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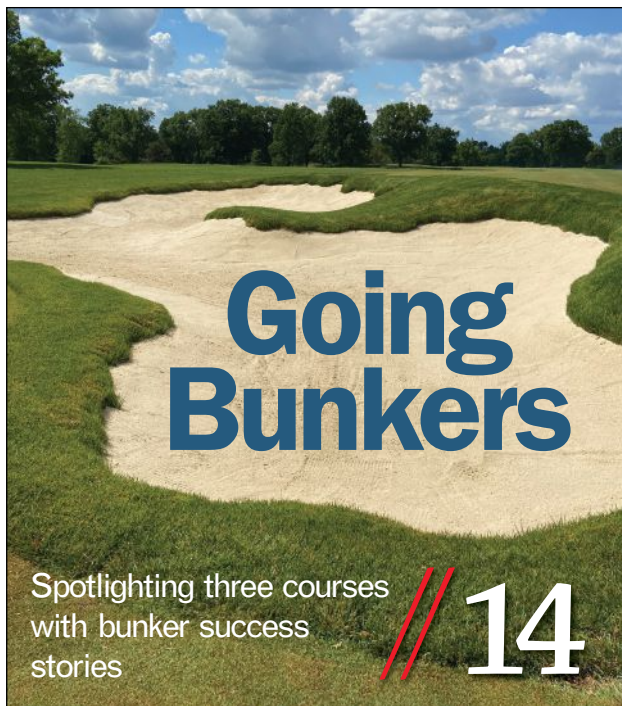


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Seven-time winner of the national **Folio: Award** for editorial excellence

EDITORIAL

EDITOR-IN-CHIEF & ASSOCIATE PUBLISHER Seth Jones
785-542-2627 / sjones@northcoastmedia.net

SENIOR EDITOR Abby Hart
216-706-3756 / ahart@northcoastmedia.net

EDITOR Christina Herrick
216-675-6009 / cherrick@northcoastmedia.net

MANAGING EDITOR Sarah Webb
216-363-7932 / swebb@northcoastmedia.net

ART DIRECTOR Pete Seltzer
216-706-3737 / pseltzer@northcoastmedia.net

CONTRIBUTING EDITORS

Carlos Arraya, Karl Danneberger (*Science*), Alan FitzGerald, Joe Gulotti, Mike Kenna (*Research*), Matt Neff, Jared Nemitz, Sean Tully, Mark Woodward

BUSINESS

CLEVELAND HEADQUARTERS

1360 EAST 9TH ST, 10TH FLOOR, CLEVELAND, OH 44114

GROUP PUBLISHER Bill Roddy
216-706-3758 / broddy@northcoastmedia.net

PUBLISHER Craig MacGregor
216-706-3787 / cmacgregor@northcoastmedia.net

WESTERN REGIONAL SALES MANAGER Jake Goodman
216-363-7923 / jgoodman@northcoastmedia.net

EASTERN REGIONAL SALES MANAGER Dan Hannan
216-363-7937 / dhannan@northcoastmedia.net

ACCOUNT MANAGER Chloe Scoular
216-363-7929 / cscoular@northcoastmedia.net

EXECUTIVE SALES ASSISTANT Petra Turko
216-706-3768 / pturko@northcoastmedia.net

DIRECTOR OF MARKETING & EVENTS Michelle Mitchell
216-363-7922 / mmitchell@northcoastmedia.net

MARKETING & EVENT MANAGER Allison Blong
216-363-7936 / ablong@northcoastmedia.net

SR. MGR., PRODUCTION SERVICES Rhonda Sande
216-978-9778 / rsande@northcoastmedia.net

SR. AUDIENCE DEVELOPMENT MANAGER
Antoinette Sanchez-Perkins
216-706-3750 / asanchez-perkins@northcoastmedia.net

MARKETING/MAGAZINE SERVICES

SUBSCRIBER, CUSTOMER SERVICE
847-513-6030 / golfdom@omedia.com

LIST RENTAL Brahm Schenkman
800-529-9020 / bschenkman@infofirefinery.com

REPRINTS & PERMISSIONS Wright's Reprints
northcoastmedia@wrightsmedia.com

CORPORATE

PRESIDENT & CEO Kevin Stoltman

VP OF FINANCE & OPERATIONS Steve Galperin

VP OF GRAPHIC DESIGN & PRODUCTION Pete Seltzer

EDITORIAL DIRECTOR Marty Whitford

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“While everyone endured a harsh week, everyone we talked to was well and — naturally — preparing for golfers when we talked to them.”

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

The mess in Texas

I started writing this while sitting outside. It was by no means balmy, but that’s still saying something considering a week ago, I woke up to -17 degrees F here in northeast Kansas. School was canceled for two days as a result of dangerously low temperatures and rolling blackouts. My daughter walked by my office and saw me working in a stocking cap and gloves. But, we never had a rolling blackout here, thankfully.

I try to avoid writing about the weather, mainly because the weather changes so fast that it’s old news by the time the magazine comes out. And also, because oftentimes, bad weather is quickly put behind us after it’s passed.

I don’t think the folks in Texas, and in many other areas of the U.S., are going to forget the weather of February 2021. Millions were in a dayslong blackout, and tragically, 26 died in Texas as a result of the harsh conditions. The news showed empty grocery store shelves and long lines to buy propane. Safe drinking water was scarce, and reports of carbon monoxide poisonings were common.

For this issue, we checked in with several of our Friends

of *Golfdom*, including Jeff Smelser, Galveston (Texas) CC, and Jim Moore, retired from the USGA, near Waco (see “Winter Storm Uri ravages Texas,” page 8). While everyone endured a harsh week, everyone we talked to was well and — naturally — preparing for golfers when we talked to them.

Tyler Andersen, superintendent at the University of Texas Golf Club in Austin, told me that last Monday morning, the house across the street from him still had power. At the time, he still believed these were just “rolling blackouts,” and power would soon be restored to his side of the street. By 5:30 p.m., he took a breath, and when he exhaled, he saw his

breath. A check of the thermostat showed him it was 38 degrees inside his house and time to take his family somewhere else.

Power remained off in the Andersen home for four straight days. Thankfully, a friend with power nearby put his family up for a few days. He couldn’t get to his course for a week, because the roads to the course were too gnarly to travel. “We don’t have snow plows here,” Andersen said. “We just have gravel trucks, and those were limited to the main roads.”

Tyler told me he thought the strangest thing of the whole ordeal was how accurate the weather forecast was for this unusual weather spell. They knew it was coming but

were helpless to what ensued.

Scott Schurman, superintendent at LaFortune Park Golf Course in Tulsa, Okla., texted me a photo of ski tracks over one of his greens. Schurman worked in Nebraska before coming to Tulsa and said even up north, they didn’t see sustained cold temperatures like this. He was counting the hours the temperature remained below zero, and as those hours turned into days, he couldn’t help but wonder about the fate of his ultradwarf greens.

Tulsa saw a wind chill of -20 degrees F and 9 inches of snow. They covered their ultradwarf greens on Feb. 7. They had a quarter inch of ice under the snow. “Next month will be telling,” he said.

Yesterday, the local weatherman reported that our area will experience a temperature change of 110 degrees, comparing how it felt from last Tuesday to this Tuesday. Last Tuesday, it felt like -35 degrees F. Today, he’s forecasting a temperature of 65 degrees F, feeling like 75 in the sun. Last week, I was in my office in gloves and a stocking cap. Today, I’ll be outside in shorts and a T-shirt.

It’s easy for a guy like me to walk the laptop out to the driveway and put the weather ordeal behind me. But, there’s no telling the long-term effects this weather might have for courses across the country. But, like Smelser told us, “life moves on.” ☺

Email Jones at sjones@northcoastmedia.net.

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Starter

NEWS, NOTES AND QUOTES



// WINTER WEATHER WATCH



Cross country ski tracks at The Club at Indian Springs in Broken Arrow, Okla.

WINTER STORM URI RAVAGES TEXAS

BY **ABBY HART** // Senior Editor, and **CHRISTINA HERRICK** // Editor



Winter Storm Uri brought sustained below-freezing temperatures and snow to areas of the country not accustomed to winter weather, such as Texas.

Jim Moore, retired USGA director of education and outreach, said it's not the snow that is of concern to superintendents, but rather, it's prolonged temperatures below freezing that will result in severe turfgrass injury.

"The local news said that we were now over 180 (hours below freezing), and that set the all-time record for this area," he said. "Much of Texas is seeing records broken for both low temperatures and the number of hours below freezing."

Moore vividly remembers the winter of 1983, the year Texas suffered prolonged below-freezing hours. "That year, greens died all over

Texas," he said. "The combination of dry conditions and prolonged freezing was just murder."

Moore said it's been 40 years since the golf industry in the South has seen anything like this. Moore lost six greens at Ridgewood Country Club in Waco, Texas, in 1983, where he was a superintendent at the time.

The relationship between cutting height and winter injury incidence was another lesson learned in 1983, Moore said. With ultradwarfs, often mowed to 1/8 an inch or 1/10 inch, more of the plant is in the upper portion of the root zone and, therefore, more susceptible.

"I believe the ultradwarfs will be particularly hard hit and fully expect many courses to have to replant some, if not all, their greens," Moore said.

"Any north-facing slope on fairways,

Continued on page 10

// NEW MAN IN CHARGE

GCSAA ELECTS 85TH PRESIDENT

The Golf Course Superintendents Association of America (GCSAA) named Mark F. Jordan, CGCS and natural resource leader at Westfield Country Club in Westfield Center, Ohio, to a one-year term as president at the association's annual meeting Feb. 4, held in conjunction with the Golf Industry Show. He is the 85th president in the association's history.

Jordan served as vice president of the association in 2020 and has been a member of the association's board of directors since 2014. A 34-year member of GCSAA, Jordan is also a member and past president of the Northern Ohio GCSA.



Mark Jordan

Jordan has served as the natural resource leader at Westfield CC since 2007 but has been with the club since 1988, previously serving as general manager, club manager, superintendent and assistant superintendent. Prior to Westfield CC, Jordan had stints as an assistant superintendent at Winding Hollow Golf Club in New Albany, Ohio, and Hyde Park Golf and Country Club in Cincinnati.

// PLANNING FOR THE FUTURE

JOHN DEERE, GCSAA TEAM UP

John Deere is affirming its commitment to the golf industry through the support of four programs in collaboration with the GCSAA.

The initiatives, which target young professionals including students and assistant superintendents, aim to drive interest in golf course maintenance careers and provide new growth opportunities for the existing workforce.

"We are proud to support these impactful programs. It is critical for manufacturers like John Deere to invest resources in developing the future leaders of our industry," said Manny Gan, director, global golf sales & marketing, John Deere. "As a longstanding partner of the GCSAA, we know the importance of what it does for the golf community, and we are committed to helping further their reach to current and future turfgrass professionals."

PHOTO BY: WELGLAD / ISTOCK-GETTY IMAGES PLUS / GETTY IMAGES (GOLFBALL); DAVID JONES

// 200 AND COUNTING

A quest to play every OK course

BY SARAH WEBB // Managing Editor

➔ David Jones' quest to play every single golf course in Oklahoma began when he was an assistant superintendent and attended monthly meetings across the state through the Oklahoma GCSA.

"We had meetings at private clubs and places I wouldn't get to play usually," said Jones, now superintendent at The Club at Indian Springs in Broken Arrow, Okla. "It got to the point where I got quite a few on the list and thought, well, I'm just going to try and play all of them. It's been a very long journey. I started getting serious about it about 15 years ago."

By his calculations, Jones said there are currently 190 courses in Oklahoma, but at one time, there were closer to 230-240 — before many of them closed down. He's also played at about 400 courses total, including



David Jones

ones in Australia, Scotland, Ireland and more.

When asked what courses in his state stood out to him, Jones cited his 100th and 200th Oklahoma courses.

"The 100th Oklahoma course was Carson Creek in Stillwater. It's a pretty high-profile course," he said. "My 200th course was Cimarron County in Boise City. It was a seven-hour drive and only a nine-hole course, so I drove seven hours to play nine holes. I left at 4 a.m. and got back at 8 at night. I wanted the 200th course to be the farthest course from where I live."

For his last course, Jones said he would like to have a tournament and invite friends to celebrate. And, for his next feats, Jones would like to reach 500 courses played by the time he turns 50 (in two years), and he'd like to play a round in every U.S. state. He has 14 states left.

"Any time I travel, I always take my golf clubs," he said.



David Jones has golfed in Australia (top left), Branson, Mo., (top right), Scotland (bottom left) and New South Wales (bottom right), just to name a few.

// PARTNERS IN — ERM — GOLF

GOLFNOW, INDIGO GOLF PARTNERS EXTEND PARTNERSHIP

GolfNow has extended its seven-year partnership with Indigo Golf Partners, a division of Troon, a golf management company.

Building on the long-term collaboration and success between the two companies, the new agreement will continue offering participating Indigo properties within its 160-property management portfolio access to G1, GolfNow's business management technology, which can combine all software and operating systems utilized by a golf course facility into one platform. Demonstrating the flexibility of G1, GolfNow is developing custom technology within the platform to satisfy Indigo's current and future needs.

Within the partnership, Indigo Golf Partners-managed courses can leverage additional GolfNow technology and services, including a white-label booking engine, pricing algorithms and wide-ranging exposure to the millions of golfers who search for and book tee times through the online tee time distribution portal.

// TRUE CHAMPIONS

FMC CONTINUES TO GIVE BACK LOCALLY

The FMC Professional Solutions "Give Back to Local Chapters" program continued at the virtual 2021 Golf Industry Show.

In 2020, FMC donated \$30,000 to nearly 90 local GCSAA chapters nationwide. This year, all superintendents can visit the FMC booth online and test their skills at the photo hunt game, which challenges players to locate the differences between two similar pictures. Superintendents can earn points for their local chapter with a top prize of \$5,000.

The fundraiser was an initiative driven by the FMC True Champions end-user rewards program. Superintendents can register, and FMC will track purchases of qualified products and submit their "give back" donation directly to their local chapter. Qualified products include both Fame SC Fungicide and Rayora Fungicide.

// FUNDS, RAISED

SPIIO SECURES \$1.6M IN FUNDING

Spiio, an in-ground data as a service provider, has raised a \$1.6 million fundraising round from internal investors: byFounders, inQvation, Danish Growth Fund and a range of angel investors.

The company said the funds will be used to strengthen the development team, move forward with innovative projects that are improving the Spiio platform and scale sales and marketing efforts, primarily in North America. Spiio said the new investment round will enable it to get its services out to more customers in the turfgrass industry in North America and beyond. It also speeds up the innovation of the current product suite benefiting the golf course superintendents and ground managers who use Spiio data daily.

"The team has worked incredibly hard, and we have grown significantly throughout the year," said Martin Dal, founder and CEO of Spiio. "With support from investors, we're extremely excited to have the power to do what we fight for every day: putting new valuable data services in front of many more users."

// COMING HOME

NEMITZ RETURNS TO THE FORD

Jared Nemitz has returned to The Ford Field & River Club in Richmond Hill, Ga., as its director of agronomy and grounds. Nemitz previously worked at The Ford from February 2009 to January 2014, moving up from second assistant



Jared Nemitz

superintendent to course superintendent. He previously served as the assistant general manager of The Peninsula Club in Cornelius, N.C.

"I am humbled and honored that I am able to come back 'home' to where my career started," Nemitz said. "It has been an amazing eight years for me at The Peninsula Club. The team and I were able to realize many successes and take the golf course to the next level."

Nemitz has 20 years of turfgrass industry experience, including as a research scientist and director of golf course grounds. Since leaving The Ford, Nemitz came back multiple times on agronomic trips to assist Nelson Caron and his team, volunteer for the Georgia Open and bring crew members from The Peninsula Club to learn how to navigate a golf course renovation.

THE 2 P.M. STIMP CHECK

In early February, a job post went up online that evoked the ire of many superintendents in the industry. The post not only created a firestorm on Twitter, but it also inspired a line of T-shirts and a spoof Twitter account.

Below is an excerpt of the job post. The names have been removed to protect the innocent. Does the 2 p.m. stimp reading sound reasonable to you? Email us or tweet at us @Golfdom and give us your take.

Are you an experienced golf course maintenance professional? Do you want to help ensure every member and guest of the [REDACTED] Golf & Tennis Club has the best experience available? Are you interested in working and living "next door" [REDACTED]? Are you looking for an experience of a lifetime? If you answered, "Yes" to these questions, this position is great for you!

JOB SUMMARY: The golf course superintendent is responsible for maintaining golf course playing conditions at established [REDACTED] brand standards. Your leadership is essential in maintaining a high level of employee engagement and development.

JOB RESPONSIBILITIES:

- Putting green expectations: 1. Greens speeds are required to be at a minimum of 11

on stimpmeter when measured at 2 p.m. during peak season (approximately June 15 - Sept. 15) 2. Greens will be smooth with true ball roll 3. Speed and smoothness will be consistent from green to green and day to day 4. Turf coverage on all putting green surfaces will be 100% from May 15 through end of season 5. Organic matter will not exceed 1.9% 6. Field HOC will be no higher than .125"

- Responsible for developing and implementing the fertilizer, fungicide and herbicide program for all [REDACTED] property. Superintendent is accountable for all scenarios where misapplications lead to turf loss.

- Responsible for developing all cultural practices on all playing surfaces including: vertical mowing, topdressing, aerification. Impact on golf course playability needs to be discussed with GM prior to any work.

Continued from page 8

tees and bunker faces will suffer a lot of damage as well. This damage won't be confined to Texas and will likely occur throughout the mid- to northern regions of the bermudagrass belt."

Golfdom also reached Jeff Smelser, CGCS at Galveston (Texas) Country Club, as he was driving away from checking on his course on Tuesday morning, Feb. 16. "The course is covered in snow and ice — a couple inches," he said. "We'll see the damage to the golf course in a couple weeks. (There's) nothing we can do right now."

Unfortunately, the course was not equipped with greens covers, but Smelser said he's not sure if those would even help, with temperatures dropping to 15 degrees F. He prepped for the deluge of snow by spraying fungicides the week before the storm,

several days later spraying nutrients to boost potassium and calcium levels and then applying a wetting agent to keep moisture in the greens.

Being from south of Chicago, Smelser thought he'd moved away to escape the cold. He's been a Texan since 1989, which, coincidentally, marked another deep freeze in Texas. In December of that year, the state reached subzero temperatures.

When we spoke with Smelser a few days later, he told us his family went four days without power, but they got through it with food and water they had stored up from hurricane season and "blankets, double layers, warm boots and prayer."

His course opened on the Sunday after the snowstorm to cart path traffic only, and 87 players showed up. "Life moves on," Smelser said.



//BOMBS AWAY?

USGA, R&A propose equipment changes



After a year of relative quiet as a result of the COVID-19 pandemic, the USGA and the Royal & Ancient are ready to kick the dust off the increased distance discussion.

Last month, the game's governing bodies announced three proposed equipment rules changes. Club length, testing methods for the golf ball and change to testing tolerance – characteristic time are all open for discussion with equipment manufacturers.

"It's obviously a very complex subject," USGA CEO Mike Davis told attendees of the virtual GIS. "It's about

ensuring the long-term health of the game. It's about fitting golf into golf courses instead of constantly having to change golf courses to fit the game ... other sports have allowed and welcomed innovation, other sports have allowed and welcomed better athleticism ... but they've also figured out how not to obsolete their stadiums, their playing fields and their arenas. Frankly, golf has done a crummy job of that. I can tell you on behalf of the USGA, as we look in the mirror, we'll take the blame for that. Things could have been done in the past that weren't, but it's never too late to do the right thing."



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Graeme McDowell

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Professional golfer,
2010 U.S. Open champion

"Proud of what you have achieved at @LakeNonaGCC, brother. When passion and talent come together in any line of business, great things happen."

Brandon Richey

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Superintendent, Lake Nona Golf and Country Club

"Special thanks to @FGCSA and everyone involved with The Florida Green for their consideration to be featured in the Winter 2021 issue, among so many deserving individuals in our industry. It has given me the chance to expose our wonderful association to some of my favorites."



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Ask Thad

BY THAD THOMPSON

Superintendent
Terry Hills GC, Batavia, N.Y.



Who are you and how did you get this gig with *Golfdom*?

— Seth, Kansas

My name is Thad Thompson. I am a sarcastic metal dad and member of Bills Mafia who doesn't take himself too seriously. I am also the superintendent at Terry Hills GC in Batavia, N.Y. Terry Hills is a family owned, 27-hole public facility that is home to the Jim Kelly Celebrity Classic. I am going into my 14th year at Terry Hills and my 33rd year in the industry. I am one of those odd people who took a superintendent job fresh out of college. I "got this gig with *Golfdom*," simply put, by losing a bet on the Buffalo Bills/KC Chiefs AFC championship game. I had to donate \$50 to Patrick Mahomes' charity, send Seth Jones some Terry Hills swag and write this column, while Seth smiles. Being a member of Bills Mafia, I would have donated to the charity anyway. That is what we do.

Do you play golf? Do you think it's important that a superintendent plays?

— David, Oklahoma

I got into this business because I didn't want to pay for golf. My brother and I started playing golf at the end of high school by hitting 7 irons at each other. We took our newly found weapons and ammunition to a local 9 hole course and both of us got hooked. It was easier aiming at a flag that didn't move instead of Drew. I started working there the next year and became superintendent at Turkey Run in 1992.

I have always believed that a superintendent should play golf. Basic rules knowledge, an understanding of shot value from a golfers' perspective and experiencing what you are providing to the golfer are just some of the professional aspects of playing golf. Playing in a league at work has always been beneficial — I have always put myself and game out there and made myself approachable to my members and the public.

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

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"I was amazed at the density without growth. The color was sensational. I had healthier turf. I got better disease resistance. It gave me more predictability in release."

MATT SHAFFER, Director of
Golf Course Operations, Emeritus
Haverford, Pennsylvania

into fall and winter," explains Chuck Barber, vice president, Customer Accounts-Specialty. "These GreenTRX options allow the right amount of nutrients to be supplied in the right amount at the right time for healthy green turf throughout the year and all season long. The balanced nutrition of nitrogen, potash, sulfur and iron allows each GreenTRX product to jumpstart grass and continuously feed. Customers consistently tell us about greener, lusher turf within a few days after application."

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Kenwood CC has updated 77,000 square feet of bunkers on its Kendale course, including this finished bunker on No. 1.

GOING BUNKERS

Spotlighting three courses with bunker success stories



A DIY RENOVATION

Stuck in the middle of a bunker renovation, the Kenwood CC crew found a product they could install themselves

BY ABBY HART

In September 2020, Kenwood Country Club in Cincinnati, Ohio, reopened its Kendale course after a yearlong renovation.

"I think I've called it a '*restoration*,'" says Kenwood Director of Grounds and Golf Course Operations Kent Turner, with a laugh. Installing a new irrigation system on the club's Kendale course was the main goal for the project. But, before the irrigation system went in, the club decided to restore Kendale to its 1930 William Diddel design, with modern infrastructure updates to the layout and a renovation of the 77,000 square feet of bunkers on the course.



Kent Turner

In summer of 2019, Kenwood contracted Fry/Straka Global Golf Course Design to design the golf course restoration, referencing historic drawings and photos from the club's archives. Wadsworth Golf agreed to complete the restoration work, and Polylast signed on to supply the materials and subcontract labor to line Kendale's bunkers. Then, in December 2019, with the project well underway, Polylast declared bankruptcy. The Kendale bunkers were only 40 percent complete.

With no more support or materials coming in and no subcontractor, Jason Straka, principal, Fry/Straka, jumped into action to find a new bunker solution for the remaining 10 holes on the Kendale course — ideally, a rubber-based product similar to Polylast.

The ensuing search led Straka and Turner to Porous Pave. "I knew John (Harvey, Porous Pave's parks, landscape and golf industry specialist) as a colleague and knew Porous Pave from cart paths and parking lots," Straka says. In addition to Porous Pave's cart path product, the company had also developed Sand Guard, a flexible and permeable

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PHOTO BY: JASON STRAKA

IN THE FIGHT AGAINST SPRING DEAD SPOT AND DOLLAR SPOT...

GOING BUNKERS



The crew at Kenwood CC preparing to install Sand Guard (top), getting trained on mixing and spreading the product (middle), and a bunker ready for sand installation (bottom).

Continued from page 15

bunker liner product comprised of crumb rubber and rock.

After a demonstration at Kendale, Straka says Sand Guard's drainage, flexibility in freeze/thaw cycles and ability to cut down on erosion and soil contamination are why they selected it. "And, it's seamless — you're putting it in and compacting it, and it becomes monolithic," he says.

The fact that Sand Guard could be installed with a golf course's own maintenance crew also was a big plus for Kenwood.



Jason Straka

PHOTOS BY: JASON STRAKA

Harvey and Connor Ouwinga, Porous Pave's sales and design consultant, traveled to Cincinnati to train the Kenwood crew on installing Sand Guard. "They budgeted a day and a half to train us, but they actually headed back the next morning because it only took us half a day to learn how to do it well," Turner says.

Turner assigned one of his assistant superintendents, Dave Basil, to run a crew of four to install Sand Guard. He says the installations aren't easy work, but his team could finish bunkers for one golf hole in a single day, since mixing up a standard 200-pound batch of the materials (enough to cover 48 square feet) takes about two minutes. The bunker installation was completed from May to June of 2020.

The finished "restoration" was a hit for both the members and the crew. "The members absolutely raved over it," Turner says. "And, not only are we thrilled with the product because it enabled us to finish it on budget, but we're also thrilled with the performance."

"Since the bunkers were built, we have yet to fix a washout in any of them," Turner says. "The only regret we had was not going with (Sand Guard) from the beginning."

A CANDLE IN THE WIND (AND RAIN)

A wax polymer product has minimized bunker maintenance at Whistling Straits

BY SETH JONES

It was in the July 2015 issue of *Golfdom*, in a preview story for the 2015 PGA Championship at the Straits Course at Whistling Straits, Kohler, Wis., that Chris Zugel relived the nightmare before the 2010 PGA Championship. The Wednesday morning before the tournament was to begin, 2 inches of rain washed out bunkers across the course.

"It was brutal for our guys," Zugel told *Golfdom*. "But, the fire drill we had in 2010 has prepared us in that we know we can do it ... we just have to stay on our toes."



Chris Zugel

Thankfully, the weather was good to the course and the crew for the 2015 PGA Championship, won by Jason Day. Sadly, the next big event for the course, the 2020 Ryder Cup, was canceled because of the COVID-19 pandemic. Viewers would not have noticed that since then, Zugel has a new trick up his sleeve to reduce maintenance on the out-of-play bunkers on the Straits Course: wax polymer bunker faces.

The idea goes way back to when Chris Zugel's grandfather worked at Milwaukee County Stadium, home of the Milwaukee Brewers, from 1969 to 1984. As a kid, Zugel saw how much time his grandpa spent working on the warning track. When Zugel later worked at Milwaukee County Stadium and later, Miller Park, he found himself in the same situation. That was when he

Continued on page 18

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Host of the 2015 PGA Championship, the Straits Course at Whistling Straits uses a wax polymer on out-of-play bunker faces.

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To Measure Is to Know.

Continued from page 17

first learned of Wisconsin-based Kafka Granite. He was impressed with the company's Wax Polymer Pathway Mix, but before he could get a deal done, he left to take the superintendent position at the Straits Course.

"All the paths are gravel (at the Straits Course), and I never liked that the stones would get into my shoes," Zugel says. "I reached out to Kafka to see if they had a solution. Glenn (Kafka, owner) was like, yeah, we have a wax polymer. He explained it to me, and I thought, that could be a bunker. He said, 'I guess so.'" Zugel told Kafka that the pathways had to match the bunkers in appearance, as some of the pathways go through the bunkers. Glenn Kafka gave Zugel a "hold my beer" look and made it happen.

"We started experimenting with it, and I thought this could be good with some bunkers we're not playing out of, bunkers that are purely visual," Zugel says. "And then, Kafka processes some of the waste from Kohler. They'll take some of the crushed porcelain and make counter tops, and things like that. And I thought, well, not only are we using Kohler's waste, we're having less maintenance ... we're not pushing (sand) after storms."

Whistling Straits has around 1,000 bunkers on the Straits Course, and as Zugel says, some are purely for aesthetics — golfers never hit out of these bunkers. On the steep faces and lower edges, the crew has installed the Kafka Wax Polymer Mix. Some of these bunkers are nearing 10 years old, and Zugel says they haven't moved an

Continued on page 20

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Continued from page 18

inch. Kafka describes the polymer's reaction to heavy rains as if they buried a candle in the bunker. It pushes the rain away.

Zugel has had fellow superintendents reach out to him to see how he uses Kafka's product. He says it is most practical for bunkers that are out of play or driving range bunkers with steep faces. As an added bonus, if they ever renovate, they can remove the polymer and put it right back. Zugel describes it as a ground-up candle.

When asked if it's like a restaurant putting artificial flowers on a table, Zugel says a better comparison would be artificial flowers behind the bar.

"Those flowers aren't being touched by the guests," Zugel says. "We've had rains of 3-4 inches, and it doesn't move. It helps us out with maintaining the look of the course and maintaining ahead of play ... it's acted as a bunker liner in those situations."

SPRAY AWAY

How Presidio GC in San Francisco undertook a bunker renovation piece by piece

BY SARAH WEBB

About 10 years ago, Presidio GC in San Francisco underwent a rehabilitation project, in part, because its 64 bunkers were in dire need of a facelift.

"They were old, some of the fabric liners were coming up and a lot of them didn't have liners, so the sand was contaminated and became like concrete," says Brian Netzt, who has been superintendent at Presidio Golf Course for the past 18 years. "The rehabilitation included changing the location, shape and size of the bunkers to give the course a different feel."

After researching the options, Netzt settled on Klingstone. The reasoning was four-

fold: In-house staff could install the bunkers; heavy equipment was not required; the installation could be done incrementally over the course of several years; and maintenance over time is minimal due to the lack of liners. "Everything just pointed toward Klingstone," Netzt says.

Little by little proved to be the tactic for Presidio, as the bunker renovation took place over the span of eight years.

"We didn't want to devote a huge chunk of money to tearing everything up at once because there's a corresponding revenue drop that we didn't want to bear," Netzt says. "We do 66,000 rounds a year, so the hit on our bottom line would've been significant."

To install the bunkers, crews rough graded them to get the desired shape and undulation. They then cut the drainage inside the bunkers and tied it to the out-

Continued on page 22

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GOING BUNKERS

Continued from page 20

lets. After the soil dried, they sprayed on the Klingstone.

"We put a couple barrels of Klingstone in the back of a utility cart, and our guy wore a Tyvek suit and some boots and basically spray painted the inside of the bunker with the Klingstone," Netz says.

After setting for about an hour, the product hardened up, and crews put the drainage in. Netz says Presidio also sprayed the drains in order to achieve a complete seal throughout the bunker.

Presidio used Turf Drain, a flat all-fabric pipe, and then backfilled the entire bunker with sand the next day. "There's no gravel to worry about in any of the bunkers," Netz adds. Klingstone fully cures within 24 hours or less, according to John Ammons, vice president for Klingstone.

"You put down a gallon a minute, which is 20 square feet of coverage, so you can



Klingstone bunker liner can be applied in-house using a hose.

move along at a good clip," Ammons says. "Immediately after finishing, you can cover it with sand and move along. By that time the next day, it's fully cured and playable."

For other courses looking into installing Klingstone bunkers, Netz recommends crews keep two pumps on hand.

"You may be in the middle of spraying a bunker when one of the pumps goes out

on you," Netz says. "You can't stop Klingstone from curing; it's kind of like pouring concrete — once you start, you have to see it through to the very end."

Ammons adds that weather can be another factor to consider when using Klingstone's product. "It can't be applied to frozen ground. The temperature should be 50 degrees and rising," Ammons says. "High winds can also be a challenge because you're spraying it."

The oldest Klingstone bunkers on Presidio are 10 to 11 years old, and maintenance is minimal to nonexistent, Netz says.

What's more, Netz says, the golfers love the challenge the new bunkers pose.

"We have fine fescue on our fingers that we don't maintain, but the look is a lot more fitting for the era this golf course was originally built (1895), and it's less maintenance for us because we don't have to worry about mowing bunker fingers." ©

PHOTO BY: KLINGSTONE

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Emails and doorbells

BY SETH JONES

In a typical year when the Golf Industry Show rolls around, the team packs an array of *Golfdom*-branded clothes, a stack of business cards, our voice recorders and digital cameras. This year? We met in early February to discuss what a virtual show entailed, what were our responsibilities and what we should expect. The phrase, “I don’t know” was a common response as we entered the uncharted waters.

Adding to our anxiety, once the show “opened,” when virtual GIS attendees clicked on the *Golfdom* booth, they were greeted with signage from an unrelated sprayer company. Surprise! The first several hours of the show was us answering the question, “did you know your booth has the wrong signage?”

But, there were also highlights, like Jim Nantz accepting the Old Tom Morris Award and the Ladies Leading Turf event.

The first (and hopefully last) Virtual GIS had its highs and lows, but it reinforced that it's better when we're together

Hello, friends

Viewers of the Opening Session were rewarded with a familiar face — and voice — when the Old Tom Morris Award was presented to Jim Nantz, longtime CBS sports broadcaster who regularly calls sports mega-events like the Masters, the Final Four and the Super Bowl.

Scenes from the virtual Golf Industry Show: (clockwise from top left) GCSAA CEO Rhett Evans hosting a panel with some of golf’s most influential people; GCSAA President John Fulling, CGCS, presenting Jim Nantz with the Old Tom Morris Award; and Golf Channel’s Lauren Thompson addressing the “live” audience.

Nantz shared personal stories about what golf means to him and even name checked a few of his superintendent friends on the Monterey Peninsula. He thanked the association for the recognition and then spoke on the appreciation he has for the superintendent community.

“Giving back to kids, giving back to the community, all these things are a daily part of what everyone out there does,” Nantz said. “All the people involved in the GCSAA, they all give back their time; they’re honorable people. They work crazy hours and often don’t get the recognition. To me, that lines up symmetrically with

Continued on page 26

PHOTOS BY: GOLFDOM STAFF

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// VIRTUAL GIS 2021 IN REVIEW

Continued from page 24

what the game is about. It's a game of honor. Everybody that's a part of this group embodies that better than anyone that's associated with the game."

Other sessions included similar heavyweights of the game. Tom Watson, Annika Sorenstam and Gary Player all made appearances. Brandel Chamblee somehow snuck in. A panel discussion with USGA CEO Mike Davis, PGA Tour Commissioner Jay Monahan, PGA of America CEO Seth Waugh and LPGA Commissioner Michael Whan, moderated by GCSAA CEO Rhett Evans, was good enough to warrant throwing a bag of popcorn in the microwave.

The Ladies Leading Turf discussion again garnered a strong turnout and some moving motivational speakers. "Be persistent; don't give up," said Nancy Miller, CGCS-Retired, Maple Leaf G&CC, Port Charlotte, Fla. "And, when that door opens, stick your foot in it and follow through."

Education in the break room

For superintendent attendees of the Golf Industry Show, the world-class educational seminars GCSAA offers are always a highlight of the show. Many of the superintendents I spoke with raved about the ease of viewing the GIS from their offices or break rooms.

"We all got together at the Black Wolf Run clubhouse and fired it up on the TV and got lunch," Chris Zugel of Whistling Straits, Kohler, Wis., told me. "I think it's a good idea. It's an interesting way to bring a lot more people into it without having to cover the cost to get down there. And, it was all-inclusive, so we signed up for things we might not have signed up for in the past."

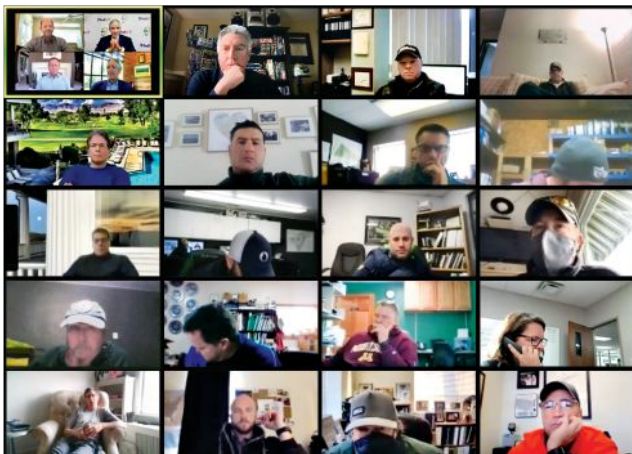
"The education was the same quality we've all been used to — very good," said another superintendent, before sharing a lament. "I know this is a business, and I'm familiar with how things work, but had I known the amount of preshow emails I would receive, I would have waited and signed up on the first day of the conference."

One virtual GIS email, with the subject line "Are you feeling lucky?" hit attendee inboxes three times on the same day, making many of us feel unlucky that day. On the exhibitor side, booth representatives heard a doorbell sound and then received an automated email every time someone entered their virtual booth. With a gamification element awarding prizes for frequent booth visits, a deluge of emails and doorbells followed.

Best thing available

The exhibitors I spoke to told me that despite a few stumbles early on and having to turn the volume off on their computers, they were happy with the virtual GIS.

"It's not going to replace an in-person trade show, but it was the best that was available during a global pandemic," said Scott Kinkead, executive vice president of Turfco. "It was difficult for us to figure out how to make it work and for everybody. It was challenging, but I think it was a tremendous effort by the GCSAA to make something work."



A live crowd shot of the 2021 Virtual GIS gave a look into how others were taking in the event.

"There were a lot of unknowns going into the show. We were asked, how will we gauge success? We've never done this," said Abbey Barry, communications senior specialist for PBI-Gordon. "After we got through the first afternoon of it, it was good. The guys got into a groove and figured out how the platform worked."

PBI-Gordon chose GIS 2021 to launch a new turf training site at training.pbigordonturf.com. The first two classes, on the new EW formulation of SpeedZone and an overview of Union Fungicide SC, are already up on the site with more classes to follow. Barry said the virtual GIS was ideal for launching something like the training site and less than ideal for the sales reps to discuss product with end users.

"I don't think it could have gone better for us to have launched a virtual/digital platform with a virtual show; that was perfect," Barry said. "It wasn't set up for intimate interactions, but it was set up to get people signed up for an online platform."

Andy Eick, director of facilities and grounds at Mohawk GC, Schenectady, N.Y., said the virtual trade show was disappointing.

"The information was difficult to navigate through. Some vendors put the time in and did a nice job of embedding videos of new products. Others just put links up to information and seemed to not put in any effort," Eick said. "The trade show floor is one of my favorite things to do at GIS, as you have an opportunity to network. You also have an opportunity to touch, feel and see new products. They did their best to provide a normal trade show feeling, but it would never be that way, so, in my opinion, it was set up for failure."

But, another superintendent loved it. "The trade show was great," he told me. "I very much enjoyed browsing through the virtual booths and chatting with old friends and virtually meeting others. I had a great chat with a Rain Bird representative who was looking for some specific insights."

And yet, that same superintendent reiterated a common obstacle to being involved with the virtual GIS: He was trying to attend a show while still being at work.

"I was at work, in my office, for the most part. It was a regular day for everyone else," he said. "So, I got the same amount of questions and texts that I do in a normal day. When I'm physically at the show, everyone knows I'm not available."

Here's to not being available in 2022. 🍷



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// TALKING 'TODES

NEMATODES ON THE MARCH

By Nathaniel Mitkowski, Ph.D.

In northern climates, the standard sampling time for nematodes is near the end of March or early April. But, this can shift earlier or later, based on weather conditions. We often find that moisture is as important as temperature. If it is a very wet spring, nematodes may not thrive and populations can remain low.

When sampling for nematodes, a single green is not going to tell you much. Nematode populations change over time, and they are not consistent on every green. My recommendation is to pick three of your worst or mediocre-quality greens for testing.

If populations are high at spring sampling, you can treat them and your root mass will respond accordingly. No treatment is required for low population levels.




Severe damage on a golf course fairway caused by extremely high levels of lance nematodes during August 2019.

Check your nematodes again in mid-to-late May. Nematode populations will still be increasing, particularly without treatment, but if populations are below threshold levels, then treatment is still not necessarily required. Do at least one more sampling at the end of June or the beginning of July. If your populations remain low, you are generally covered for the rest of the year. If they are high, treat again. In the worst cases I have seen, it is not unusual to treat for nematodes two to four times

throughout the growing season, but the type of nematodes present and the chemical being used will determine the application interval.

If the fall is warm, additional sampling in September or October may be required. Populations treated in June can rebound by October. But, an actively growing root system can do very well even if population numbers are above the threshold.

Finally, the only way to get reliable data is to take composite samples. For each green sampled, you should take 20 to 30 cores and combine them into one bag. Take core samples at approximately 5-foot centers from each other to form a grid. Also, when resampling the green, the cores should be taken from the same approximate area of the green.

I do not recommend preventive treatments unless you have a documented nematode issue. Track your nematodes, and once your nematode numbers are determined, it is appropriate to talk about your best strategy based on nematode numbers, your budget, greens conditions and time of year. 

Nathaniel Mitkowski, Ph.D., is the chair of the Department of Plant Sciences and Entomology at the University of Rhode Island. You can contact him at mitkowski@uri.edu.

NEWS UPDATES

SIGNATURE XTRA STRESSGARD AVAILABLE IN CALIFORNIA AND HAWAII

Bayer's Signature Xtra Stressgard fungicide is now registered and available for use on turf in California and Hawaii. The systemic fungicide enhances plant health, suppresses bacterial wilt and controls *Pythium*, anthracnose and summer decline pathogens.

"We are thrilled that Signature Xtra Stressgard is now available in California and Hawaii," said Mike Hirvela, customer marketing manager for Bayer Golf. "With Signature Xtra Stressgard, golf course superintendents and turfgrass managers (in California and Hawaii) now have access to a tool that not only provides control of key disease pathogens but also contributes to chlorophyll health and stability, which leads to improved photosynthesis, stronger plants and healthier turf."

The Bayer Stressgard portfolio of fungicides offers plant health benefits that go beyond disease control to mitigate abiotic stressors across the golf course. Stressgard provides healthier, more consistent playing surfaces through positive improvements in key physiological processes that take place within the plant, the company said.



GROUND PEARLS HAVE AN INTERESTING LIFE CYCLE, WHICH IS WHY INSECTICIDAL CONTROL OF THE PEST IS COMPLICATED."

David M. Kopec, Ph.D.
(see story on page 29)

// PEARL PROBLEMS

Control of ground pearls using application sequences of different insecticides

Ground pearls can be a significant problem on golf courses in desert conditions, but applying closely timed rotations of performance-based insecticides shows some promise for control

By David M. Kopec, Ph.D.

Ground pearls, also known as pearl scales, can damage warm-season grasses but are especially troublesome on bermudagrass greens. Although not widespread, damage to infested turf is problematic as populations increase from year to year when greens are irrigated and fertilized. Transmission mainly occurs from the movement or transfer of infested soils in sod, plugs, soil cores or excavated root-zone media. Once introduced, the ground pearls feed on the turfgrass roots, and populations almost always increase in irrigated and fertilized turf.

SYMPTOMS AND LIFE CYCLE

Initial turf symptoms include a slight loss of turfgrass color in small oval or semicircular patches, increasing in size from year to year, often yielding larger circles or crescent shapes (Figure 1). New offspring that hatch on the edge of the healthy turf increase the size of infected turf areas. Symptomatic turf can be evident throughout most circular regions, with the most significant number of scales usually appearing near or at the advancing edge of infestation.

Ground pearls have an interesting life cycle, which is why insecticidal control of the pest is complicated. Ground pearls attach themselves as young scales in the early summer to begin root feeding. Shortly after successful root attachment, the scales produce a hardened shell or case, at which time, they are in their “encysted” or “pearl” stage. They continue at this commonly observed stage all year

FIGURE 1



Damage caused by ground pearls on a bermudagrass putting green. Symptoms often include initial thinning and texture changes, followed by loss of turf in the forms of straw or bare soil.

until the next late spring/early summer when they emerge from within the pearl and appear as exposed pink females (Figure 2).

The females then lay eggs without the need for fertilization. The eggs quickly hatch, and the small newborn scales (now in the crawling stage) travel short distances to attach to viable roots and start feeding. They then surround themselves with the round, hard shell, only to repeat the full life cycle in the next spring/summer as emerged females. The hard shell protects them from external stress and insecticides because they live as encysted ground pearls for practically 95 percent of their life span.

CONTROL APPROACHES

For the reasons noted above, chemical control is inconsistent, primarily for contact insecticides. Systemic products used alone in repeat applications produced nominal or inconsistent results. With the loss of many older insecticides, many of which had environmental concerns, there are virtually no insecticidal products recommended for ground pearl control.

Many publications instead emphasize minimizing symptoms through cultural management practices (see the *Arizona Golf Industry Best Management Practices Resources Guide*), including modified irrigation and

Continued on page 30

TABLE 1

Product No.	Year applied	Name	Active ingredient	Formulation	Class group	Application rate	
						Product	Active ingredient
1	2017	Acelepryn	chlorantraniliprole	1.67 pounds (L)	28	20 ounces (L)/acre	0.26 pound/acre 0.29 kilogram/hectare
2	2017	Arena	chlothianidin	50% WDG	4-A	12.8 ounces WDG)/ acre	0.4 pound/acre 0.49 kilogram/hectare
4	2017 & 2018	Zylam	dinotefuran	0.89 pound (L)	4-A	4.9 pints (L)/acre	0.54 pound/acre 0.605 kilogram/hectare
7	2017 & 2018	Divanem	abamectin	0.7 pound (L)	6	12.2 ounces (L)/acre	0.067 pound/acre 0.075 kilogram/hectare
8	2017 & 2018	Ference/ Mainspring	cyantraniliprole	1.67 pound (L)	28	20 ounces (L)/acre	0.261 pound/acre 0.292 kilogram/hectare
11	2017	Nimitz (nematicide)	fluensulfone	1.5% (G)	—	80 pounds (G)/acre	1.2 pounds/acre 1.344 kilograms/hectare

The assigned product number, name, active ingredient, formulation, class group, application rate for the product and active ingredient were applied in 2017. Product numbers listed appear in subsequent tables, which provide data on treatment sequences. Products 4 (Zylam), 7 (Divanem) and 8 (Ference) were, as such, tested again in 2018, both as a “second-year” repeat application series over the same plots treated in 2017 and were applied in 2018 to formerly nontreated plots.

FIGURE 2



The life cycle of ground pearls.

Continued from page 29
fertility practices, some of which can be counterproductive in maintaining ultradwarf bermudagrass cultivars.

INVESTIGATING NEW INSECTICIDES

We investigated the application of newer systemic insecticides that closely

coincide with when ground pearls are most susceptible to body exposure.

In 2017 at Desert Hills Municipal Golf Course in Yuma, Ariz., we used a chipping green with highly visible symptoms of ground pearl damage for these trials. Each plot received applications of six different insecticides differing in active ingredient groups (Table 1).

Each plot received every one of the selected products in a different rotation sequence. After the first product was applied, plots then received an additional single application of each of the other five products within a short time. The order of product applications, which is the same as the “Treatment Sequences,” are listed in Table 2.

We applied the maximum label rate of the first product in each treatment sequence (Table 1). After that, the next labeled product was used at its maximum rate within a short time window when the population of ground pearls was 90 percent or more pink females. Thus, in 2017, six treatment sequences were started on May 24, 2017.

TURF MANAGEMENT

The entire green was core aerified with 5-inch-long (12.7-centimeter) 0.1875-inch (0.47-centimeter) solid tines on a 2-by 2-inch (5- by 5-centimeter) spacing. Revolution soil surfactant was applied at the rate of 6.0 ounces product per 1,000 square feet (1.9 milliliters/square meter) and watered in 24 hours before the first application series on May 24, 2017.

The green was mowed six times weekly at 0.1375 inch (3.5 millimeters) with a triplex mower with clippings

FIGURE 3



We counted exposed females and pearls in soil cores sampled on several dates in mid-May. Treatment sequences were started when the population of ground pearls was greater than 90 percent exposed pink females.

removed. Irrigation occurred six days per week to avoid drought stress. Fertilizer was applied during the first week of the month in May to September from a 21-7-14 fertilizer at the rate of 0.375 pound of nitrogen per 1,000 square feet (1.8 grams/square meter).

We sprayed the plots in the early morning with the CO₂ sprayer, delivering 56 gallons per acre (523.8 liters/hectare), while Nimitz was applied with a hand shaker. Each treatment series appeared three times in a completely randomized field design. Plots were hand irrigated with 0.375 inch (9.4 millimeters) of water within 30 minutes after the final product application.

Plots were harvested for ground pearl counts on Sept. 27, 2017, by taking two standard 4.0-inch-diameter (10.2-centimeter) cup cutter samples to a 5-inch (12.7-centimeter) depth (Figure 3). We stored all samples immediately in a refrigerator during the counting procedure, which took place within five days after harvest.

GROUND PEARL COUNTS

All plots in the trial that received chemical products had visual symptoms, confirmed by observing ground pearls found in the 2.0-inch-diameter (5.1-cm) soil core samples were taken at a depth of 2.5 inches (6.4 centimeters). The plot size was 20 inches by 60 inches (50.8 by 152.4 centimeters). For data analysis of the treatment sequences (TSs), two standard 4.0-inch greens cup cutter plugs (10.2 cm) were taken to a soil depth of 5 inches (12.7 cm) and analyzed for effectiveness by counting the number of ground pearls per plug.

We used the average of the two samples per plot as the individual plot data response. Also, we included severely infested areas as untreated controls and plots that showed no symptoms (asymptomatic controls). We conducted a statistical

analysis on the number of ground pearls counted in each of the treatment sequences harvested at the end of September each year.

Continued on page 32

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TABLE 2

		Application order and dates, 2017						No. pearls/ plot
		1st	2nd	3rd	4th	5th	6th	
		May	June					
TS No.	Product application order for each treatment sequence	24	2	6	9	12	15	
1	Acelepryn/ Arena/Zylam/Avid/Ference/Nimitz	1	2	4	7	8	11	22
2	Arena/Zylam/ Avid/Ference/ Nimitz/ Acelepryn	2	4	7	8	11	1	59.6
4	Zylam/ Avid/Ference/ Nimitz/ Acelepryn/ Arena	4	7	8	11	1	2	1
7	Avid/ Ference/ Nimitz/ Acelepryn/ Arena/ Zylam	7	8	11	1	2	4	8.6
8	Ference/ Nimitz/ Acelepryn/ Arena/ Zylam/ Avid	8	11	1	2	4	7	1.3
11	Nimitz/ Acelepryn/ Arena/ Zylam/ Avid/ Ference	11	1	2	4	7	8	82.6
Average of treated turf								29.2
Untreated control								94.6
LSD value								4.7

The 2017 mean number of encysted ground pearls per plot after the completion of six rotational application sequences of six products on an infested bermudagrass green in Yuma, Ariz. For the experiment (May 24 – June 15), each of the six products was applied to each plot in a different application order. The treatment sequence (TS) number defines the products used in chronological order.

Continued from page 31

RESULTS

For the six treatment sequences in 2017, the mean number of ground pearls per plot ranged from 1.3 to 82.6 (Table 2). The untreated turf plots averaged 94.6 encysted ground pearls per plot. Areas that showed no visible symptoms had, on average, one or two ground pearls per plot (data not shown).

The TS with the highest number of encysted ground pearls included treatment TS 11, which started with Nimitz nematicide (82.6 ground pearls per plot). The next highest was TS 2, which started with Arena (59.6 ground pearls per plot), followed by TS 1, which started with Acelepryn first (22.0 ground pearls per plot).

The TS applications that resulted in the lowest numbers of encysted ground pearls included those in which Ference was applied once in one of the first three applications (TS 4, TS 7 and TS 8) or in which Avid was used earlier in the first three applications (TS 4 and TS 7). The three Ference TS sequences (TS 4, TS 7 and TS 8) had, on average, 1.0, 1.3 and

Research Takeaways

- Ground pearls have become extremely problematic to control on golf courses because of the removal of many older turfgrass insecticides with environmental issues.
- Ground pearl adults (when they are exposed as nonencysted egg-laying females) were severely reduced in numbers by rotational and closely spaced single applications of Zylam, Avid and Ference under desert conditions.
- This research presents a protocol of product use sequences to achieve significantly enhanced ground pearl control.

8.6 ground pearls per plot (Table 2).

Based on the 2017 results, we repeated the best treatment sequences in 2018 on the same turf plots for a second year. We also used the best performing treatment sequence (TS 4, TS 7 and TS 8) programs from 2017 as new initial treatments starting in 2018 to new plots having ground pearl counts ranging from 79 to 234 per plot (Table 3). Thus, there would be a total of six treatment sequences for 2018, now all based on rotations of Zylam, Avid and Ference products.

The three repeated treatment

sequences from 2017 are TS 4+4, TS 7+7 and TS 8+8, and three that were new starts in the 2018 season are TS 4, TS 7 and TS 8. We followed the same sampling procedures for the plots (two greens cup-cutter plugs) in early October 2018 and completed ground pearl counts within seven days. Plot maintenance was identical to that described for 2017.

The results for 2018 show that when we applied the first rotational application of Zylam, Avid or Ference, nearly all cysts were eliminated from infested plots. It is essential to note the first application was during the exposed female stage. The two-year repeat treatment series, e.g., TS 4+4, TS 7+7 and TS 8+8, averaged 1.6, 0.5 and 1.0 pearls per plot, respectively, when applied over two years. In October 2018, the nontreated control plots averaged 167 pearls per plot (Table 3).

For the plots that received the treatment sequence of TS 4, TS 7 or TS 8 on previously untreated plots for the first time in 2018, the number of encysted pearls ranged from 6.0 to 39.1, among the three designated treatment

TABLE 3

		Application order and dates									No. pearls/ plot
		1st	2nd	3rd	4th	5th	6th	1st	2nd	3rd	
TS No.	Product application order for each treatment sequence	May	June 2017					May 2018			
		24	2	6	9	12	15	21	25	29	
4	2018: Zylam /Avid/Ference	—	—	—	—	—	—	4	7	8	5.1
7	2018: Avid /Ference/Zylam	—	—	—	—	—	—	7	8	4	39
8	2018: Ference /Zylam /Avid	—	—	—	—	—	—	8	4	7	6
4 +	2017: Zylam /Avid/Ference/Nimitz/ Acelepryn/Arena	4	7	8	11	1	2	—	—	—	1.6
4	2018: Zylam /Avid/Ference	—	—	—	—	—	—	4	7	8	
7 +	2017: Avid /Ference/Nimitz/Acelepryn/Arena/Zylam	7	8	11	1	2	4	—	—	—	0.5
7	2018: Avid /Ference/Zylam	—	—	—	—	—	—	7	8	4	
8 +	2017: Ference /Nimitz/Acelepryn/Arena/Zylam/ Avid	8	11	1	2	4	7	—	—	—	1
8	2018: Ference /Zylam/Avid	—	—	—	—	—	—	8	4	7	
Mean of treated plots											8.7
Untreated controls											167
LSD value											3.9

The 2018 mean number of encysted pearl scales per plot for six treatment sequences (TS) on a highly infested bermudagrass green in Yuma, Ariz. Three TS follow effective treatments from 2017 on the same plots, and three repeat the best treatments on newly infested areas. Note: “—” no application on that date.

sequences involving Zylam and Avid and Ference. As in 2017, TS 7 ranked third for the lowest number of encysted pearls, then TS 4 and TS 8 (Table 3). The number of ground pearls in the nontreated control plots was quite large in October 2018, averaging 167 encysted ground pearls per plot (Table 3).

CONCLUSIONS

In our case, we harvested soil samples from mid-May to mid-June to determine the ratio of pink exposed females to encysted pearls. We found that a population of 90 percent females was correlated to 1790 AZMET (cumulative) heat units when using the 55/85 degree F sigmoidal model. For locations not covered by the AMET network, it is critically important to make multiple soil samples across multiple dates to determine the ratio of females to encysted pearls. Start doing so before mid-May and continue repeating the process every five days to determine when the females

predominate the population.

This data shows that, at least under extreme desert heat conditions, ground pearls can be dramatically reduced in numbers on bermudagrass by performing closely timed applications of three systemic insecticide products, each applied once at the full label rate on nonencysted, egg-laying females. We used a single high label rate of Zylam, Ference and Avid in a narrow time window when exposed females predominated the population. These chemicals worked best when applied over two seasons. Thus, applying select insecticides in rotations while maintaining full label compliance for all products used appears to be an effective chemical treatment for turf with ground pearl infestations under desert conditions. ©

David Kopec, Ph.D., is a retired Extension specialist in turfgrass science and management from the University of Arizona in Tucson, Ariz. (1985-2018). He can be contacted at dmk@email.arizona.edu.

Acknowledgments

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Thatch can be controlled by implementing practices such as topdressing, aerification and verticutting.

Thatch meets its match

Topdressing, aerification and verticutting consistently are three keys to controlling thatch, according to Bob Harper, superintendent at Lago Mar Country Club in Plantation, Fla. Harper says his golf course topdresses, on average, about every two to three weeks, verticuts once a month in the growing season and aerifies three times a year.

The course has had TifEagle ultradwarf bermudagrass on its greens since 2000.

"It's important to control thatch on ultradwarfs," Harper says. "In the beginning, it produces a lot of thatch, and we kept verticutting to keep the thatch out, but we realized there was no way to verticut enough to keep thatch at bay, which started to develop on top of greens space."

Harper notes that the thatch starts to build up in the summer months.

"Even in South Florida, we have a growing season and nongrowing season," he says. "We verticut in the growing season to account for extra buildup."

Other than those practices, Harper says it's important to treat the soil with microbes.

"You can't mechanically reduce all the thatch; you're topdressing it, and the thatch buries on itself, so it's important to have healthy soil microbes," he says. "We either feed soil microbes with carbohydrates to promote populations or add microbes through certain treatments. It's consistently included in the spray program."

Harper also uses growth regulators, such as Primo, anywhere from 1 to 5 ounces per acre as often as weekly in growing season. ©

PHOTO COURTESY OF: BOB HARPER

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By using coring heads, superintendents can easily reduce their thatch. They can use such coring heads by attaching them to their own triplex greensmower. Superintendents can remove thatch up to 1 inch with 0.25-inch hollows at mowing speed. If the operator goes slower, he or she can achieve more holes per square foot, which can bring the removal percentage up by about 7 percent per pass. Using these types of coring heads helps superintendents ensure that there is a quick healing of the holes and direct playability after using the coring heads.

The Club at Indian Springs, Broken Arrow, Okla.

DAVID JONES
Superintendent



We've got 36 holes — 18 with bermudagrass greens and 18 with bentgrass greens. The bermudagrass greens get a lot of thatch because they're constantly growing throughout the summer. On those, we double verticut and topdress every week. We do a big aerification on the bermudagrass in July. On the bentgrass, it's more spring and fall when they're growing. In the summertime, the bentgrass greens slow down in our area, and we don't do a lot of verticutting or topdressing during that time. On the bentgrass greens, we verticut once a month. For aerification on the bentgrass, we do one in the fall and one in the spring. We do a smaller aerification once a month on the bentgrass greens, with smaller tines. We also watch our inputs on fertilization. If you can do a little bit less to keep them from growing, that helps with the thatch.

DryJect

JOHN PADDOCK

Owner



The rate at which thatch accumulates in turf is highly influenced by the inputs of the superintendent. Careful attention should be given to only apply enough fertility and water to produce a uniform and healthy playing surface. Excess inputs will magnify thatch accumulation. Thatch levels can be manipulated by encouraging healthy biological activity (decay) by incorporating either the native soil back into the top portion of the thatch by core aeration and dragging or by topdressing or injection with a blended soil/sand mix or with sand alone. Incorporating both these materials helps to create a "hybrid thatch" or mat. This firms it up and encourages robust microbial activity and decay. Regular incorporation of the desired soil medium will provide the necessary dilution to this organic matter. In sand-based sports turf, the injected or topdressed sand should be close to matching the sand in the soil profile.

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“It is interesting to read about the early descriptions of the insect pests we deal with today on golf courses.”

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

Early golf course entomology

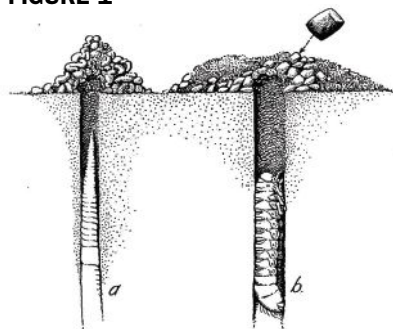
I like to look back each month on the history of the USGA Green Section. My first step is to go to the Turfgrass Information File at Michigan State University. My search always reveals something about the pioneers of modern turfgrass science. Insects and articles before 1942 were the themes for this search.

The Green Section published more than 100 articles concerning insect problems on golf courses before 1942. Many answered questions from the readers on how birds visited courses to find insects. Earthworms and how to deal with castings also were popular topics.

The first articles were by W.R. Walton, an entomologist with the U.S. Department of Agriculture. *The Bulletin of the USGA Green Section* published three of his writings in 1921, including an April story about southern June beetles and in September, an article on control of the May beetle. The control measures taken were a little scary, e.g., sodium cyanide or kerosine fusel-oil emulsion. I liked drawings depicting the burrows and castings for earthworms and southern June beetle (Figure 1).

White grubs and earthworms were the primary insects discussed during the first year of the Green Section. However, Walton also wrote about the

FIGURE 1



Burrows and castings of earthworm (a) and Southern Green June Beetle (b). Note the difference in the size of the burrows and the form of the castings (from *The USGA Bulletin of the Green Section*, April 22, 1921).

changa, or West Indian mole cricket, in the June 1921 issue. In 1929, he published an article on cutworms on golf greens, while W.B. Noble penned an article about sod webworms and their control in 1932.

In October 1921, B.R. Leach, another USDA entomologist, had an

article about the Japanese beetle. At that time, this new beetle was only found on golf courses in New Jersey and Pennsylvania. He questioned how much of a nuisance this insect would become on golf courses. He described the insect's damage and stated that it would not be easy to control.

By 1926, after four years of research, Leach recommended lead arsenate as a control measure. The application rate of 3.5 pounds per 100 square feet is a bit staggering compared to today's insecticides. He noted extreme care is required when applying this poison.

In the 1930s, there were some lapses in *The Bulletin of the USGA Green Section*. Nothing was distributed in 1934, 1935 and 1937. The rest of the years in that decade had a bulletin for just a few months of the year.

In 1940, the Green Section changed its primary publication to *Turf Culture* for February and November. From May through October of that year, *Timely Turf Topics* also was published.

In the November 1940 issue, R.T. White summarized progress with “milky white diseases of Japanese beetle larvae.” In 1933, an organism was responsible for reducing larvae populations at the Moorestown, N.J., laboratory. In 1935, they discovered spore-forming bacteria were responsible for the grub disease. The USDA coordinated a program to help colonize the milky spores throughout New Jersey, Maryland, New York and Connecticut.

It is interesting to read about the early descriptions of the insect pests we deal with today on golf courses. The USGA Green Section depended heavily on USDA entomologists' cooperation with members of several well-known golf courses. We are very fortunate to have dedicated entomologists at our land grant universities today. **©**

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



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RainBird.com/golf

5 | John Deere 220 E-Cut Hybrid Walk Greens Mower

JOHN DEERE's 220 E-Cut Hybrid Walk Greens Mower features an electric reel drive that automatically adjusts reel speed based on the throttle position and maintains a consistent frequency of clip and cut quality, regardless of the operator. A ball joint design allows the cutting unit to move in any direction, maximizing contour following. Ease of use is enhanced on new models with an LED light kit and a newly designed kickstand. All controls move forward to mow for easy operation.

Deere.com/golf

6 | Smithco Greens Roller

SMITHCO's greens rollers come in four different models. The Tournament XL-7000 Ultra Wide (pictured) features a hydraulic direct cylinder drive, offering excellent traction and slashing maintenance, according to the company. With the strength to handle the toughest greens, the XL-7000 includes a 16-hp Vanguard Twin and offers power steering for ease of use.

Smithco.com

The 19th Hole



Andy Eick

DIRECTOR OF FACILITIES & AGRONOMY // Mohawk Golf Club, Schenectady, N.Y.



After 18 holes, what can I get you?

An ice-cold Labatt Blue. I grew up near Buffalo. Labatt Blue is as common as drinking water in Western New York.

Tell me about Mohawk Golf Club.

It's an old, old club up here. It was established in 1898, and it was actually the General Electric Club. The main headquarters of GE was in Schenectady, and the higher-ups and managers formed the club. It's an old Devereux Emmet property, a beautiful layout. It's a great walking course with rolling terrain and a Tudor-style clubhouse.



Do you have a family? Yes, I've got two girls: Avery, 13, and Charleigh, 11. I've been married to my wife, Natalie, for 15 years; we've known each other since nursery school. My kids are hysterical. They're big into sports — field hockey, basketball and lacrosse. And, we have two labs, Shelby and Louie.

You're a big live music fan ... what concert would you travel for once shows start back up?

Ween, Dead & Company, and a band called Rebelution. I did see a concert in 2020. It was a drive-in: Dark Star Orchestra in Cape Cod. You had to stay in your little car lot to hang out. It was a neat setting and venue. A bunch of fog was rolling in, so it was misty and eerie. It was refreshing to see live music.

What's your expectation for the 2021 golf season? I think it's going to be great.

// BEST ADVICE

"(RICK SLATTERY TOLD ME), ANDY, YOU CAN ONLY CONTROL 50 PERCENT OF YOUR IDENTITY. THE OTHER 50 PERCENT? IT'S WHAT PEOPLE THINK OF YOU ... ONCE I UNDERSTOOD THAT, A LIGHTBULB WENT OFF ON HOW I MANAGE PEOPLE."



Seeing the industry reenergize and rebound was awesome last year. You forget how much kids' sports factor into the golf industry. Families that have so many practices a week and games on weekends, you can't justify being a member somewhere. With kids not having those sporting events, they started picking up golf.

If I'm ever in Schenectady, what do I have to do?

It's a rich history here. The main headquarters for General Electric originated here. It's a huge facility. The other thing, if you're a history buff, is the Stockade District. The original Dutch settlers of Schenectady came here in 1661. It's a cool part of Schenectady with these old row houses and a lot of old places you can tour. A couple times, it was almost completely demolished due to the French and Indian War.

What teams do you root for? Purdue

basketball and football. I was a freshman when Drew Brees was a senior. I played four years of rugby at Purdue. And, obviously, the Buffalo Bills. I have season tickets. I live in the Albany area, but I travel the four hours to go home and see my mom and dad, see my sisters and brothers and then go to the game.

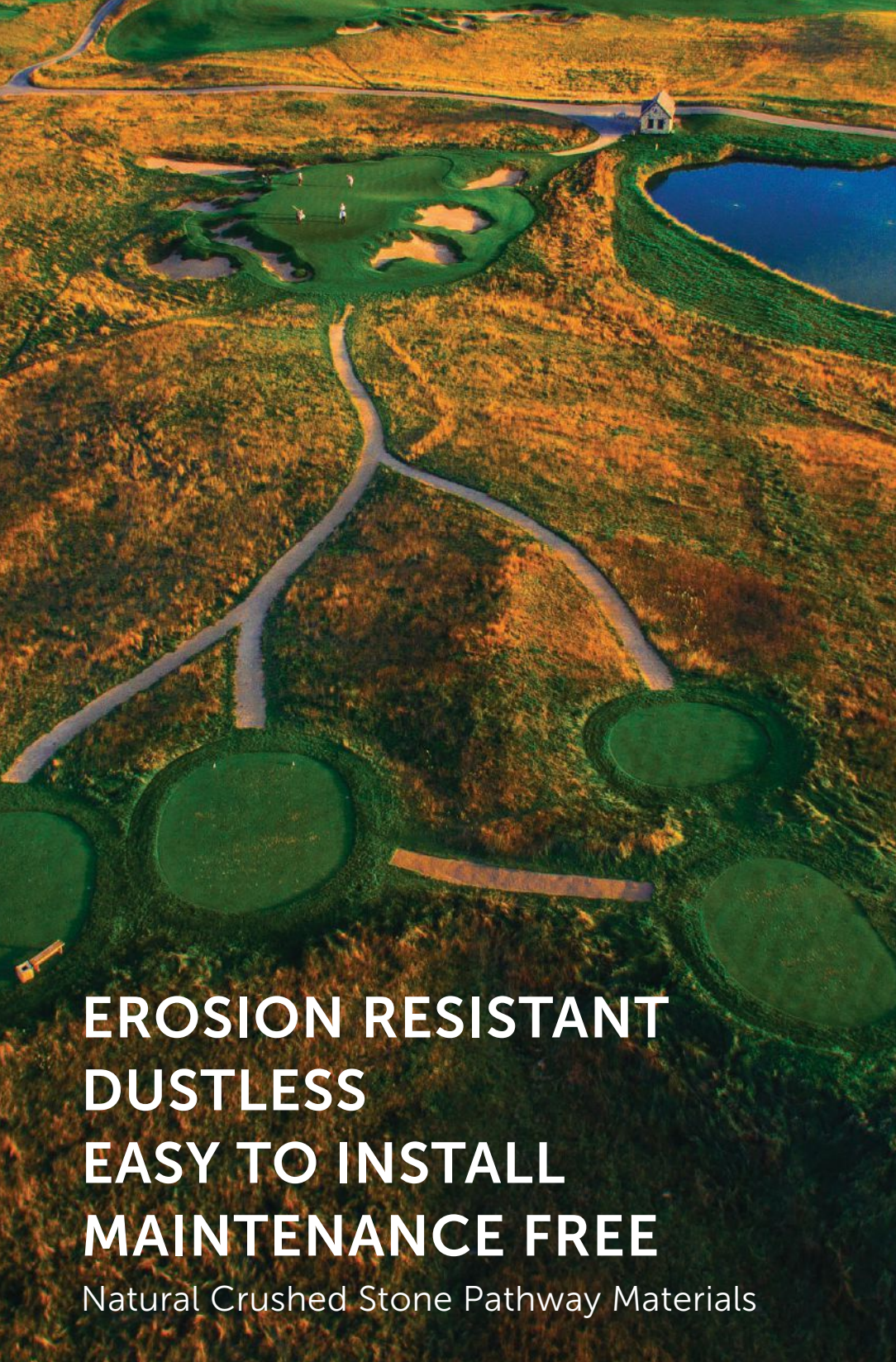
Who usually goes with you? There's usually a fight in the house. The girls are big fans. But, we have enough tickets between our friends and my brothers and sisters, so at any given time, we can have everybody go. It becomes a tradition.

As interviewed by Seth Jones, Feb. 18, 2021.

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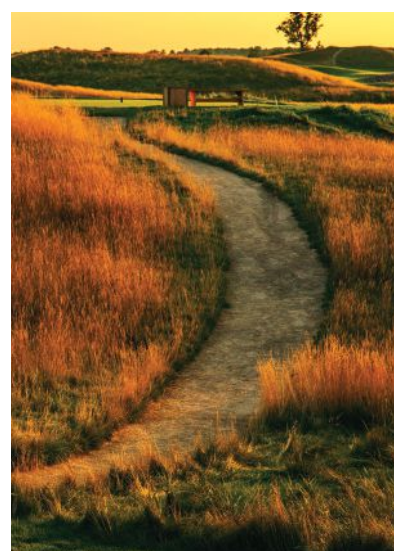


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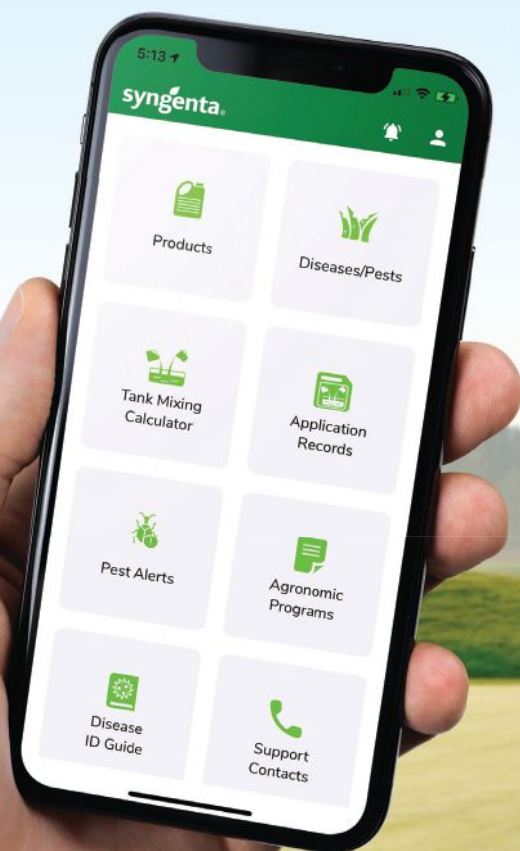


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