide resistance in NRS or similar diseases like spring dead spot, summer patch or take-all patch. To reduce the risks even further, superintendents can incorporate QoI and DMI fungicides into their preventive programs while using rotations, tank mixtures or premix products, including these modes of action. If these chemistries fail to provide acceptable control, superintendents should submit a sample to a diagnostic lab for confirmation that NRS is the primary culprit. For more information on NRS, please visit pages 86 and 87 of the recently updated *Compendium of Turfgrass Diseases, Fourth Edition.*

"Looking further back in time ... few, if any, golf course pests existed and links courses in the United Kingdom were essentially the exclusive hosts of golf on the planet."

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

A closer look at the evolution of pesticides

Spring is a time of considerable agronomic activity that corresponds with the general population's interest in their own landscapes. At this time, the most common question I get as I walk through my neighborhood — besides what is wrong with my lawn — is about pesticides.

The popularity of this question seems to ebb and flow, ranging from real concerns throughout the 1990s to a much lesser extent now. Elsewhere in the world, however, banning pesticides, especially on golf courses, has either occurred or grown in Europe and South America.

One of the more popular comments directed toward me is, "Why do we use more pesticides now than we used to?" To answer that question broadly, I agree that we are using more pesticides than we used to. Although the phrase more than we used to is a little too vague.

GOLF'S FIRST PEST

In the early to mid-19th century, few, if any, golf course pests existed and links courses in the United Kingdom were essentially the exclusive hosts of the game on the planet.

At the time, the location and climate were ideal for that rudimentary version of golf. In the early 1850s, as course construction became more popular inland, golf went through its first major boom. With those new courses came new struggles, as poor-draining clay soils brought along earthworms.

Earthworm infestations, and the resulting earthworm casts, made putting greens unplayable for most of the year. As a result, golf failed miserably, with earthworms being a major contributor.

One could argue that earthworms were the first golf course pest.

During this period, however, scientists identified compounds to act as both an irritant for earthworms, causing them to emerge at the surface where they could be physically removed by workers, or a toxin.

A BROADER SPECTRUM

Pesticides developed or used from the early 1900s to 1960s were primarily inorganic materials known for being toxic to many things — humans included — such as arsenic, cadmium, copper, lead, mercury, nicotine and sulfur.

Additionally, these products were nonbiodegradable, applied at high rates and many had broad-spectrum uses. In this case, the term broad spectrum takes on a different meaning than what we would use in modern times.

For example, Paris green, a copper-based arsenate product developed in 1814 by two German scientists, was once used to kill rats in Paris sewers. By the 1880s, it was the most widely-used insecticide in the world. Later in 1945, Italy used the product to control the spread of malaria.

CONTINUED DEVELOPMENT

Since the 1960s, scientists have developed lower-risk biodegradable pesticides characterized by short residuals, low application rates and targeted specific pests. Due to the development of these newer pesticides, many older inorganic herbicides have seen a drastic drop in use.

In the 1980s, the Environmental Protection Agency (EPA) banned arsenates like lead and others. Years later, in the '90s, the EPA banned the last mercury-based product Calo-Clor, traditionally used for snow mold.

Looking back to when some say we used fewer pesticides than we do now provides a perspective of how much pesticides have evolved. We need to quantify the use of new, lower environmental risk products within a pest control program. Maybe developing a score that reflects the risk of your program can justify its use.

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

How one super is blazing a trail with bermudagrass mite management

Yellow declining turf might be a sign of stress, or it might be something more sinister

By Christina Herrick

As you're scouting your course, you notice an area of general decline. The turf is yellow and weak. You look at it and think it's stress and move on.

But Craig Weyandt, superintendent at The Moorings at Hawks Nest in Vero Beach, Fla., says superintendents, especially in the Southeast, shouldn't be so quick to dismiss the warning signs of something more devastating — bermudagrass mites.

As the name indicates, these microscopic pests — also known as bermudagrass stunt mites — suck plant sap from bermudagrass varieties. The damage stunts the growth of the stems, causing the leaf sheaths to swell and cause a witch's broom effect.

"It'll start off as an area of general decline," he says. "(The turf) is weak, kind of yellow. You've really got to look down at the leaf blades to notice the mutation."

He says symptoms tend to show when daytime temperatures range between 65 to 80 degrees F.

Declining turf is a sign of stress, but it's also a sign of bermudagrass mites. A telltale sign of bermudagrass mite damage is the stunted growth of turfgrass.

PHOTOS BY: CRAIG WEYANDT

BLOWING UP

Weyandt surveyed a patch of weak and thin turf in the spring of 2013.

"When I went down and looked at it, I could see this mutated witch's broom appearance to the grass," he says. "I told my assistant, 'These are stump mites,' ... and he is like, 'no way.'"

Weyandt's assistant superintendent hooked up a coin microscope to his computer to look at some samples. Sure enough, the assistant and Weyandt saw little round eggs in the turf.

Weyandt says he tried to manage the spread of bermudagrass stunt mites by mowing infected areas last and disinfecting equipment. The challenge to controlling the mites is the pest's short life cycle and how easily it spreads.

"These mites can be spread by equipment, they can be spread by foot traffic, they can be spread by golf cart traffic," he says.

Weyandt estimates bermudagrass mite eggs can go from an egg in a leaf sheath to adult in 5 to 10 days.

"Even if you kill an adult, you may not have killed an egg. Then, a week or two later, you're going to have a whole 'nother hatch," he says.

Weyandt says he's watched bermudagrass mites rip through the Southeast at blazing speeds.

"I can find them on every hole of the two golf courses that the Moorings Club owns. I can go over to friends' golf courses that don't think they have them and find them," he says. "Conditions have gotten worse, and we've watched it progress throughout the Southeast."

CONTROL METHODS

Weyandt says control methods are a work in progress. Scalping the turf, removing the leaf blade clippings and disposing of the clippings is one option he learned about in turf school.

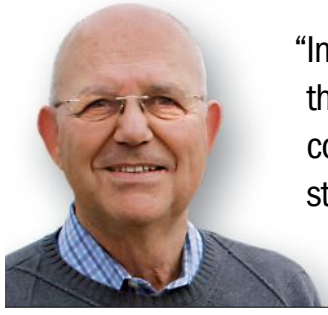
"Ideally, you're collecting the insect in all stages of life and removing it from the host," he says. "That's really not realistic. If you're talking about something that you've got on 40 acres, what would I do with 40 acres of grass clippings?"

Fraise mowing is another popular cultural control, he says. While some products have a label for mites, Weyandt says there's a lack of information about best application times and rates and whether or not to use a wetting agent.

"I've had manufacturers say that they seem to be getting the best control in the fall, but I don't have visible stunt mites in the fall, so how do I know where to treat it," he asks. "Nobody wants to blanket applications of insecticides and have it wasted. We're blazing a trail as we go along."

To assist supers in diagnosing and treating damaged turf, the University of Florida created the bermudagrass mite discussion forum on Facebook.

Weyandt says he's seen promise with a spirotetramat, an insecticide, which seems to help with turf recovery.



"In 2002, researchers conceded they couldn't maintain acceptable conditions for nonchemical and standard cultural greens."

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

A course without pesticides?

In the 1980s and '90s, several communities demanded golf courses use fewer or no pesticides. Yet golf course superintendents faced with constraints on the use of pesticides had little information on how to maintain acceptable playing conditions.

Those advocating for pesticide restrictions weren't aware of the costs associated with implementing the policies and the resulting impacts on golf turf performance.

For those reasons, Frank Rossi, Ph.D., and Jennifer Grant, Ph.D., at Cornell University, designed a project to investigate the feasibility and performance of putting green turf managed using integrated pest management (IPM) systems or no chemical pesticides.

Rossi and Grant conducted research at Bethpage State Park on the Green Course in Farmingdale, N.Y. This course accommodated approximately 50,000 rounds annually with heavily topdressed push-up soil greens six years before the project.

The research duo used 18 putting greens to design a 3-by-2 factorial, with three pest management and two cultural management regiments.

Pest-management greens received one of three regiments:

❶ **Unrestricted:** All legal chemical pesticides in New York were available for use.

❷ **IPM:** Practices determined by the specific needs of each green, based on scouting information, action thresholds (when feasible) and site history. While this regiment allowed for pesticide applications, researchers emphasized biological approaches.

❸ **Nonchemical:** This regiment did not allow for EPA-registered pesticides. Researchers emphasized biological approaches to prevent and minimize problems.

Cultural-management greens received one of the following regiments:

❶ **Standard:** The standard cultural practices employed at the Bethpage State Park golf courses.

❷ **Alternative:** A modified version of standard practices to reduce turfgrass stress and minimize pest problems while maintaining minimum performance standards (quality ratings above six on the NTEP rating scale).

THE RESULTS

This on-course research on putting greens taught us an important lesson. First, IPM greens received 27 to 46 percent fewer pesticide applications than standard, unrestricted pest-management greens.

Dollar spot was the predominant pest problem in all years, but incidence and severity dropped in 2002 and 2003. On the other hand, *Rhizoctonia* incidence was higher in 2002 and 2003 than in 2001.

After the first season, the team lost nonchemical greens that received alternative cultural practices. Researchers resodded those plots with 9-month-old velvet bentgrass (SR 7200).

In 2002, researchers conceded they could not maintain acceptable conditions for nonchemical and standard cultural greens.

Therefore, those three greens received alternative cultural practices comparing traditional *Poa*/bentgrass greens and velvet bentgrass greens with nonchemical pest management.

Velvet bentgrass greens outperformed *Poa annua*/bentgrass greens without pesticides for most of 2002 and parts of 2003. Nonchemical *Poa*/bentgrass greens were marginally acceptable or below acceptable quality during much of July, August and sometimes early September.

In 2002, alternative greens performed better than standard cultural greens in all treatments. They used fewer pesticides to maintain alternative greens than the IPM and nonchemical strategies.

However, this did not occur in other years with higher disease pressure. Nonchemical standard greens needed an emergency chemical fungicide application in 2002 and several in 2003.

The study shows a nonchemical putting green program for creeping bentgrass greens was not practical at the time of the research. At best, implementing an IPM program and adjusting cultural practices could reduce pesticide use compared to a calendar-based program. G

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

Resource

Grant, Jennifer A.; Rossi, Frank S. 2004. Evaluation of reduced chemical management systems for putting green turf. USGA Turfgrass and Environmental Research Online. February 15. 3(4): p. [1-15].

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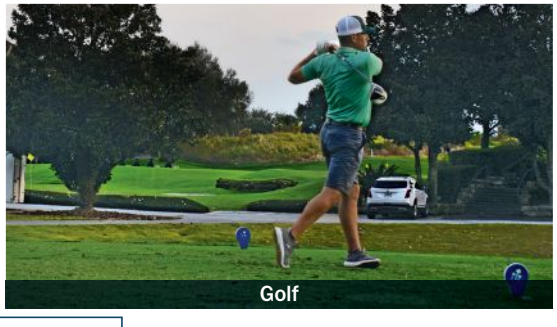
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Deere.com

2 Anuew PGR

NUFARM's Anuew Plant Growth Regulator provides superintendents with improved turf appearance, faster suppression and more uniform bermudagrass appearance. A class A, late-stage PGR, Anuew is foliar absorbed and can be used to manage growth while improving quality, density and appearance on greens, tees and fairways of both cool- and warm-season turfgrass. Anuew also offers *Poa* seedhead suppression, improved mixed grass collar management and fairway growth flush management.

Nufarm.com/USTurf

3 DPB-2500

Part of **ECHO**'s eForce 56-volt battery system, the DPB-2500 offers superintendents a quiet, lightweight and powerful blower. The handheld tool can blow up to 549 cubic feet per minute at 158 mph. When using the 5.0 Ah-battery, the DPB-2500 can run up to 180 minutes and comes with a two-year commercial and five-year consumer warranty.

Echo-USA.com

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4 SP0070 sunglasses

Building on the framework of the **ADIDAS** sport eyewear collection, the SP0070 helps superintendents focus on the course while providing better clarity. An impact-resistant and lightweight TR90 frame, alongside Kolor Up technology applied to the scratch-resistant lenses, enhances colors while maintaining a high level of sun protection. These frames also offer a 12-hole ventilation system, security block hinges and a four-position adjustable nose pad.

Adidas.com

5 Primo Maxx

Primo Maxx plant growth regulator from **SYNGENTA** helps superintendents produce denser, healthier turf with fewer clippings. In conjunction with Primo's 30th anniversary, Syngenta surveyed superintendents who gave Primo Maxx 4.5 stars out of 5. The survey found the top uses of Primo Maxx include reducing clippings, improving turf color and quality and saving on labor costs.

GreenCastOnline.com

6 550 XP Mark II chainsaw

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Husqvarna.com

The 19th Hole

Glen MacDonald

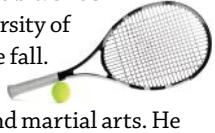
SUPERINTENDENT // Cripple Creek G&CC, Dagsboro, Del.

Glen, what can I get you? An aged Grand Marnier — something to sip on — with a glass of water.

Tell me about Cripple Creek. The course was built in 1984. We sit on 145 acres. We have a few holes on the Indian River Bay. Being by the ocean, we have a lot of members who use this as their second club. Even though they're Dr. Jones back in D.C. and Baltimore, they come here and want to just be Mark.

What happens with coastal flooding there? As beautiful as the 90-acre salt marsh is, we get a flood on seven holes once a year. Usually, the greens and tees are good. The marsh grass comes up about 12 feet wide and 18 inches tall. It gets so bad that we'll push it off the fairways and take 30-plus trailers to our compost area. It's a chore and we have to shut down for a couple of days.

Tell me about your family. My wife Megan inspired me to go to turf school. We've been together since high school. I coach my daughter Mya's tennis team. She challenged me yesterday. She said 'I think I got you, old man.' I showed her I still got it, a little bit. She's heading to the University of South Carolina in the fall. My son Jack is 14, he's into wrestling and martial arts. He started working for me on the crew this last summer.



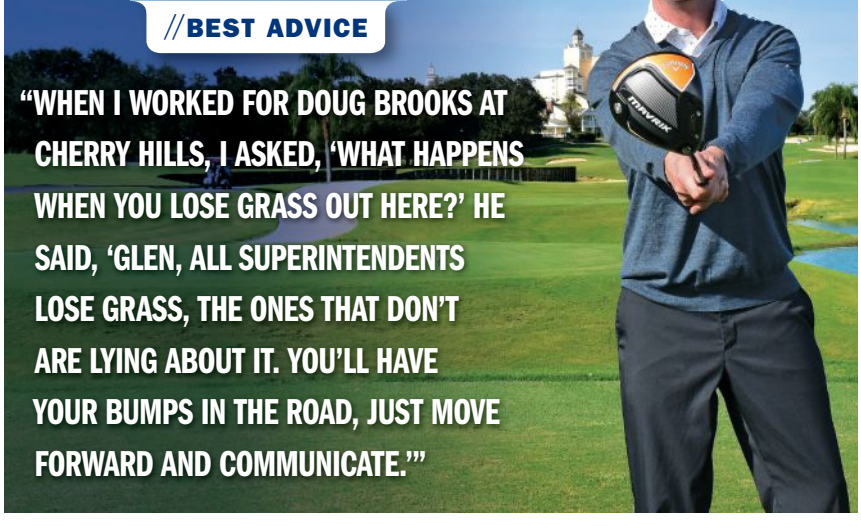
What was your highlight of the GCSAA Show? After that long day at the trade show, I think seeing you and your team by the poolside bar would be in my top five. It's also good to see the guys I went to Penn State with or worked with in Colorado or Illinois. There's a good group of guys from around here as well.

Do you have a most memorable day at work? My first day at work here. I've worked at all different levels around the country, but the warm welcome I got here, not just for me but also for my family, stands out.

What are your sports teams? Being from Detroit, there's not much to cheer for in football. I've morphed from a Detroit guy to a Philly guy. I did take my son to Detroit recently, we caught a Phillies game on Friday, the Tigers on Saturday then the Lions' opening day on Sunday.

If you were a guest on a sports talk show, what argument would you be ready to fight for? I picked up something interesting at the *Golfdom* Summit. There are no superintendents in the World Golf Hall of Fame. There's room for a superintendent in there. Maybe not Glen MacDonald, but there's room for some of the guys creating these great conditions. I would definitely go to bat for that.

As interviewed by Seth Jones, March 10, 2023.



//BEST ADVICE

"WHEN I WORKED FOR DOUG BROOKS AT CHERRY HILLS, I ASKED, 'WHAT HAPPENS WHEN YOU LOSE GRASS OUT HERE?' HE SAID, 'GLEN, ALL SUPERINTENDENTS LOSE GRASS, THE ONES THAT DON'T ARE LYING ABOUT IT. YOU'LL HAVE YOUR BUMPS IN THE ROAD, JUST MOVE FORWARD AND COMMUNICATE.'"

PHOTO OF GLEN BY: *GOLFDOM* STAFF; WIKI COMMONS (PENN STATE NITTANY LION); GETTY IMAGES / ISTOCK-GETTY IMAGES PLUS / JIM_PINTAR (DRINK); LIUDMILA CHERNETSKA (WATER, TENNIS RACKET)

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