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Golfdom Summit 2024 RECAP

Biggest — and best? — Summit ever

This *Golfdom* Summit had it all
— the most partners, more
superintendents, even
a hole-in-one

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The Players is coming

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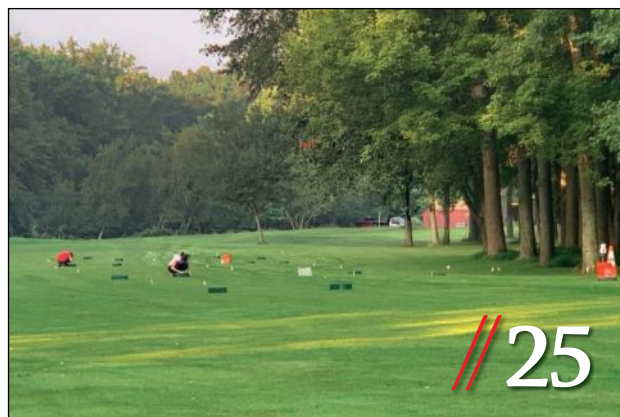
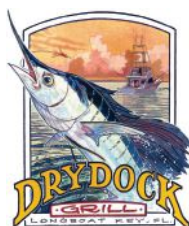
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“As ice and then 12 inches of snow smacked northeast Kansas, I was smacking a 3-wood down the fairway at Longboat Key Club ...”

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

“We should take a golf trip!”

I was at a holiday party when I found myself at the corner of the downstairs bar with my wife, my group of friends and their wives. One of the guys set down his drink and made a proclamation, “In 2025, we should take a golf trip together!”

By then, the bourbon was flowing, and I was incapable of inner dialogue. I blurted out, “Golf trip? When you have my job, that’s called a ‘work trip.’”

When one of the wives scowled at me, I realized I just dashed someone’s idea of a good time. So, I followed up with, “Or, you could always just come with me to the U.S. Open or the Masters because you know I’m going to those.”

Apparently, that wasn’t a great follow-up either.

Just a few days later, I was again reminded how lucky I am to be in the golf business. The Palm Beach GCSA invited me to speak at their chapter meeting. A big snowstorm was heading toward the Midwest, and Southwest Airlines offered to move my flight to

Florida up a day to beat the storm. I got the green light from my wife — I love my wife — then headed out.

As ice and then 12 inches of snow smacked northeast Kansas, I was smacking a 3-wood down the fairway (OK, sometimes fairway, sometimes elsewhere) at Longboat Key Club (see my 19th Hole interview with Longboat Key’s Bob Coffey in this issue). That trip was one for the record books as I got in 45 holes in three days, saw some incredible projects that we’ll feature in future issues and maybe even upset a LIV golfer when I hit a shot from near his backyard (probably should’ve picked that one up).

So, this is just that annual reminder that while I know you all work like hell, espe-

cially during the peak season, this industry comes with some great perks — like free admission to the Masters for you Class A GCSAA members. Take advantage when you can. Because the busy season is coming ...

On to a few bullets:

- Following up on that above note, this issue features the first story in a series — sponsored by our friends at Quali-Pro — on superintendents hosting professional tournaments. In this issue, we’re spotlighting the work done recently at TPC Sawgrass, host of the Players Championship. The sponsorship will continue in the Tour Guide issue, which will be out soon, and will also spill over into in-person events at several tournaments — includ-

ing the Players, the Masters and the U.S. Open, among others. Keep your eyes peeled as we’re hopeful to host a bunch of our readers at these events in 2025.

- Welcome to the team Will Coughlin, *Golfdom*’s new digital media specialist. Will is in charge of all things digital — the website, social media, the e-newsletter, etc. Will is an absolute golf nut, both playing and watching. When I grabbed a drink with him recently, the first thing he asked me was, “Did you watch The Match?” The kid is eager to talk golf with you all, and I’m a little worried he’s also prepared to take my money in our fantasy golf pool.

- I was sad to hear of the passing of my favorite dog of turf, Pinki, who was the loyal sidekick to my friend Damon Di Giorgio at Point Hardy GC in St. Lucia. I told Damon that Pinki might have been the most famous dog in the industry — she was once featured in the *New York Times*, after all. In her 17 years of being by Damon’s side, the Chihuahua-Yorkshire mix became friends with then-Vice President Joe Biden and was also a regular cart mate of Rickie Fowler and his wife. Pinki also did volunteer work when she’d visit hospitals to cheer up folks battling Alzheimer’s and other diseases. Cheers to Pinki — she was a good dog. 🐶

Email Jones at:
sjones@northcoastmedia.net.

Starter

NEWS, NOTES AND QUOTES



// WHERE IN THE WORLD IS CARMEN MAGRO?



Magro at Robert Trent Jones GC during the 2024 Solheim Cup, where he helped the crew monitor greens during the tournament.

MAGRO MAKES A MOVE

Longtime turf professional starts new company, PURE Insight

BY SETH JONES // Editor-in-Chief

➔ Carmen Magro, CGCS, Ph.D., has been in the turf industry for three decades — from his start at Whitmarsh Valley CC in Lafayette Hill, Pa., and later as a superintendent at Bidermann GC in Wilmington, Del., to most recently, inspiring the POGO TurfPro system (Stevens Water Monitoring Systems) where he spent 11 years.

Now, Magro has made the jump to a new company: PURE Insight. As president and CEO of the company, Magro and his international team will offer agronomic consultation, a new tool for monitoring conditions (available sometime this year) and a line of biologically

enhanced nutrition products.

“I only want to work with the best and create a company that provides services and tools I believe superintendents really need,” Magro told *Golfdom*. “I’m speaking at (the British Turfgrass Management Expo) next week, and at the GCSAA Conference in February, discussing everything monitoring and advanced irrigation practices. I’ve learned from many, and I’m on a vendetta to share this education with the world.”

PURE Insight is dedicated to gathering insight, analyzing complex conditions and delivering solutions to

Continued on page 5

// TOP OF THE MOUNTAIN

BOBBY JONES GC NAMED COURSE OF THE YEAR

Bobby Jones Golf Course, managed by Bobby Jones Links (BJL), a client-centric, boutique management company in the golf industry, saw the Atlanta, Ga., course be selected as the 2025 Jemsek National Course of the Year.

Regional winners were chosen from the East, Midwest, South and West sections of the United States. Bobby Jones Golf Course was named South Region Course of the Year, and from these regional winners, the NGCOA Board of Directors chose the acclaimed Georgia property as the 2025 Jemsek National Course of the Year.

The NGCOA’s Jemsek National Course of the Year Award recognizes a facility that epitomizes exceptional course quality, shows management excellence, makes important contributions to its communities and the game and is a model of operations to its peers.

// ACROSS THE BORDER

AQUATROLS CO. ADDS TERRITORY MANAGER

The Aquatrols Company recently added Josey Groeneveld to the North American Sales Team. In his new role as Territory



Josey Groeneveld

Manager for Western Canada and the Pacific Northwest, Groeneveld will work closely with The Aquatrols Company’s distribution network to support the needs of existing customers and help

identify new opportunities for growth.

Most recently, with Bayer/Envu for more than seven years as Territory Sales Manager for Western Canada, Groeneveld brings significant agronomic knowledge as well as a deep understanding of the particular needs of customers located in this geography, according to the company.

“Josey’s wealth of experience and customer-focused attitude make him a great asset for both our customers and distributors, and he will be an excellent addition to the Aquatrols team,” said Wes Hamm, director of North American sales.

PHOTO BY: WELGLAD / ISTOCK-GETTY IMAGES PLUS / GETTY IMAGES (GOLFBALL); COURTESY OF: CARMEN MAGRO

// PEACH STATE CREW

Georgia GCSA names Super of the Year, new prez at awards banquet

➔ The Georgia Golf Course Superintendents Association (GCSA) selected James Drinkard, golf course superintendent at Athens (Ga.) Country Club, as its Superintendent of the Year.

“If you love what you’re doing and you love where you’re doing it, well, you’ve really got something,” Drinkard said of his time at the club, which is home to 27 holes designed by Donald Ross.

Drinkard credits his mentor and eventual father-in-law, Buzz Howell, longtime colleagues Bill Hunt and Chris Thornton and an army of turfgrass students from the nearby University of Georgia.

Drinkard’s award was presented in partnership with Corbin Turf and Ornamental Supply at the Georgia GCSA’s annual awards banquet at The King and Prince Beach and Golf Resort on St. Simons Island. He also received a special pin on the night to mark 40 years of association membership.

In other news at the event, the association celebrated Tenia Workman’s, executive director of the Georgia GCSA, final formal duty. Workman retired after 22 years helping lead the association. In February 2024, Workman was honored with the Outstanding Contribution Award from the GCSAA.

Georgia GCSA members also elected Brandon Hayes from Reynolds Lake

Georgia GCSA Superintendent of the Year, James Drinkard, center, with mentor, Buzz Howell, and wife, Lynnly.



Oconee – Great Waters in Greensboro, Ga., as president. Hayes will work closely with Tim Busek, who in turn is replacing Workman as executive director. Busek was formerly golf course superintendent at St Ives Country Club in Johns Creek.

Members also elected Brad Tremmier from RiverPines Golf in Johns Creek, Ga., as vice president and Scott Slemple from Piedmont Driving Club in Atlanta, Ga., as secretary-treasurer.

Continued from page 4

supers, sports field managers and agricultural entities globally. Superintendents can connect with Magro through his new website, [GetPureInsight.com](https://getpureinsight.com).

“I’ve learned a lot from superintendents, sports field managers and farm-

ers over the last couple of decades,” Magro says. “I feel it’s time that we can bring together a company that offers something truly unique to the industry. I’m willing to invest everything I have into this because it’s been a vision of mine for a very long time.”

// IN MEMORIAM

MARK HOLLINGER, ASGCA, DIES AT 70

Mark Hollinger, ASGCA, died Dec. 24, 2024, near his home in Winter Garden, Fla. He was 70 years old.

A native of Pennsylvania and raised in Warner Robins, Ga., Hollinger earned a bachelor’s degree in landscape architecture from the University of Georgia and practiced landscape architecture, resort development and planning for 13 years on Hilton Head Island, S.C. At Hilton Head, Hollinger developed an interest in golf architecture, and he went to work with Willard Byrd & Associates in 1986 before joining JMP Golf Design Group in 1990.

Hollinger served as a partner and principal at JMP, serving clients in the United States and internationally. With JMP, he focused on environmental responsibility and designs that respond to site conditions and existing landforms. The firm became known for creating extraordinarily beautiful courses that featured strategic design principles.



Mark Hollinger

// WITH A CAPITAL T

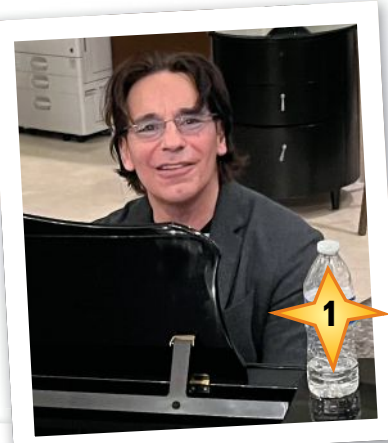
TURFGRASS GETS OUTSIDE INVESTMENT FROM 54

54, a global sports and entertainment agency, started a strategic investment in Turfgrass, an international golf course development company.

This collaboration aims to integrate 54’s experience in strategic planning, advisory services and operational solutions with Turfgrass’ track record in delivering end-to-end golf course development and agronomic consulting services to some of the best-known venues in the sport.

According to the company, the collaboration aims to provide the industry with a more comprehensive offering than currently available in the market, combining 54’s aptitude for strategic development and business planning with Turfgrass’ understanding of the construction, evolution and management of playing surfaces, creating a turn-key solution for investors and clubs seeking to elevate business performance and return on investment.

Golfdom Summit Edition Gallery



1 He's the Piano Man In all these years of the *Golfdom* Summit, it was finally 2024 when Carmen Magro, CGCS, Ph.D., president and CEO of PURE Insight, saddled up to the Reunion Resort lobby piano and played us a tune.



2 Power meeting Solving some of the world's problems are (left to right) George Kinhead, president, Turfco; Kevin Stoltman, CEO, North Coast Media; Thomas Bolon, superintendent, Lake Forest CC, Hudson, Ohio; and Brian Abels, superintendent, Ames (Iowa) CC.

3 A hole-in-one! Editor-in-chief Seth Jones (left) looks on in shock at the scorecard with the first ever hole-in-one at the *Golfdom* Summit scramble, courtesy of David "DJ" Johnson, executive vice president, Kress. Great shot, DJ!



4 Winner's circle Jones and Jake Goodman (far right), western regional sales manager, *Golfdom*, congratulate the winning golf team of Neil Perez, director of sales, Jacobsen; Ron Pote, owner, NanoOxygen Systems; and Jacob Rockhold, CGCS, Stone Canyon GC, Lee's Summit, Mo.



5 Pops with Pops Jeff Eldridge, CGCS, (left) golf segment lead, Nufarm, joins Scott Robbins, director of agronomy, Ptarmigan CC, Fort Collins, Colo., and his son Jack Robbins, director of grounds, Pinehurst CC, Denver.



PHOTOS BY: GOLFDOM STAFF



6 Legend has it Once attendees arrived at the *Golfdom* Summit Legends presentation, it was clear who the new Legend was: Ken Mangum, CGCS (left) with the crew from Kress: Tim Barrier, CGCS, golf business development manager, DJ Johnson and James Brent, golf business development manager.



7 Man of the hour Stuart Bothe (left), director of golf course maintenance, Emerald Dunes Club, West Palm Beach, Fla., and Corey Kimball (right), sales representative, Elite Turf Solutions, were thrilled to congratulate Mangum on his new honor.



8 It's a dry heat This group of desert dwellers were happy to see each other in the Sunshine State: Jeff Lezon, CGCS, Canyon Gate CC, Las Vegas, Patrick Parkins, TPC Las Vegas and Shawn Emerson, Ethos Golf and longtime superintendent at Desert Mountain.

9 Sun's getting real low Cody Sander, superintendent, Drumm Farm GC, Independence, Mo., Rich McIntosh, director of agronomy, Colonial CC, Fort Worth, Texas, Lyndsie Balstad, product manager, PBI-Gordon and Scott Hollister, editor, *Golfdom*, race to beat the sundown during their round on the Palmer Course at Reunion Resort.



The Golfdom

FILES

FROM THE ARCHIVE

In this edition of The *Golfdom* Files, we go back in time to 2009, when Contributing Editor Ron Furlong, longtime superintendent at Avalon Golf Links in Burlington, Wash., gave his wish list of features for mowers in the future. To read the full article, visit Golfdom.com.

I wish I had a mower that could ...

BY RON FURLONG, Contributing Editor

Watching the film *Wall-E* recently with my two daughters got me thinking about future inventions in the area of robotic golf course maintenance equipment (I really need to work on separating work and home life).

Wall-E himself (he's a little trash compactor, for those of you who don't have kids) might be a little rough on turfgrass unless he comes equipped with more turf-friendly tracks. But Eve, the slick, multi-purpose hovering white robot from the movie, could be, with a little tweaking and a few modifications, quite useful on the golf course.

In compiling this list, we should probably assume the technology behind the robot Eve is still a few centuries away. So here's a top-five list of, without going too far out there, the things I think would most benefit the mowing of the "short stuff" on golf courses around the world:

5 Clipping reduction on fairway mowers — I know some clubs are able to basket their fairway clippings, but for many others (my own club included), this is not an option. What we non-basket-catchers are left with is using plant growth regulators, mowing as often as we can and mowing when possible in dry conditions (i.e., in the afternoon as opposed to the morning).

I have yet to see a fairway mower that can produce a clean cut with no

clippings in wet conditions.

4 A more widespread ability to use alternative fuels in our mowers and golf cars — Hydrogen fuel may be the fuel of tomorrow. And tomorrow may be here sooner than we think. The landscape is literally changing before our eyes — and we must adapt to it.

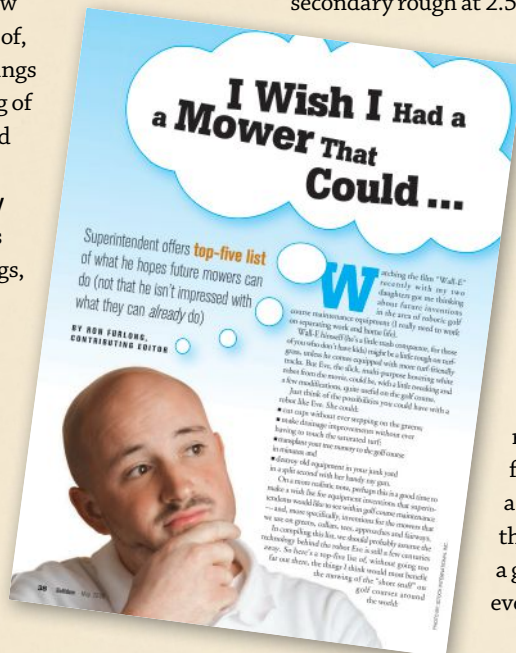
3 Addressing noise and emissions concerns — This is a huge issue already for many golf courses, and it's only going to get worse with new regulations and a changing environment. Mowers, blowers, golf cars and just about

everything golf courses use are going to have to be more environmentally friendly as we push forward. I know great strides have been made in the last 10 years, but they are not going to be enough in the future.

2 More multi-purpose mowers (i.e., the ability to change height of cut on the go) — On a normal summer day, we usually have seven different heights of cut going on simultaneously — greens, collars, approaches and tees (usually the same height), step-cut, surrounds, primary rough and secondary rough. The ability to have a mower that could, with the push of a button, change from one height to another would be quite useful. Obviously, the same mower could not cut the secondary rough at 2.5 inches and turn around and cut the

greens at .115, but some kind of overlap from, say, greens to collars or collars to approaches would be welcome. I know this technology does exist at a certain level, but making it more user-friendly for the operator would be a nice advancement.

1 Thinking mowers — I know this is coming, but wouldn't it be great to have a fairway mower know, for instance, that its own center reel is not cutting as good as the other four reels? Or know that it is about to hit a sprinkler head that didn't go down all the way the night before? Or know when a golfer is standing on the tee behind it, even when the operator is unaware? ☺





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"So, all this hands-on training had to be important, right? Not being afraid to try new things, making mistakes and knowing how far to go would make me a better superintendent. Well, yes and no."

ALAN FITZGERALD, CGCS, MG
Rehoboth Beach (Del.) Country Club

Hiring for skills, not attitude

A while back, a meme popped up on my LinkedIn feed with Simon Sinek's quote: "You don't hire for skills. You hire for attitude; you can always teach skills." I'd seen this before, and my reaction both times was that it sounded great, but it couldn't work because there are many jobs that require skill.

Across the pond, many young greenkeepers start as apprentices, just like I did many years ago. The on-the-job training was accompanied by taking classes for a few weeks a year to learn the technical side, with the work experience being the basis for the practical side. We had a little black book that tracked our progress. As soon as I was competent, my boss signed me off, and I moved on to the next skill I needed.

After phase two, the amount of in-class education became more important as the practical side was completed. From there, I took a slightly different route and went to Penn State rather than attending one of the U.K. colleges — it is Happy Valley, after all!

At Pine Valley, I was fortunate that we had the resources to try new things and that superintendent Rick Christian allowed me to try out new things. I got to do a lot of experimenting and, in doing so, learned what worked, what didn't and how far you could push things. Of course, there were some mistakes, but we learned and just moved on with the recovery.

So, all this hands-on training had to be important, right? Not being afraid to try new things, making mistakes and knowing how far to go would make me a better superintendent. Well, yes and no.

In a recent conversation, someone asked why I had changed jobs after 19 years and why I thought I had gotten this one. Without think-

ing, I answered, "Because I was myself." I joked that I had used George Costanza's philosophy from "Seinfeld." If every instinct he has is wrong, then the opposite must be right.

I used to struggle with interviewing, and it got to the point where I struggled even getting to the interview. Something had to change, so I tried something different. I didn't focus on what I'd done in my career, but I relaxed and was just myself rather than trying to impress myself by acting how I thought I should. It turns out that was the key, at least this time ... or maybe it was just that the stars eventually aligned.

Which brings me back to that meme. While I got the idea behind it, I thought there

are a lot of jobs — like being a superintendent — where you need the proper skills and knowledge to be successful.

Due to the magic of social media algorithms, a few days later, another meme popped up with the same saying on a picture of a pilot sitting in the cockpit reading "Flying For Dummies," reinforcing my thoughts. That was until I mentioned it to a friend, and I was surprised that he immediately said to think about it in another way.

It's important that the person fits in with the team and contributes to a harmonious environment. It balances the team. Of course, the person should have a great attitude, but they still need to be able to learn quickly. Yes, that person might not be able to fly a plane, or in our case, water a green or drive a sprayer when hired, but there is no reason the right person can't be taught once they are, just like my old apprenticeship.

Getting that interview for a superintendent's job means it's already assumed that you can grow grass, and they are just looking for confirmation. More importantly, they're looking at how you will fit into the organization. It turns out what Simon says is right! 🍋

Alan FitzGerald (superintendent@rehobothbeachcc.com) is superintendent at Rehoboth Beach (Del.) Country Club.



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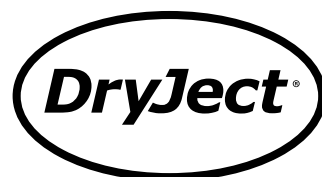
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Biggest — and best?

BY SETH JONES

This *Golfdom* Summit had it all — the most partners, more superintendents, even a hole-in-one!*

(To see who hit the shot, turn to page 6!)

As any superintendent in Florida can attest — see this issue's story on the crew at TPC Sawgrass on page 22 as just one example — the weather there this fall and winter has been particularly challenging. Cool, wet weather and a terrible hurricane season have made the art of maintaining a golf course difficult.

But somehow, when *Golfdom's* group of 100 attendees — including superintendents, industry representatives and the magazine's staff — arrived in Orlando for the 2024 *Golfdom* Summit in mid-December last year, Mother Nature was fully cooperative. Consider this: The only rain the event saw was in the hour before any outdoor activities were to begin. Or, despite the forecast for cold, windy weather, the Legends presentation was still held outdoors by the pool on what was a calm, cool night.

The weatherman whiffed; Mother Nature smiled.

"This was easily the smoothest *Golfdom* Summit we've ever done," said Craig MacGregor, the magazine's publisher. "We had more partners involved in the event than we've ever had before — that could have been a logistical challenge, but it worked out. Even though the event is nearing its teenage years and is well known in the industry, it seems there's a renewed interest in what the event is and what it delivers."

Uncommon camaraderie

What sets the *Golfdom* Summit apart from other industry events is its unique format: Approximately 45 superintendents from around the country are invited each year. About 15 to 20 of the magazine's advertising partners also join in for the opportunity to meet with those superintendents in a intimate, relaxed environment.

The magazine's partners get to deliver a short presentation to the superintendents as a group.

Continued on page 14

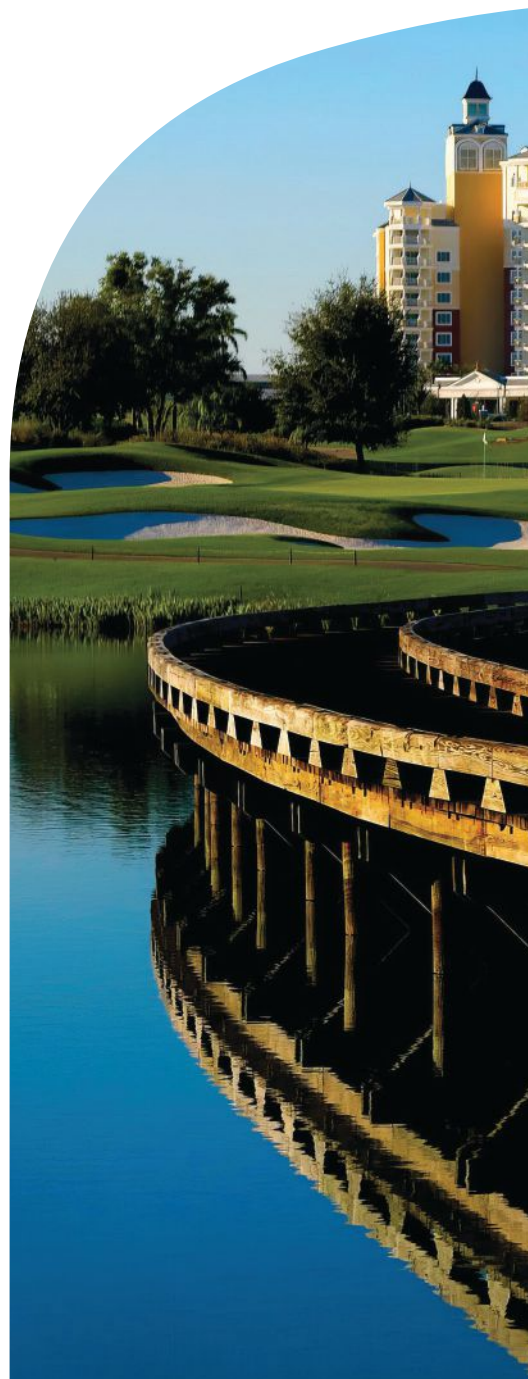


PHOTO COURTESY: REUNION RESORT

— Summit **ever**

A scenic view of a golf course. In the background, a large, multi-story resort building with a central tower and blue accents stands against a clear blue sky. The middle ground features a lush green golf course with sand traps and a small pond. In the foreground, a wooden bridge with a decorative railing spans a body of water. The bridge's structure is made of dark wood, and its reflection is visible in the water below.

“Even though the event is nearing its teenage years and is well known in the industry, it seems there’s a renewed interest in what the event is and what it delivers.”

— Craig MacGregor, Publisher, *Golfdom*



Celebrating the announcement of the new Legend is (left to right) Paul Blodorn, national account manager, Quali-Pro; Dan Hannan, business development manager, Kafka Granite; Scott Hollister, editor, *Golfdom*; Ken Mangum, CGCS; Shawn Emerson, associate, Ethos Club and Leisure; Seth Jones, editor-in-chief, *Golfdom*; and Bryan Borrell, chief strategic officer, Kafka Granite.

Continued from page 12

Following that presentation, they get another opportunity to meet in a smaller setting: two superintendents visit with each partner for no longer than 15 minutes, then move on to the next meeting. And, of course, there's a round of golf followed by a barbecue dinner — another opportunity to network and connect with one another.

Justin Woodland, golf course superintendent at The Barn GC in Ogden, Utah, said that he'd never been at a meeting where such a diverse group of industry professionals were offered so many opportunities to get to know each other.

"The camaraderie (is what stood out)," Woodland said. "I knew of many of these people, but to spend time with them in this type of environment — some formal, some very, very low-key — and then the conversations afterward in the rooms and around the bar ... the camaraderie with the people here is the best."

"The exposure (to other superintendents) is my biggest take-away," said Kyle Moses, superintendent at Tower Tee Golf and Recreation in Festus, Mo. "I've never been in the same room as a director from Pinehurst. I'm always around my local superintendents — who are legends in their own right — but being a part of something like this and not having to ask my club for the money to take the trip? Now I have an entirely new group of people I can ask questions of and rely on."

A new Legend is revealed

One of the most anticipated events of the *Golfdom* Summit is the

unveiling of the new Legend winner. The award, sponsored by Quali-Pro and Kafka Granite, recognizes a superintendent for their lifetime dedication to the craft of greenkeeping and the superintendent community. Previous winners include Ted Horton, CGCS (Pebble Beach); Matt Shaffer (Merion); Bob Farren, CGCS (Pinehurst Resort); Shawn Emerson (Desert Mountain); David Stone (The Honors Course); Tim Hiers, CGCS (White Oak Conservation); and Marsh Benson (Augusta National).

This year's inductee was Ken Mangum, CGCS, longtime superintendent at Atlanta Athletic Club.

"I've known Ken for about 50 years. He is the embodiment of class and professionalism in our industry," Hiers said. "Ken is an innovator and a mentor to many successful superintendents, and his contributions extend well outside the golf community. He is the type of person you'd like to have as a neighbor and a friend. Despite all his success, he has remained humble and grateful to the golf management industry we all love."

Mangum said he was "speechless" when he received a call from Shaffer informing him he was being honored as the newest Legend.

"I am honored to be in that group of guys — I count all of them as friends," Mangum said at the beginning of the hour-long panel discussion. "I've known many of them for years. Tim and I went to the same school. I've had many discussions with Shawn. We all have a lot in common."

Mangum spent 27 years maintaining Atlanta Athletic Club

Continued on page 16

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Continued from page 14

and hosted the 1990 U.S. Women's Open, the 2001 PGA Championship, the 2002 U.S. Junior Championship, the 2011 PGA Championship and the 2014 U.S. Amateur.

He told the audience that when he first joined Atlanta Athletic Club in 1988, he was tasked with hosting the U.S. Women's Open in 18 months — and that was with only nine of the facility's 37 greens playable at the time.

"Some people called me crazy," Mangum laughed, "but I told them I'm just an optimist, because it couldn't get any worse."

Mangum said the key to his success was his determination to always be learning and taking chances on new ways to get the job done.

"My dad told me one time when I was young, he said he didn't care what I did, but make sure to be the best at what I do. That was going to take hard work, it would take being smart and it would take being innovative," Mangum said. "But if you do all those things, you can be the best at something. I took all those things and tried to be the best. I did a lot of things first. I didn't mind being first. I pushed the envelope a lot, because I wanted to be better. I always felt like there's got to be a better way, and I wanted to be better."

Key moments

The 2024 *Golfdom* Summit included 17 partners, the most ever for the event. Here's a key message from each company

Porous Pave

According to Connor Ouwinga, national sales manager for Porous Pave, what sets the company's product apart from others in the industry is its versatility. Ouwinga showcased several different applications, including cart paths, bunker liners, maintenance



(Left to Right) Connor Ouwinga and A. John Harvey, ASGCA, meet with Greg Brandreit, CGCS, Heritage Links Construction and Rob Collins, Paradise Valley CC.

paths, cart staging areas, bunker liners and even bridge decks.

It's also an environmentally friendly product — made from recycled tires — which is important to the company.

"It's high-traction even on steep slopes, reduces the ball bounce by about 73 percent because of its impact absorbance," said Ouwinga. "That's thanks to it being made out of recycled materials like truck tires. We've recycled about 25 million pounds of tires since we started in 2007."

Quali-Pro

Jeff Rampino, Florida territory manager for Quali-Pro, spent time helping superintendents at the 2024 *Golfdom* Summit get further acquainted with Quali-Pro and its parent company, Control Solutions, Inc.



Paul Blodorn (left) and Jeff Rampino (right) of Quali-Pro meet with Brian Dearstine, The Preserve at Eisenhower and James Bryson, Bedens Brook Club.

"We are a very large company, but the nice thing is that we can also be small and nimble to respond to your needs in the field," he said. "We're giving you significant support through our industry support programs with the GCSAA and local associations."

Rampino also highlighted several of Quali-Pro's top products, including Suprado — a *Golfdom* Supers' Choice Award winner in 2022 and 2023 — and some of the company's newest products, like Smokeshow, an herbicide for postemergent weed control in bermudagrass.

Redexim

Redexim territory manager Darren Powers gave *Golfdom* Summit attendees a history lesson on Redexim and a look toward the future of what the company has to offer.

"We help solve problems," he said. "We have equipment that will relieve compaction and promote water infiltration. Our flagship product is the Verti-Drain, a deep tine aerator. We are the first company to create a deep tine aerator."

Powers and Brad Lackey, regional territory manager, also showcased Redexim's overseeders and grooming tools, including the Turf Tidy 3000 and its newest Verti-Drain, the 2519.

PHOTOS BY: GOLFDOM STAFF



Brad Lackey (center), Redexim, walks TJ Winzeler (left), Corte Bella GC, and Matthew Bilson, Promontory Club, through the features of the Verti-Drain.

Jacobsen

Neil Perez, director, sales, noted that his company is backed by a multinational conglomerate — Textron — which makes the company a powerhouse of technology.



Lee Frie, product manager for Jacobsen, chats with Joshua Goodhart, Avalon G&CC, Warren, Ohio.

“The reason that’s important to us and to the industry is we can actually leverage a lot of new technologies and share information and ideas amongst ourselves,” Perez said. “We’re a bit of an engineering firm in that sense. A lot of the products that we’re showing here — a lithium triplex greens mower, a fairway mower that’s all-electric, lithium-based — the technology first successfully debuted in other sectors, and we were able to figure out ways to bring it to the golf industry.”

PBI-Gordon

Brian Aynardi, Ph.D., Northeast research scientist for Kansas

City-based PBI-Gordon, talked about PBI being an employee-owned, niche company focused strictly on the turf and ornamental market.

“We’re focused solely on what you all do,” Aynardi said. “We work with our distribution partners and with you, the end user, to bring trusted, innovative, proven products to the market. Those partnerships also deliver ... educational resources online. We have

Continued on page 18

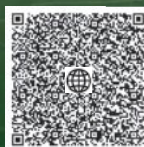


Dwight Staats, Highland Hills GC and Chad Gilkison, The Club at Pradera, meets with the team from PBI-Gordon: Brian Aynardi, Ph.D., Lyndsie Balstad and Dani McFadden, Ph.D.

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Continued from page 17

training modules. We have materials that you can go for on each product to read more about them, such as BMPs for managing certain types of weeds. We also offer business support through our partners. We have technical expertise both through our tech service team ... and customer support.”

Nufarm

Chris Fronczek, golf market manager for Nufarm, featured several of the company’s products he described as industry leaders but said the company takes special pride in its support of the industry.

“We’ve got a lot going on regarding new products in this coming year and years to come. But something we’re equally proud of is our support of the industry. We’ve been a GCSSA Gold Partner for many years. We’re RISE (Responsible Industry for a Sound Environment) board members. We support the National Association of Landscape Professionals. And two that are near and dear to



Jeff Eldridge, CGCS, (right) golf segment lead, Nufarm, chats with Jack Robbins (left), director of grounds, Pinehurst CC, Denver and Scott Robbins, director of agronomy, Ptarmigan CC, Fort Collins, Colo.

my heart are Project EverGreen and their Green Care for Troops program, which we’re presenting partners ... and the EXCEL Leadership Program. All those things are really important to us.”

Sipcam Agro

Product development manager Michael Prudhomme recapped the company’s 2024 with a highlight on their new facility in Waynesboro, Miss., that produces postemergent and preemergent herbicides. From this new facility, Sipcam also plans to release its new patented herbicide, Linchpin, in 2025, offering another postemergent solution for broadleaf weeds and more.

“The primary (herbicide) we’re excited about is Linchpin. It’ll be coming out in the first quarter of 2025,” Prudhomme said. “It’s a sedge, kyllinga/crabgrass and some broadleaf postemergent-type product.”

Kress

Tim Barrier, CGCS-retired, mentioned he’d been invited to the *Golfdom Summit* during his days as a superintendent but could never make the time to attend. He was excited to finally be at the event, now as the golf business development manager for Kress.



Joshua Goodhart, Avalon G&CC, listens as Tim Barrier, CGCS-retired, Kress, talks about the benefits of robotic mowing.

“We’re a global leader in robotic mowing ... and as you all probably know, robotics is really starting to make a push in the United States. There are a lot of things to like about the technology ... but the cut quality you’re going to see is one of the greatest things that we hear about Kress technology,” Barrier said. “I have superintendents tell me all the time that they don’t care what it saves, they don’t care about the labor. But they do care that their golf course is in better condition and it’s noticeable to the golfers out there.”

Steel Green Manufacturing

Spreader/sprayers were the name of the game for Steel Green Manufacturing, and sales representative Caleb Myers featured several of these tools at the *Golfdom Summit*.

Starting with the SG52 with a 230-gallon tank, Myers went down the line to smaller machines, such as their award-winning SG46 — the highest liquid capacity machine that can fit through a 4-foot gate.

“(The SG46) in particular has won us a lot of awards. It really started gaining traction,” Myers said.



Caleb Myers, sales representative, Steel Green Manufacturing, shows Scott Bower, Martis Camp Club, Truckee, Calif., the company’s ride-on spreader/sprayer.

PHOTOS BY: GOLFDOM STAFF

The Andersons

Along with featuring their staple of fertilizer and insecticide solutions, The Andersons' *Golfdom* Summit presentation focused on how the company views the current state of the industry. Territory manager Alan Hollen said he expects 2025 to stay relatively flat and similar to 2024, even after some big changes such as the presidential election.

taskTracker

Are you still using a whiteboard to keep track of your labor on the golf course? What about pen and paper?

Jaime Sharp, the founder of taskTracker, used his presentation to discuss why digitizing a job board through programs like taskTracker can make accessing critical data easier, save labor hours, increase efficiency and more.



Jaime Sharp (center, pointing), president, taskTracker, walks Summit attendees through the features of taskTracker.

"Most people who are using a whiteboard, what do you do with that data at the end of the day? You erase it," Sharp said. "That data can be used to power a lot of analytics."

POGO Turf Pro

Carmen Magro, Ph.D., CGCS, is a staple at the *Golfdom* Summit, where he showcases his system for helping superintendents measure moisture on their golf courses. Magro is a strong proponent of knowing not only what you're measuring but also why you're doing it and how it helps you make the right decisions.

"Imagine if a doctor took one test and said, 'Oh my God, we have to go into heart surgery because of what this test said,'" Magro said. "Then, they find out later that this person has been an athlete their whole life, and those elevated numbers are normal. That's what monitoring is all about. You need to understand what that number means and put it into perspective."

Turfco

Scott Kinhead, executive vice president of Turfco — a 100-plus-year-old family-owned company based in Blaine, Minn. — stressed the importance of precision to the group of superintendents, especially on practices like topdressing greens.



Brian Dearstine, The Preserve at Eisenhower, Crownsville, Md., listens as Scott Kinhead, executive vice president, Turfco, shows the features of the T5000 spreader/sprayer.

"When you have to overlap to get your spreads even (on greens), four extra passes could be an extra 72 passes for a turning topdresser," Kinhead said. "If you're topdressing 10 times, that could be 360 to 720 extra passes per year. If you're in the South and topdressing 20 times a year, we're talking 720 to 1,400 extra passes."

Continued on page 20

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Continued from page 19

Frost Inc.

Ken Rost, CEO of Frost Inc., said he gets it if a superintendent hasn't gotten wrapped up in GPS spraying ... but he also wants them to know that the technology is now proven.

"Sometimes you get wrapped up into all kind of other tasks, and you don't see the forest from the trees," Rost said. "I'll tell you, you're not a guinea pig anymore. The system, since 2012, we've refined it, and it has gotten so easy to use ... anyone can use it. You can see what's been done and have that record of turf management."

NanoOxygen Systems

Ron Pote, owner of NanoOxygen Systems, made his first-ever trip to the Golfdom Summit. He told the superintendents his goal was to incorporate oxygen and ozone into water to make it better for golf courses.



Mike Bugenhagen (left), The Club at Hokulia, and Ron Pote (middle), owner, NanoOxygen Systems, discuss the importance of water quality.

"If you talk to someone who grows plants, they know exactly what their dissolved oxygen is because they measure it all the time," Pote said. "Now, we basically eliminate algae from ponds, and then that water that we treat goes out onto the course with high levels of oxygen. We produce water that has three to four times the rainwater's (oxygen) concentration."

Kafka Granite

Dan Hannan, business development manager for Kafka Granite, discussed the company's history and its product and how a chance encounter with Chris Zugel, CGCS at Whistling Straits, connected with the products use in golf.

"Glen (Kafka, owner) had a contract with Kohler and would crush their waste toilets to reduce their landfill weights," Hannan said. "Chris and Glen worked together to create a pathway mix to recycle that porcelain ... and from there, it's really branched out."



Jim Turner (left), founder, Numerator Technologies, and Taylor Turner, CEO, talk surfactants with Justin Woodland, The Barn GC and Joshua Krane, Glenwild GC.

Numerator Technologies

A specialty chemicals manufacturer, CEO Taylor Turner discussed the challenges the industry currently has with water, including hard water and a lack of water.

"We're a specialized manufacturer of some of the industry's leading soil surfactants in the marketplace... 88 percent of North America's water is hard water," Turner said. "Does your water flow perfectly down? We can offer tailored solutions to provide you with better water movement and better water quality."

Atticus

Another company making its debut at the 2024 Golfdom Summit was Atticus, a chemical company based in Cary, N.C. Rob Golembiewski, Ph.D., and Michael Sorensen were in attendance to talk to the superintendents about the company.

The duo told the attendees that while the chemistry isn't unique, the Atticus experience is. Atticus is a demand-driven manufacturer of battle-tested chemistries, established in 2014. Since Atticus is an independent company, they're able to make decisions at speed, executing each step with discipline in order to get results. For more information on Atticus and a complete list of their products, visit AtticusLLC.com. 



Michael Sorensen and Rob Golembiewski, Ph.D., Atticus, discuss the company's chemistries with Matthew O'Dell, Tapawingo National GC and Joshua Goodhart, Avalon G&CC.

PHOTOS BY: GOLFDOM STAFF

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2024 Partners



THE PLAYERS IS COMING

BY SETH JONES

Work at
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to achieve
perfection
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It's late January, and Jeff Plotts, director of golf course maintenance at TPC Sawgrass, host course of the Players Championship, wishes he had more time. Time to prepare, time to perfect, time to plan.

But as any superintendent knows, time is not on his side.

"It sounds kind of crazy, but the best advice I was given right away in my career was, 'Just circle the date, it's coming regardless,'" Plotts says. "You just need to do the very best you can throughout the process. It just takes timing and planning."

As of late January, the crew in Ponte Vedra Beach, Fla., was keeping a close eye on a difficult weather pattern for the area.

"This has been a prolonged period of cold where we're now seeing some of the bermuda really expressing itself in dormancy, whereas typically that'll stay green throughout and then the overseed comes on," says Lucas Andrews, assistant director of golf course operations at TPC Sawgrass. "I think we've got a good enough base of seed down. We've still got enough time right now. We've been through this before. Every winter is a new learning opportunity for us."

An atypically cool winter combined with hurricanes has Andrews and Plotts and the crew at TPC Sawgrass excited for warmer temperatures to wake up the course, but only Mother Nature can deliver that. For now, the

Continued on page 24

"As soon as the tournament is over, we start to break it down and begin the planning for the next year," Jeff Plotts says.

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“WE’RE BLESSED TO HAVE A GREAT TEAM AND GREAT SUPPORT. IT’S EXCITING HERE. EVERY DAY SINCE OCTOBER WE’RE BUILDING SOMETHING.”

“Our incredible staff of operators have been here a long time,” Lucas Andrews says. “The best thing about this job is the people I get to work with.”

Continued from page 22

crew is focused on controlling what they can control — which is a lot.

What they can control

There are several exciting projects of note that this year’s Players Championship will put on display:

- Trey Rogers III, Ph.D., Michigan State University, has been working on a test green at Sawgrass to explore the benefits of ‘variable depth greens.’ The concept hopes to improve uniformity on greens, regardless of slopes and undulations.

“A typical USGA green has about 12 inches of root zone mix. With undulation, the low areas have a tendency to stay a little more wet,” Plotts says. “We’re adding a deeper root zone mix at the lower portion of the green. On a high spot or a knob, we want to shallow up that root zone mix and have it hold extra moisture. ... But before we commit to anything, I like to test it. We’re testing it on a regular basis to understand how it performs.”

- New this year will be the return of a mighty oak tree near the No. 6 tee box that was lost in 2014.

“That was a pretty epic project in itself,” says Andrews. “The ability to recapture something here that was so iconic is pretty awesome to see.

The results are better than anyone would have expected. We were able to enhance the view around the tee while recapturing the classic shot of this majestic oak tree hanging over the tee and forcing players not to manipulate their shot but to think about it. It’s what Pete Dye was intending on every shot out here; there’s not a single shot you can sleep on out here.”

- As far as pest control, the crew at Sawgrass points to mole crickets as their primary nemesis. They’ve been successful in eliminating them.

“We make our application in the spring. If you time it right, it pretty much lasts throughout the season,” Plotts says. Sawgrass relies on Fipronil 0.1G from Quali-Pro.

“Here in northeast Florida, you turn around for a second, and you’re getting attacked by a pest,” Andrews adds. “Fipronil is an absolute guarantee. It’s nice to lean on a partner like Quali-Pro and know that the product is going to stand up to the challenges that are thrown at us every season of the year.”

Back to school

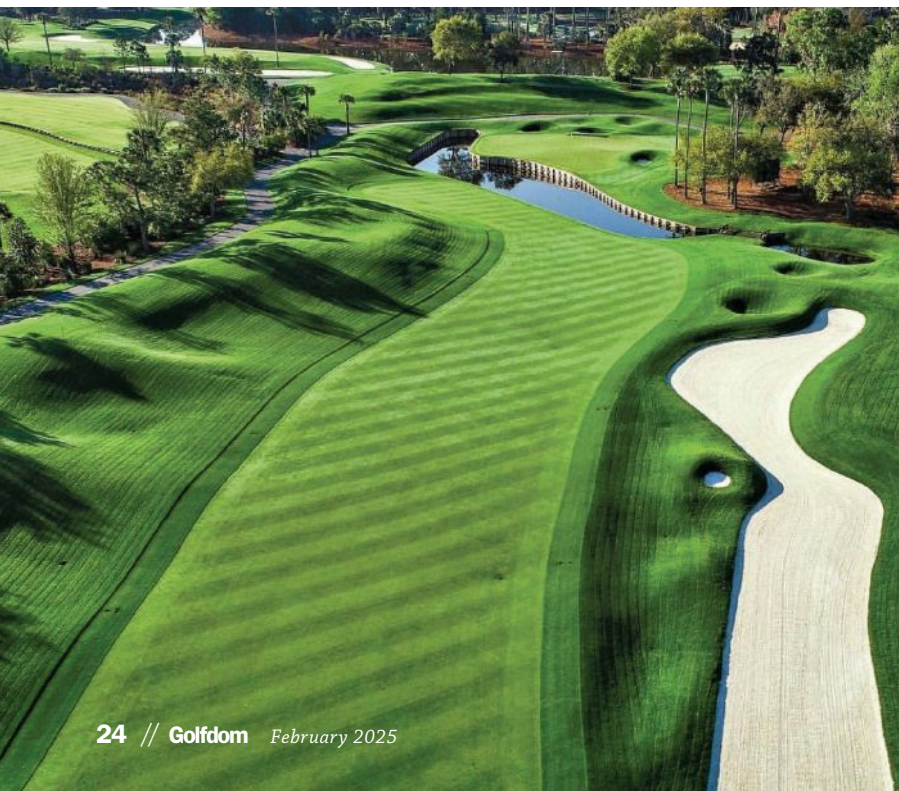
Sawgrass expects another strong volunteer force, featuring superintendents from around the world, to arrive on the Saturday before tournament week. Sawgrass is a massive property, so the crew likes to have the extra day to show volunteers how to get around the course.

And, of course, that volunteer crew supports a regular staff who have been delivering results on The Players for decades.

“We’re blessed to have a great team and great support,” Plotts says. “It’s exciting here. Every day since October we’re building something. You can just see things come together as we’re leading into the tournament.”

Andrews says that in his eight years of working alongside Plotts, he’s seemed to learn something every day.

“There’s not a wasted moment on the golf course that we’re not figuring out how to be better, learning from what we’ve done,” Andrews says. “Everybody knows Jeff is a big Georgia Bulldog. He has a very similar management style to an SEC football coach. I tell people when they get here — you may have been a superintendent elsewhere, but you’re going back to university when you work for Jeff Plotts.” ©





Super Science

// A FRESH APPROACH

EXAMINING NEMATODES AS A FORM OF PEST CONTROL

By Mike Kenna, Ph.D.

Entomopathogenic nematodes (EPNs) can control several important turfgrass insect pests, including white grubs, weevils, cutworms and sod webworms. However, most biopesticide research has focused on releasing many EPN strains that may have lost some of their ability to persist effectively over years of lab maintenance and efficient mass production.

Researchers Albrecht Koppenhöfer, Ph. D., and Ana Luiza Sousa, Ph. D., at Rutgers University, examined the potential of fresh field isolate mixes of endemic EPNs to suppress turfgrass insect pests over multiple years.

The experimental plots straddled fairway and rough on two golf courses in central New Jersey. In early June 2020, they applied isolate mixes from golf courses of the EPNs *Steinernema carpocapsae*, *Heterorhabditis bacteriophora* and their combination to plots.

Populations of EPNs and insect pests were sampled on the fairway and rough side of the plots from just before EPN application until October 2022.

EPN populations increased initially in plots treated with the respective species. *Steinernema carpocapsae* densities stayed high for most of the experiment. *Heterorhabditis bacteriophora* densities decreased after six months and stabilized at lower levels.

They observed a reduction in several insect pests across the entire experimental period. In the fairway, the combination treatment reduced annual bluegrass weevil larvae (59 percent reduction) and adults (74 percent); *S. carpocapsae* reduced only adults (42 percent).

White grubs were reduced by *H. bacteriophora* (67 percent) and the combination (63 percent). Black turfgrass atenius adults were reduced in all EPN treatments (43-62 percent) in rough and fairway.

Sod webworm larvae were reduced by *S. carpocapsae* in the fairway (75 percent) and the rough (100 percent) and by *H. bacteriophora* in the rough (75 percent).

Cutworm larvae were reduced in the fairway by *S. carpocapsae* (88 percent) and the combination (75 percent).

Overall, their observations suggest that inoculative applications of fresh field isolate mixes of endemic EPNs may be a feasible approach to long-term suppression of insect pests in turfgrass, but they may require periodic reapplications. 

Reference

Long-term suppression of turfgrass insect pests with native persistent entomopathogenic nematodes. *Journal of Invertebrate Pathology*. <https://doi.org/10.1016/j.jip.2024.108123>.



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

NEWS UPDATES

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Advanced Turf Solutions and The Aquatrols Co. released a new, co-branded soil surfactant, HydroPak Adapt.

According to the companies, HydroPak Adapt is an infiltration and hydration surfactant designed to help users maximize rainwater and irrigation absorption on their properties while prolonging hydration.

Adapt's formula addresses hydrophobicity and water acceptance in soils during drought periods, helping users conserve water and minimize their labor needs. It allows water to infiltrate fast, reducing the risk of runoff and standing water while creating firmer surfaces.

Adapt is the latest addition to the HydroPak line of soil surfactants, which was created through a collaboration between Advanced Turf Solutions — a green industry distributor serving professionals in the golf, lawn care and sports turf markets — and The Aquatrols Co.

Advanced Turf Solutions customers can begin placing their orders for Adapt immediately by contacting their sales representative.



“PLANT-PARASITIC NEMATODES POSE A SIGNIFICANT RISK TO THE HEALTH AND VISUAL QUALITY OF GOLF PUTTING GREENS.”

Asa McCurdy, Jeff Barizon and G.L. Miller
(see story on page 26)

//DIGGIN' DEEP

Understanding nematode depth and distribution in bentgrass greens

By Asa McCurdy, Jefferson Barizon and G.L. Miller

Plant-parasitic nematodes (PPNs) pose a significant risk to the health and visual quality of golf putting greens. Modified sand-based root zones provide a large pore space environment amenable to nematode movement and population growth, and feeding damage is more quickly realized on golf greens already under intense stress from low mowing and aggressive maintenance practices.

Control of plant-parasitic nematodes (PPNs) on putting greens with nematicides may depend on the seasonal occurrence and depth distribution of target PPN populations. Many nematicide active ingredients have low water solubility and high organic matter affinity, leaving them stuck in the thatch layer (7,21). As a result of this limited soil mobility, control of a target PPN deeper in the soil profile is unlikely.

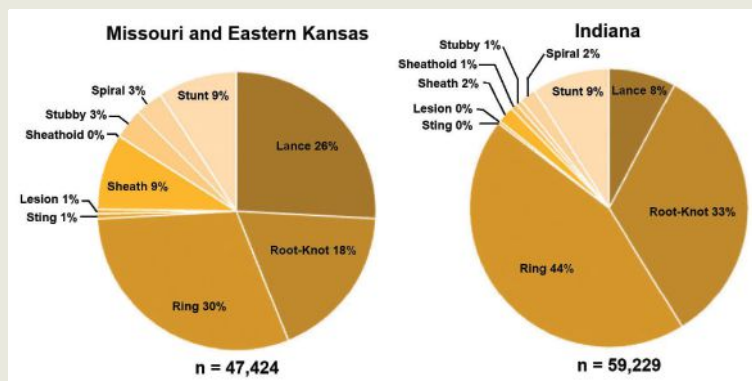
As a further complication, PPN species vary in their lifestyle and can be present outside or inside the root. Determining if and when PPN populations aggregate to a targetable depth may help combat limitations in nematicide efficacy.

This study aimed to determine if plant-parasitic nematode populations on golf course putting greens in Missouri and Indiana peaked at a targetable depth at a specific time in the year, focusing primarily on lance (*Hoplolaimus* spp.) and root-knot (*Meloidogyne* spp.) nematodes.

Root-knot nematodes are the most economically damaging PPN due to their explosive and destructive endoparasitic reproductive process and ability to produce new progeny quickly (24). The morphology of root-knot nematodes is dynamic through their life cycle, with gender-specific characteristics that

FIGURE 1

Plant Parasitic Nematodes



Distribution of plant-parasitic nematode species sampled from creeping bentgrass putting greens in Missouri and Eastern Kansas in 2021 and Indiana in 2022 in two independent pie charts. Samples were collected during April, June, August and October of 2021 and 2022, respectively. The "n" indicates the total PPNs represented within each chart.

TABLE 1

Type III Tests of Fixed Effects for both Missouri and Eastern Kansas in 2021 and Indiana in 2022. Data were analyzed using PROC GLIMMIX in SAS 9.4

Species	Effect	Missouri	Indiana
Lance	Depth	<.0001	<.0001
	Month	.0028	.0003
	Depth x Month	.0487	.4981
Root-Knot	Depth	.0004	<.0001
	Month	.7918	<.0001
	Depth x Month	.9998	.5897
Ring	Depth	<.0001	<.0001
	Month	<.0001	<.0001
	Depth x Month	.0001	<.0001

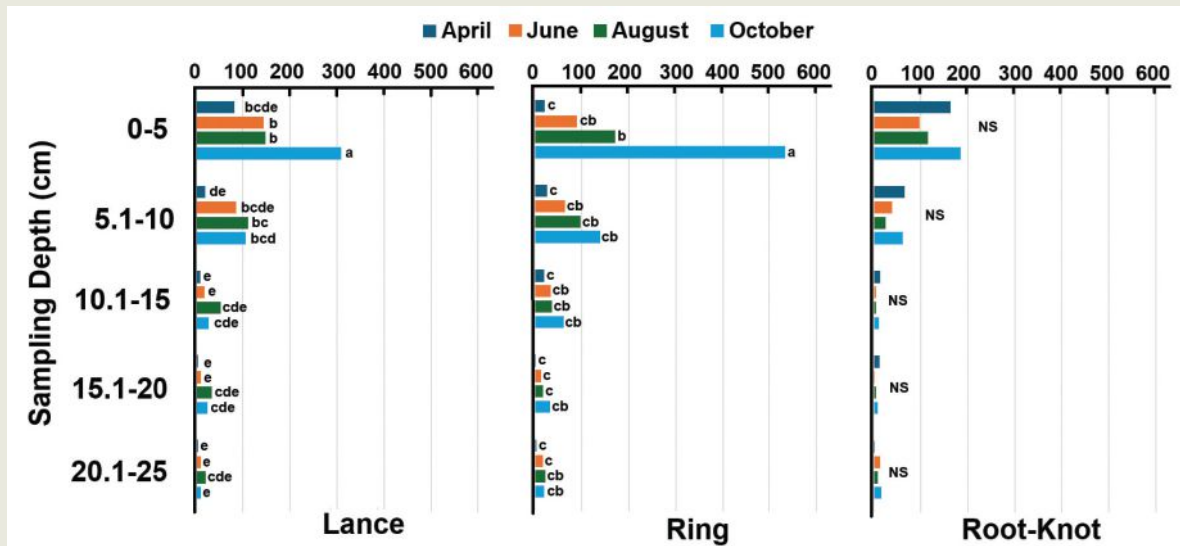
develop after three to eight weeks of plant parasitism (3). However, root-knot nematodes are typically easily recognized due to the large size of females

and host specificity between species (3).

Lance nematodes attack a range of cereal crops and turfgrasses and feed both externally (ectoparasitism)

FIGURE BY G.L. MILLER

FIGURE 2

Mean Nematode Population Density per 100 cm²

Missouri and Eastern Kansas 2021 total lance, ring and root-knot nematode population densities by sampling depth and month with soil samples aggregated (100 cm³). Letters indicate significant differences between sampling depths by month analyzed within that individual species ($P < 0.05$). The "NS" indicates no significant depth-by-month interaction.

and while burrowing through root tissue (endoparasitism) (4,10,17 and 19). *Hoplolaimus galeatus* is the main species of lance nematode reported to parasitize turfgrasses in the United States (8,10 and 19). Alternatively, *H. stephanus* has seldom been reported parasitizing bentgrass outside the East Coast, Georgia and on two golf course greens in the Midwestern United States (11,12). Although *H. galeatus* is a well-documented PPN on turfgrasses in the Southern region, similarities in morphological characteristics (9,20 and 22) and host range (14) of *Hoplolaimus* spp. may have resulted in the over-representation of this species.

Effectively timing management strategies, particularly nematicide applications, require knowledge of the biology and seasonal occurrence of PPN populations. Nematicide applications timed when PPNs are shallow in the soil profile and just before a population spike would improve control (5). This study serves as a benchmark to enhance nematicide control by determining the monthly

vertical distribution of PPNs on putting greens in Missouri and Indiana. This study also aimed to assess lance and root-knot nematode species on golf greens in the Midwestern United States through DNA sequencing and scanning electron microscopy.

MATERIALS AND METHODS

In 2021 and 2022, 20 golf putting greens with creeping bentgrass or a mix of creeping bentgrass and *Poa annua* were sampled. In 2021, ten greens from Missouri and Kansas City (Mo./Kan.) were selected based on prior high lance nematode populations. In 2022, 10 Indiana greens were sampled without a priori knowledge of their potential nematode levels. Sampling occurred in April, June, August and October. Twelve sampling points per green were collected using a 1.9 cm soil probe to a 25 cm depth, stratified into 5 cm increments and aggregated to 100 cm³ of soil per depth.

Samples were processed using a root washer and sucrose-flotation method, with nematodes identified

morphologically and counted using a hemocytometer under 40x–400x magnification. Individual PPNs were identified to genus based on general morphological characteristics with a pictorial key to genera.

Nematode populations were statistically analyzed using PROC GLIMMIX in SAS 9.4 to assess vertical distribution and seasonal density changes. Variables included depth, month and their interaction, with the site treated as random. Populations from Mo./Kan. and Indiana were analyzed separately, with means compared using Fisher's LSD.

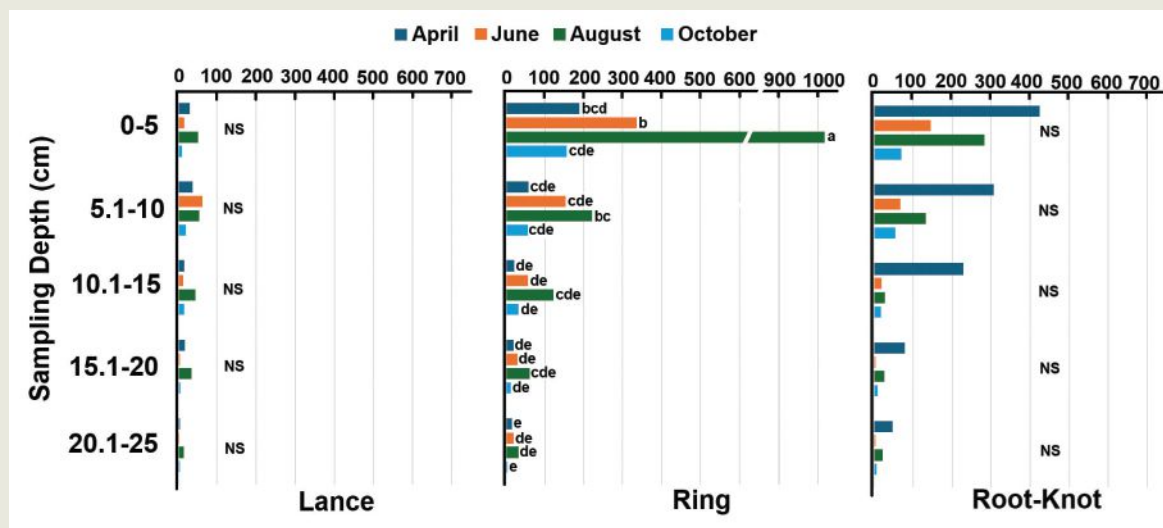
RESULTS

Plant parasitic nematode (PPN) populations were more abundant in Indiana in 2022 than in Mo./Kan. in 2021 (Figure 1). The reduced number of nematicide applications in Indiana sampling locations compared to Mo./Kan. may have caused this difference.

Higher lance nematode populations were found in Mo./Kan. than in Indiana (average of 1,225 and 462, respectively),

Continued on page 28

FIGURE 3

Mean Nematode Population Density per 100 cm²

Indiana 2022 total lance, ring and root-knot nematode population densities by sampling depth and month with soil samples aggregated (100 cm³). Letters indicate significant differences between sampling depths by month analyzed within that individual species ($P < 0.05$). The “NS” indicates no significant depth-by-month interaction.

Continued from page 27

presumably due to targeting sites with historically high lance nematode populations. Root-knot nematodes and ring nematodes were more abundant in Indiana than in Mo./Kan. (average root-knot per site: 1,997 (IN) vs. 857 (MO/KC); ring 2,617 (IN) vs. 1,432 (KC/MO)).

In 2021, the lance nematode population had a significant depth-by-month interaction in Mo./Kan. (Table 1 and Figure 2). Lance populations sampled across Indiana in 2022 showed no significant depth-by-month interaction. Populations sampled from the upper 0–5 cm of the soil in October 2021 in Missouri were significantly higher than any other depth and month (Table 1 and Figure 2). Lance nematode populations were higher in August 2022 in Indiana than in the other three months sampled (Table 1 and Figure 3).

Populations of root-knot nematodes in Mo./Kan. were not significantly different between sampling months (Table 1 and Figure 2). In contrast, root-knot nematode population levels in Indiana were significantly higher in

April 2022 than in any other month in 2022 (Table 1 and Figure 3). In both states, root-knot nematode populations were higher at the 0–5 cm sampling depth in 2021 than all other depths, and the 5.1–10 cm depth had higher populations than deeper samples (Table 1, Figures 2 and 3).

The most abundant PPN in Mo./Kan. and Indiana was the ring nematode (*Criconeimoides* spp.) (Figure 1). In Mo./Kan., ring and free-living nematodes were significantly more abundant in the 0–5 cm range during October than any other depth–month combination (Figure 2). In Indiana, higher ring nematode populations occurred during August at a 0–5 cm depth than any other depth–month combination (Figure 3).

DISCUSSION

Populations of lance, root-knot and ring nematodes varied seasonally across all sampling sites and depths, a finding consistent with prior research. While some studies reported similar trends across cropping systems, others

highlighted significant differences (1,6,13,16,18 and 19). Aggregated distributions within greens can result in vastly different population densities, even a few meters apart (19). The findings highlight the limitations of current sampling methods and the difficulty in extrapolating overall PPN populations.

In turfgrass, lance nematode populations are influenced by soil temperature and reproductive cycles, although some studies indicate no association (13,19 and 23). Declining root biomass creates a feedback loop limiting PPN population density due to increased resource competition (6). Evidence also suggests lance nematodes may shift to endoparasitism when soil temperatures reach specific thresholds, a factor not accounted for in this study (19). As expected, lance nematode populations at several sites in Mo./Kan. with a history of them on the site were above the treatment threshold, particularly in the October sampling period. Conversely, lance nematodes were more rare, at lower populations and below nematicide application thresholds in Indiana.

Hoplolaimus stephanus was the most prevalent lance nematode on Midwest bentgrass greens but remains underreported in literature. Studies may misidentify the species as *H. galeatus*, which predominates in warmer regions and on different turfgrass species (14). This study reinforces the underrepresentation of *H. stephanus* in research and emphasizes the potential for geographic and host factors to shape nematode distribution (11,14,20 and 23). Additionally, practices such as topdressing with contaminated sand, golf equipment transfer or proximity to agricultural systems may introduce nematodes to putting greens over time (15).

Root-knot nematode populations found in this study were generally below nematicide treatment thresholds (33). In Indiana, they were more highly concentrated at the 0–5 cm depth in April, consistent with some studies but contrasting others that observed late fall peaks (1,2,18 and 19). Discrepancies may arise from differences in sampling periods or specific host-crop interactions. For example, early-year moisture levels may induce egg hatching, leading to population fluctuations over time.

Similarly, this study found ring nematodes below nematicide treatment thresholds. Ring nematodes displayed seasonal and depth-related interactions, with population peaks varying by region. Indiana populations peaked in August, while Mo./Kan. peaked in October. Previous studies revealed inconsistent year-to-year trends, even within the same golf course, further complicating predictions (2). Population dynamics often differed across greens within a course, discrediting attempts to generalize findings (23).

CONCLUSION

This study underscores the importance of regionally characterizing nematode species to improve management strategies. Spring-applied nematicides could coincide with population spikes

and maintain acceptable levels through the summer stress period. However, the residual efficacy of nematicides, such as abamectin (short half-life) and fluopyram (longer half-life), is a critical factor in designing a program aimed at season-long control. Additional fall applications may target fall population peaks more aptly, particularly in Mo./Kan., where lance nematodes were more abundant in October. **©**

The article was adapted from the following source: McCurdy, Asa L.; Barizon, Jefferson; and Miller, G.L. 2024. Depth distribution of plant-parasitic nematodes on bentgrass golf greens in Missouri and Indiana. *Journal of Nematology*. 56:1-15. DOI: 10.2478/jofnem-2024-0006

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Research Takeaways

- Overall, plant parasitic nematode (PPN) populations were more abundant in Indiana (2022) than in Missouri/Kansas (2021), possibly due to the lack of nematicide applications at IN sampling sites. Lance nematodes were targeted and more prevalent at Mo./Kan. sites, while root-knot and ring nematodes were more abundant in Indiana sites.
- In October, lance nematode populations in Mo./Kan. (2021) peaked in the 0–5 cm soil depth, showing significant depth-by-month interactions.
- Root-knot nematode populations in Mo./Kan. (2021) were consistent across months, with the highest density at 0–5 cm depth. Indiana (2022) populations peaked in April, with higher densities in the upper soil layers (0–10 cm).
- Ring nematodes were the most abundant parasitic nematodes found in both regions, with higher populations in Indiana sites. Ring nematodes, however, do not cause as much feeding damage as other species and are seldom above any action threshold.

Emerging pests, diseases and weeds to watch

Experts from around the industry share what you can expect in 2025

By Rob DiFranco

As the 2025 golf season creeps closer, we sought out advice from the industry about the problems that golf course superintendents need to keep an eye out for on their courses this year.

Below, experts share the weeds, diseases and pests that might pop up on your course in the new year.



If left untreated, kyllinga can spread into large patches.

KYLLINGA

Kyllinga is an annual sedge — similar to yellow and purple nutsedge — that requires a different type of control than its fellow sedges primarily seen in the southeast. But that's changing, according to Bret Corbett, Ph.D., product development manager at Albaugh Specialty Products.

"We're seeing it in a lot more golf courses up the Eastern Seaboard," says Corbett. "It started primarily in the Southeast, but now there's hardly a golf course that you can find without kyllinga on it."

According to Corbett, the sulfonylurea herbicides good for other sedges aren't as effective on kyllinga. He adds that sulfentrazone has worked on the weed, but with such widespread use,

there is a resistance starting to form in certain areas of the country — like the Northeast.

BERMUDAGRASS MITES

Since the emergence of newer bermudagrass varieties, bermudagrass mites have begun to rear their ugly heads once again, according to Jeff Rampino, Florida territory manager for Quali-Pro.

"Over the last five or six years, it's become a problem in Florida because we're no longer using just regular hybrids; we're going back to some of these offshoots of common (bermuda)," he says.

Rampino adds that outside of Florida, he's seen the mites in Georgia, Alabama, most of the coastal regions and as far north as Delaware.

"When you've got them and you fertilize, the turf gets worse," he says. "They're eating up the foliage and everything like that. So once they get new green tissue, they go hog-wild."

In terms of control, Rampino says that Quali-Pro's Suprado can provide control of the pest in its early stages.

"We dedicated one hole on a golf course to it, and the hole that (was) sprayed, we never had to spray after the first application. Whereas the rest of the course had to be sprayed two to three times with adulticides," he says of a test in Sarasota, Fla., with Suprado.

MINI RING

Mini ring — or *Rhizoctonia zeae* — is a disease that might sound familiar to some superintendents, as it's been plaguing bermudagrass putting greens for roughly the last 10 to 15 years.

But according to Lane Tredway, Ph.D., technical representative with Syngenta, "of late, it's being seen more frequently on higher heights of cut, like fairways, tees and green surrounds."

That's a problem for superintendents because the main method of control is repeat applications on a 14-day interval. Tredway adds that superintendents aren't used to having to make applications with that kind of frequency on those higher height-of-cut areas.

"Superintendents who are seeing these mini ring outbreaks on those higher heights of cut have to rethink their fungicide programs," he adds.

FALL ARMYWORM

Fall armyworms aren't a new pest for superintendents, specifically those in the southeastern U.S., but they are becoming more ferocious, according to Syngenta's Tredway.

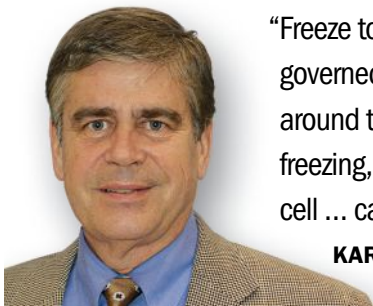
Tredway adds that if that trend continues, superintendents in the transition zone will need to make scouting for fall armyworm a much larger priority much earlier in the year.

"They can develop and spread quite rapidly, and you can find yourself behind the eight ball (with armyworms)," he says. 



When fall armyworm has a head start on killing turf, it can be tough to catch up.

PHOTOS BY: PETER LANDSCHOOT, PH.D. (TOP); LANE TREDWAY, PH.D. (BOTTOM)



"Freeze tolerance of a turfgrass plant is largely governed by the water in the plant, specifically around the cells. When temperatures fall below freezing, cellular water begins to flow out of the cell ... causing a decrease in water potential."

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

Focusing on the moisture component of winter injury

As winter arrives for most of the northern U.S., turfgrass survival becomes a concern for parts of the country where injury has occurred in the past. Frigid temperatures play a role, but in most instances, the presence or lack of water is instrumental in winter damage to the turfgrass plant.

The freeze tolerance of a turfgrass plant, in large part, is governed by the water in the plant, specifically in and around the cells. When temperatures fall below freezing, cellular water begins to flow out of the cell into the intercellular spaces, causing a decrease in water potential outside the cell. Unfrozen water moves down the gradient created and out of the cell. The colder the temperatures, the more water travels down the gradient. Thus, the degree of cell dehydration is a function of freeze tolerance.

The type of freeze injury associated with water around the plant cells occurs on golf courses in the U.S. at relatively high freezing temperatures — 25 to 28 degrees F — during late winter/early spring. This type of freeze injury is technically described as "expansion-induced lysis" because it occurs during freeze/thaw cycles — ice that rapidly forms or collapses ruptures cell membranes.

Excessive water around the crown of the plant during these freeze/thaw cycles in late winter increases the severity of the damage. Removing water from around the plant is the primary method of reducing the likelihood of freeze injury.

Conversely, the lack or unavailability of water can cause winter injury primarily through desiccation. Winter desiccation is the death of turfgrass leaves or plants from winter drying. Desiccation most often occurs on open semi-dormant turf exposed to windy, low atmospheric humidity conditions. The two different types of winter desiccation are termed atmospheric and soil drought.

Atmospheric drought is normally associated with leaf tissue death. Favorable conditions for this type of desiccation are periods of sunny, windy conditions combined with low atmospheric humidity. The soil may have adequate soil moisture but is frozen

or cold enough to increase the viscosity of the soil water to the point where uptake is severely restricted. Plants with restricted or shallow root systems like *Poa annua* are also sensitive to atmospheric drought. Desiccation symptoms appear similar to drought in that the leaves are brittle, dry and have a burned look.

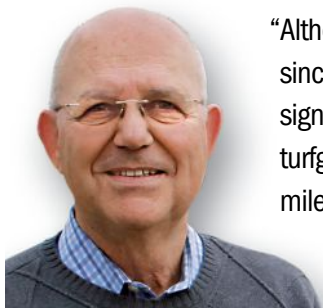
Through the Midwest and eastern U.S., atmospheric drought is common. Although atmospheric desiccation can cause leaf death, it is not normally associated with crown or plant death. However, juvenile or succulent growing turf is especially susceptible to desiccation, and death may occur. Generally, the injury sustained with atmospheric desiccation recovers once the plant begins growth in early spring.

The second type of desiccation occurs under low atmospheric humidity and progressively droughty soil due to a lack of rain or snow. Desiccation resulting from soil drought conditions can cause plant death.

It's fascinating how golf course superintendents in the western U.S. and northern Great Plains manage putting greens in the region. Applying enough water to greens to reduce the severity of desiccation without applying too much water, especially in later winter when the potential for excess water resulting in freeze injury is an important concern, is a tight balance that's important for superintendents to master.

Temperature is an important factor in winter injury. Preparing or initiating practice to minimize winter injury must focus on the moisture (water) component as a means of reducing the potential for winter injury. **G**

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



"Although OSU has researched bermudagrass since the early 1900s, the program took significant strides in 1986, becoming a prominent turfgrass research and breeding center. Early milestones included the release of Guymon ..."

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

The driving force behind Oklahoma State University's turf program

As an alumnus of Oklahoma State University (OSU), I receive many publications and emails about the university, particularly from the Ferguson College of Agriculture. Like most universities, there are accomplishments to brag about. In December, I read an article about the bermudagrass breeding program. There are a few USGA-related highlights I want to add to the story.

In his 34 years as an OSU Extension turfgrass specialist, Dennis Martin, Ph.D., has been the bridge between turfgrass scientists and the industry. Martin stepped into his role as the state Extension specialist in 1990 after I departed for the USGA Green Section. He provided some historical information about the turfgrass program. He was interviewed about the last four decades of bermudagrass research.

Although OSU has researched bermudagrass since the early 1900s, the program took significant strides in 1986, becoming a prominent turfgrass research and breeding center. Early milestones included the release of Guymon, a cold-hardy seeded bermudagrass introduced in 1982. Though primarily a forage grass, it highlighted OSU's potential in turfgrass development.

Also, in 1986, the USGA Turfgrass and Environmental Research Program provided a vital grant to OSU to develop new bermudagrass cultivars. This grant enabled Charles Taliaferro, Ph.D., and Jeffrey Anderson, Ph.D.,

to increase efforts on developing cold hardy bermudagrasses for golf and sports turf. The USGA included the bermudagrass breeding program in the long-range plans to provide turfgrasses that require less water.

In the 1990s, OSU released Midlawn and Midfield hybrid bermudagrasses, co-developed with Kansas State University. These varieties were more cold-hardy than existing options but did not fully meet industry needs. It wasn't until 2006 that Patriot was released, which brought modest improvements. However, it was surpassed by Latitude 36 and Northbridge, which revolutionized the industry with superior quality and performance.

When Charles Taliaferro retired in 2006, Yanqi Wu, Ph.D., assumed leadership of OSU's breeding program. Wu, Martin and Taliaferro collaborated to develop Latitude 36 and Northbridge, which remain industry mainstays. Earlier successes like Yukon and Riviera seeded bermudagrasses also boosted OSU's global reputation. Riviera was no-

tably used in the 2008 Beijing Olympics, while Yukon offered enhanced winter hardiness for the U.S. transition zone.

In 2017, OSU released Tahoma 31, a vegetatively propagated bermudagrass that gained national attention for its exceptional cold hardiness, drought resistance and reduced water needs. Its popularity has extended to professional sports fields and golf courses.

Collaboration has been central to OSU's turfgrass successes. The team works with universities across the U.S. to test and improve turfgrass traits under diverse environmental conditions, including drought tolerance and disease resistance. With USDA funding through the Specialty Crop Research Initiative, OSU has expanded its focus to southern climates, developing varieties like Texoma, which will soon be available in Texas.

OSU's turfgrass research extends beyond traditional goals. With USGA grant support, Charles Fontanier, Ph.D., studies traits like shade tolerance and sod tensile strength, aiming to integrate multiple desirable features into turfgrass. Efforts by Ph.D. Mingying Xiang and Shuhao Yu use genetic tools to enhance breeding efficiency, particularly for drought-resistant bermudagrasses. Their work identifies genetic markers associated with desirable traits, accelerating the development of resilient turfgrass.

The program has also shifted focus to biodiversity and sustainability. In 2024, OSU hosted an international gathering to explore the potential of pollinator-friendly species and non-turf plants, something Martin emphasized the importance of with biodiverse lawns. OSU's turfgrass program continues to advance turfgrass science, and the USGA's partnership with OSU has benefited golf course and sports turf management. **G**

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



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Nufarm.com



2 Celoxid SC

Celoxid SC, containing cyazofamid, is a fungicide from **ATTICUS** that delivers 14-28 day control against tough *Pythium* diseases like root rot, dysfunction, blight and damping-off. With a unique mode of action and no known fungicide resistance, Celoxid SC plays a key role in resistance management programs. Celoxid SC produces long-lasting disease protection for seven to 28 days and can play a key role in a resistance management program.

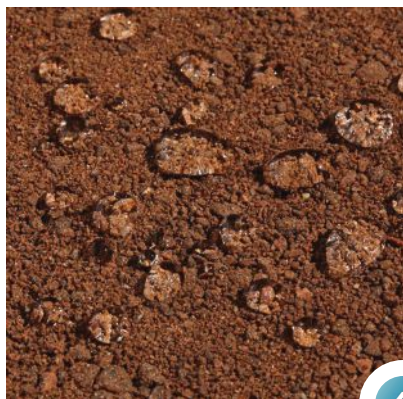
AtticusLLC.com



3 ETQ Flex

ETQ (Enhanced Turf Quality) Flex from **SIPCAM AGRO** offers turf relief from abiotic stress periods: extreme heat, drought and prolonged exposure to the sun quickly diminish turf grass survival, affecting course quality, beauty and overall performance. When relative leaf water content, chlorophyll production and root mass are the most vulnerable...ETQ Flex (Enhanced Turf Quality) is the solution! Superintendents can mix ETQ Flex with their current fungicide products and apply it to golf, sports or residential turf. Absorbed by the plant, the ETQ complex hits its intended target, not the soil profile, layering over time.

SipcamAgroUSA.com



4

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5



6

4 | Rustic Granite Wax Coated Aggregate Pathway Mix

The patented Golf Pathway Mix combines **KAFKA GRANITE**'s natural crushed stone or decomposed granite with a combination of engineered wax polymers in a totally waterless process. This unique paving alternative is easy to install and maintain while delivering a dustless, sealed, non-permeable and natural-looking surface that can be installed on the steepest of slopes. Kafka also offers a free trial of this product.

KafkaGranite.com

5 | Smokeshow Herbicide

Smokeshow Herbicide from **QUALI-PRO** is a water-soluble dry flowable formulation designed for selective postemergent control of some of the toughest weeds in turfgrass. Smokeshow targets persistent grassy weeds like goosegrass, dallisgrass and sandbur, as well as sedges, including kyllinga. Smokeshow offers two modes of action, combining 27 percent metribuzin (Group 5) and 18 percent sulfentrazone (Group 14) for control and resistance management.

ControlSolutionsInc.com

6 | Jacobsen ELiTE 360 Triplex greens mower

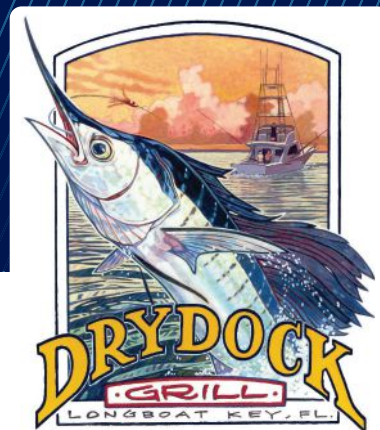
The ELiTE 360 line from JACOBSEN is equipped with the company's 500-plus amp-hour ELiTE lithium battery, which provides users with 5.5-plus hours of operation per charge. The machine offers convenient on-board overnight charging that fits with existing universal electrical infrastructure, making it as simple as plugging it in at the end of the day to ensure it is ready for the next.

Jacobsen.com

The 19th Hole

Bob Coffey

SUPERINTENDENT // Longboat Key (Fla.) Club



Bob, thanks for setting me up for golf today. What can I get you?

I'll have a Yuengling.



How did you get into the business?

I was originally in education — I was a teacher and a basketball and football coach. My wife Robin wanted to move to Florida, and back in '98 she found a job here. I applied for some teaching jobs and didn't get anything. I was looking for work and applied at Windermere GC right outside Orlando. I liked it because it came with free golf. After a couple months, the assistant was leaving, so they wanted to make me the irrigation tech. A couple weeks after that, the school called me and said, "Hey, we got a pregnant P.E. teacher. Would you like to fill out her contract as a way to get into the corporation?" I kind of looked at where things were, and I thought, 'I think I can do this for a living.'

Do you ever miss teaching? No, oh no, no, no.

What's your biggest challenge on the course? Right now, it's the cold; paspalum doesn't like the cold weather. We're all paspalum here. The same cultivar that's rough is on the greens. The other thing is keeping everything as tight, clean and detailed as possible.

What's your favorite tool to get the job done? The USGA's GS3. Once we get used to figuring out what the numbers mean for us — because they're different for everybody — it's really going to help lead us to the next level of conditioning. Like today, we mowed, we'll look at our numbers and probably just roll tomorrow morning. We might mow tomorrow afternoon — it depends on what numbers we get.

If someone was visiting you, aside from seeing the golf course, what would you recommend they do while here? There are some great restaurants here — The Chart House or DryDock. The Salty Dog is great but hasn't been rebuilt from the storm yet.

Do you have a family, and what do you all do for fun? I have a wife, three daughters and a son — all grown. And I have a couple grandkids. For fun, we go out to eat.

What is your most memorable day on the golf course? When I was at Cimarone up in Jacksonville, I got to play in the pro-am. Our pro was Jim Furyk. We finished second by one shot at 18 under. Playing golf with a U.S. Open winner, who is also such a fantastic person, that's one of my all-time favorite memories.

What teams do you root for? The Jaguars and the Reds. I don't watch basketball as much as I used to. I got kind of spoiled; I went to Indiana State and was in school with Larry Bird. I followed him when he went to Boston. Man, he could play — he made everyone better.

As interviewed by Seth Jones, Jan. 5, 2025.



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