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2021 U.S. OPEN REVIEW

Q&A WITH SPEEDZONE FORMULATOR

A NORTH COAST MEDIA PUBLICATION VOL. 77 // NO. 7

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HOME SAFE

After being released from the Arizona Diamondbacks' organization broke and with a drug addiction, Zach Ferone was at rock bottom. Then a job in golf maintenance brought him back to a different big league.

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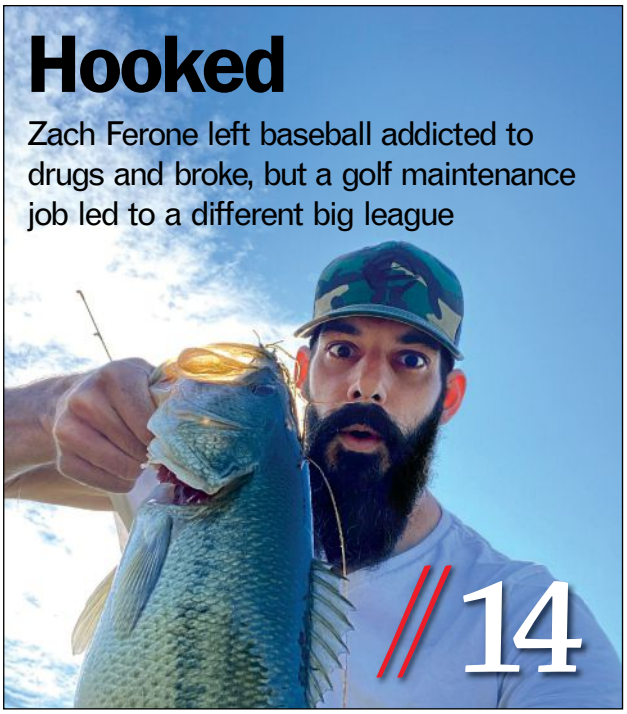

Hooked

Zach Ferone left baseball addicted to drugs and broke, but a golf maintenance job led to a different big league

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As PBI-Gordon announces a new EW formulation of SpeedZone, we talk to the man who brought the herbicide to the market

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DEPARTMENTS

SUPER SCIENCE

COVER PHOTO BY: MATTHEW ALLEN

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"In April 2020, COVID-19 put the page, like much in life, on indefinite hiatus. No travel, no Gallery."

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

Not in Kansas anymore

There's a lot of content in this month's issue that I'm excited to share with everyone. The cover story is a remarkable tale written by longtime *Golfdom* columnist Matt Neff, I have a fun Q&A with Dr. Dale Sanson of PBI-Gordon and I always enjoy sharing the 19th Hole interview each month.

But the page I'm most excited about this month? Page 12 — the triumphant return of the *Golfdom* Gallery.

The Gallery page ran every month in the magazine for the last nine years. It's our "faces and places" page where we show the movers and shakers in the industry at the various events we attend each month. It's a page that seemed daunting when we first started it (how would we get enough photos each month?) Over the years, it became second nature for the *Golfdom* community; people sometimes even volunteered to smile for a photo and suggested we use it on the page. Our readers have reached out to me asking for permission to create their own customized Gallery page in the *Golfdom* style to commemorate retiring employees (and I always say yes).

In April 2020, COVID-19 put the page, like much in life, on indefinite hiatus. No travel, no Gallery. As much as I love Kansas and our many golf courses, an all-Kansas Gallery would get repetitive pretty quick.

Now, mirroring the many reunions around the country with family and friends, the Gallery makes a welcomed return to the magazine this month. In it, we celebrate the 2021 U.S. Open and the people we saw there. The page adds a human element to our magazine. While it was gone, I felt the magazine was missing a big part of its personality.

The return of the department prompted me to revisit some old Galleries as a reminder of how we write the page and what it looks like. Just grabbing a few back issues was a walk down memory lane. There was the photo of the crew and me, all smiles as we toasted the conclusion of the 2016 Colonial in Fort Worth. I stumbled upon our own Jake "Goody" Goodman, western regional sales manager, with NFL Hall of Famer Dan Marino at who-knows-what event. I grinned when I saw the photo of *Golfdom* Group Publisher Bill Roddy with his wife Melissa, as they held newborn baby Sarah.

It would be a lot of fun for me to go back and collect all these pages into a single edition. It would be like a *Golfdom* family photo album. I wonder which industry person holds the record for the most appearances? Surely it's either Turf's Most Interesting Man, Bob Farren, CGCS at Pinehurst Resort, or second-generation reader of the magazine, Rees Jones, ASGCA, AKA the Open Doctor, who makes a repeat appearance in this month's Gallery.

Often, I hear from readers that after they are featured in the Gallery, old friends come out of the woodwork with a call, a text or a DM over Twitter, just to say hello after the welcome surprise of seeing them in the magazine. It might be someone they went to college with or worked alongside years ago before changing courses. I'm happy that *Golfdom* can accommodate those reunions.

I'm hopeful to see *Golfdom* Gallery back for good as the team and I are getting back on the road again to see you, the reader, and visit the great golf courses you all maintain. If you see us, grab us and smile for a photo so we can get it on the page. And, if you've been featured in the Gallery and have a story about it, shoot me an email and let me know because after all, you're family, and I love a good family reunion.

Email Jones at: sjones@northcoastmedia.net.

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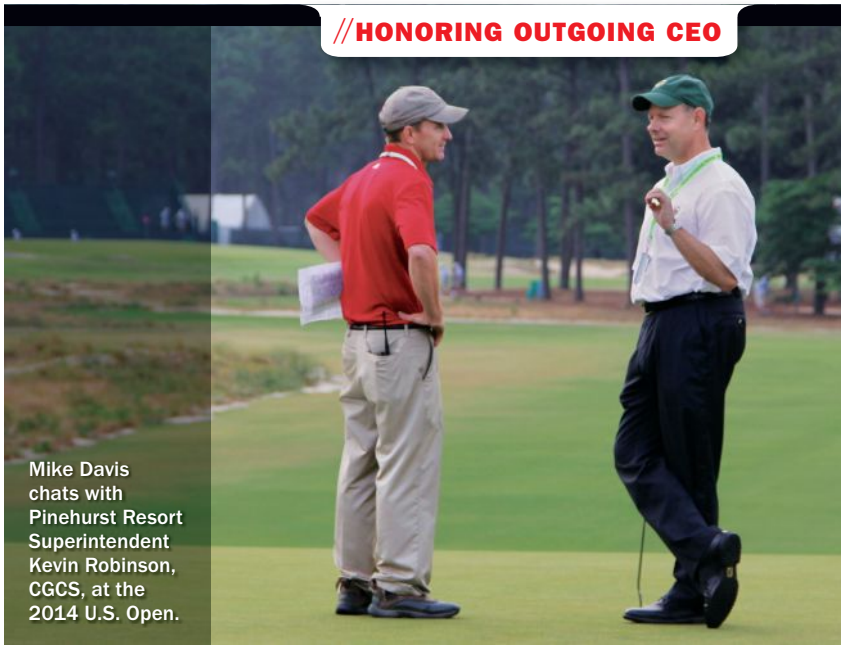
Starter

NEWS, NOTES AND QUOTES

//HONORING OUTGOING CEO



Mike Davis chats with Pinehurst Resort Superintendent Kevin Robinson, CGCS, at the 2014 U.S. Open.

USGA RENAMES SUSTAINABILITY INITIATIVE AFTER DAVIS

The program formerly known as the Turfgrass Environmental Research Program (TERP) will now be called the Mike Davis Program for Advancing Golf Course Management in honor of the United States Golf Association's (USGA) outgoing CEO.

The program is the largest private grant program in golf dedicated to advancing innovation in sustainability and improving on-course experiences. The USGA annually invests $2 million in the program, with $45 million invested to date. The program strives to improve playing conditions, reduce costs and create a more environmentally friendly game.

"Mike Davis' vision to lead the game forward through golf course sustainability has propelled the success of this program," said USGA President Stu Francis. "With his passion for golf courses and data-driven decision-making, we could not find a better program to share his name and inspire a sustainable future for golf."

Davis joined the USGA as assistant manager of championship relations in 1990, becoming senior director of USGA Rules and Competitions in 2005. He became the USGA's seventh executive director in 2011 and CEO in 2016. Davis stepped down from his role last month to pursue a career in golf architecture and design with Mike Fazio II. Their golf architecture firm is named Fazio & Davis Golf Design.

//TURF MASTER

FITZGERALD NAMED MASTER GREENKEEPER

The British and International Golf Greenkeepers Association (BIGGA) awarded Alan FitzGerald, superintendent, LedgeRock Golf Club, Pa., and *Golfdom* columnist, with a Master Greenkeeper Certificate.

Alan FitzGerald

"I cannot remember the last time that I was as excited as I was when I got word that I had become Master Greenkeeper number 84. The standards to become one are extremely high, which is shown by how few have gained the distinction over the last 30 years. Becoming a Master Greenkeeper is the accumulation of everything I have done over my career, which is why I am extremely excited and honored to be a member of this select club."

In September 2019, FitzGerald was named *Golfdom's* Herb Graffis Businessperson of the Year.

//ROUND 2

TONY WHELAN RETURNS TO RAIN BIRD GOLF

Tony Whelan has returned to Rain Bird's Golf Division as its new international sales manager. Whelan returns to the company he first joined through Rain Bird International in Canada in 1997.

He has worked in a variety of positions, eventually becoming regional manager for Rain Bird's Canadian Landscape Division. Whelan and his family relocated to Rain Bird's Tucson, Ariz., offices in 2005, where he worked with Landscape Division teams to grow international sales. In 2008, he joined the Golf Division as a golf specification manager.

Tony Whelan

After leaving Rain Bird, Whelan stayed in the golf industry in a leadership role with Jacobsen mowers. He also led channel expansion and development initiatives with MTD Products, focusing on outdoor power equipment dealerships and the landscape contractor market.

PHOTO BY: WELLGLAD / ISTOCK-GETTY IMAGES PLUS / GETTY IMAGES (GOLFBALL); *GOLFDOM* STAFF (KEVIN ROBINSON & MIKE DAVIS)

//ONLINE WORLD

SBI 2021 virtual program accepting applications

Superintendents can now apply for this year's virtual professional development program, which will be held in December. Applications are now open for superintendents to submit for the 2021 Syngenta Business Institute (SBI) program, which will be hosted Dec. 6-10.

The 2021 program will be held via Zoom, beginning with an introductory social networking session on Thursday, Dec. 2. Educational courses will then be hosted in three-hour sessions Monday through Friday, Dec. 6-10. Faculty from the Wake Forest University School of Business will teach the curriculum, which will cover negotiations; financial management; tools for managing employees; work/life balance; and leading across cultures and generations.

To facilitate deeper interaction among attendees, the class size for SBI 2021 will be limited. The program is only open to individuals employed in the U.S. as a superintendent, director of agronomy or at an equivalent level.

#TurfTweetoftheMonth

Follow us @Golfdom

Sally Jones
@sallym321
Superintendent / General Manager, Benson (Minn.) Golf Club

Thank you @KayCockerill, @marissalmar, Dr. Pat Cornett, Linda Segre and Shannon Roullard for visiting with the #WomenInTurf maintenance volunteers at #USWomensOpen today! Your support not only for your maintenance staff but also for Women in Turf is inspiring. @TheOlympicClub

PHOTO BY: AJ HILL (TWEET)

Ask Thad

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

What's your take on the recent uptake of women in golf course maintenance?

— Paul H., St. Louis

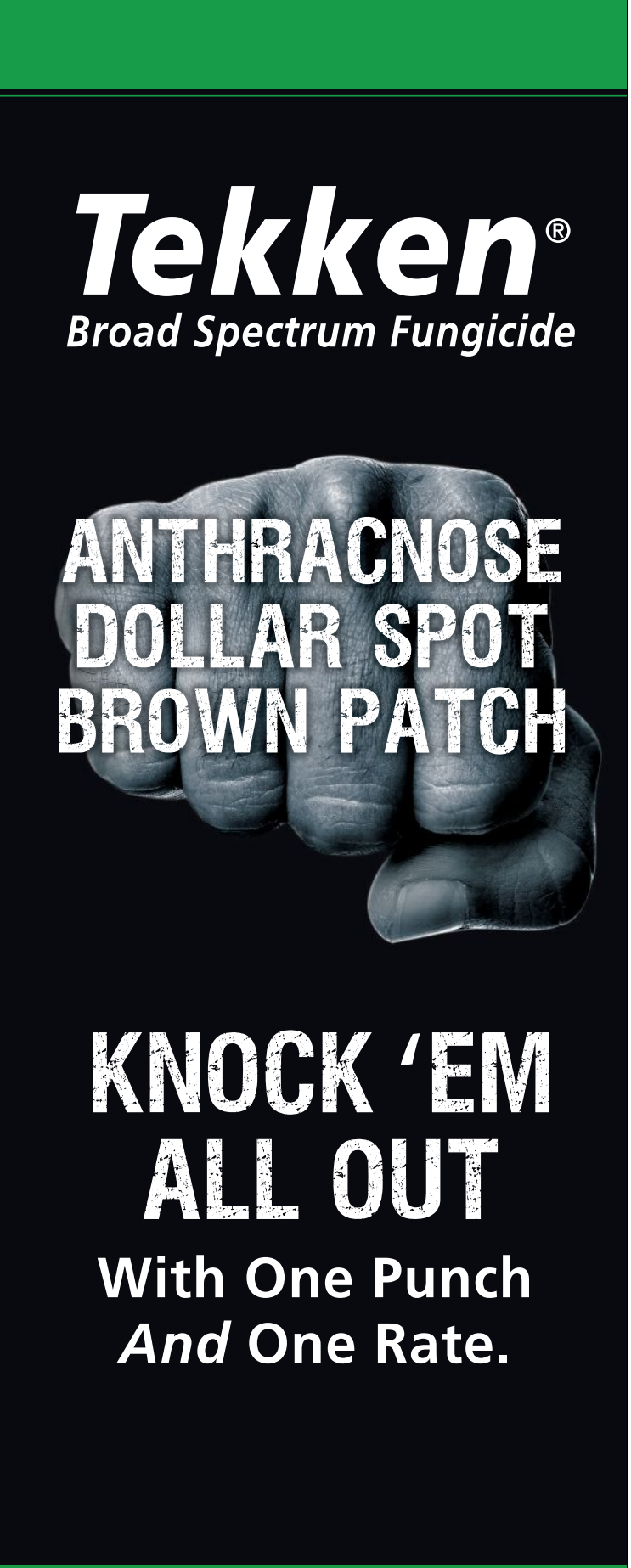
First and foremost, I think it is more of an uptick in the awareness of women in golf course maintenance. At every course I have been at, I have worked with women. From owners to general managers to crew members, they have always been a part of my career. They have taught me far more about life and a woman's perspective than I could ever teach them about turfgrass. Seeing women mentoring women in social media groups like Women in Turfgrass Management as well as all the female volunteers and staff at The Olympic Club during the Women's U.S. Open shows the public that this can be an inclusive career for anybody. Is our industry disproportionate in the number men to women? Yes, obviously, look around at your crew. Does it have to be? I would argue no.

How do you mentor young people?

— Tyler R., Amarillo, Texas

Do you remember when you were young and knew it all? The older crew members were out of touch? Yeah, me either. We were all there though, and YOU used to be the young, lazy kid on the crew. Sadly, perception is reality. Mentoring can be fun and fulfilling and comes down to three things — listening, trust and respect. We train, teach, guide and try to fit every employee into the same box. Listen to them; this current generation is one of the most artistic and creative that I have dealt with, and they have new and different perspectives even doing some of the most mundane tasks. Trust, this is the hard one. Trust them enough to make some mistakes and let them. If you want any respect from the younger crew members of today, you better respect them as well. They are smarter than you think. Once you remember that everyone once thought you were a lazy kid, it's easy to mentor.

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



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Isofetamid is an SDHI (succinate dehydrogenase inhibitor; FRAC Group 7) fungicide that provides exceptional control of the pathogens causing dollar spot, leaf spot, and spring dead spot.

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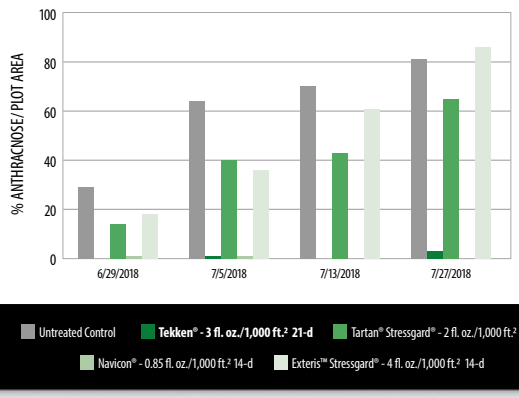
Tekken gives golf course superintendents a product they can rely upon for exemplary disease control, and at a very economical cost compared to competitor products claiming extended interval disease control. Tekken is labeled for use on golf course greens, tees, and fairways, with a maximum of three applications per year.

University testing is the most reliable and unbiased way for product development teams to evaluate new product candidates. So, rather than talking about the disease control Tekken has demonstrated for the past five years, looking at data from numerous university cooperators provides golf course superintendents peace of mind when selecting a broad-spectrum fungicide for extended interval control of diseases in 2020 and beyond.

Control of Anthracnose on an Annual Bluegrass Putting Green
University of Connecticut – Initial Application: May 24, 2018



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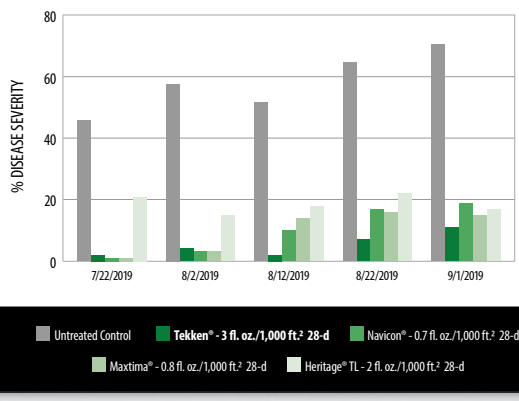
Control of Summer Patch in Kentucky Bluegrass Rough
Rutgers University – Initial Application: June 21, 2019



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Preventative Control of Dollar Spot on Fairways
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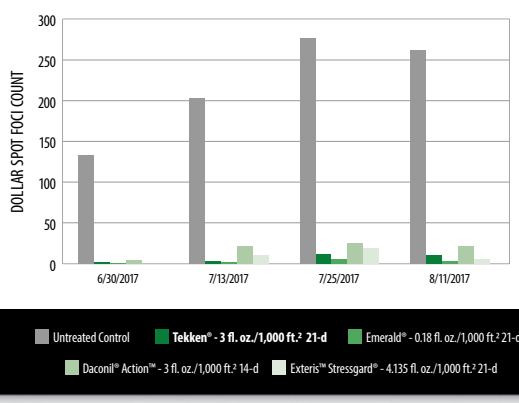

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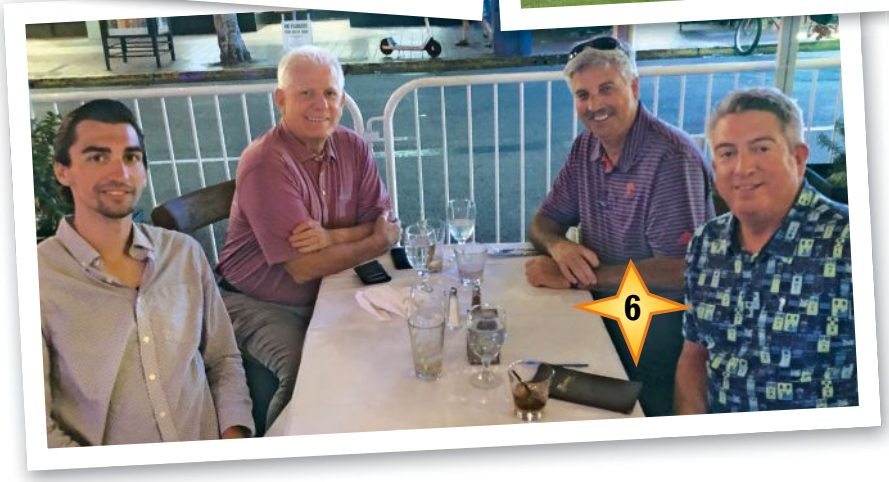
Golfdom Gallery

121ST U.S. OPEN TORREY PINES EDITION



1 **Go Buckeyes!** Two Ohio State alums, 2021 U.S. Open Host Superintendent Rich McIntosh (left), senior superintendent, Torrey Pines Golf Courses, San Diego, with his friend Chad Mark, director of grounds, Muirfield Village, Dublin, Ohio.

2 **In the zone** Anthony Kiser, Michigan State University, intern at the Bridges at Rancho Santa Fe, Rancho Santa Fe, Calif., got some extra OJT in by volunteering for the week at the U.S. Open.

3 **Fresh faces** The early wake-up call is no big deal to Cole Yoshida (left), assistant superintendent at Rolling Hills CC, Rolling Hills Estates, Calif., alongside Cameron Gurtner, assistant superintendent at Meridian Hills CC in Indianapolis.

4 **Jones and Jones** It's good to see these two together again: longtime friends Seth Jones (left), *Golfdom* editor-in-chief, alongside the Open Doctor, Rees Jones.

5 **A Volunteer volunteer** Jake Ogren, University of Tennessee student currently interning at Valhalla Golf Club, Louisville, Ky., mows a teebox.

6 **Feels like old times** (Left to right) *Golfdom* Digital Editor Joey Ciccolini, Mark Woodward, CGCS, Jon Maddern, CGCS, Club Corp, and Jones enjoy a dinner in the Gas Lamp District of San Diego the day California reopened.

PHOTO BY: *GOLFDOM* STAFF

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HOOKED

After being released from the Arizona Diamondbacks system broke and with a drug addiction, Zach Ferone hit rock bottom. A job in golf maintenance brought him back to a different big league.

BY MATT NEFF

Everyone loves a redemption story. They're reminders that good things can come from tough circumstances and that happy endings really can happen. Such is the story of Zach Ferone.

The second assistant superintendent at Sycamore Creek CC, Springboro, Ohio, Ferone spent three-and-a-half seasons pitching in the Arizona Diamondbacks farm system and independent minor leagues before hanging up the cleats and starting his career in the golf course maintenance industry. In addition to working at SCCC, he is entering his rookie season as a professional angler with the National Professional Fishing League, a professional bass fishing circuit debuting this year.

That's certainly a unique résumé by anyone's standards, but those are just the bookends of his adult life. It's what happened in between that got him where he is today.

A moment of clarity while fishing on the Ohio River kick-started Zach Ferone's recovery.

Major League dreams

Ferone played collegiate baseball at Muskingum University in New Concord, Ohio, and was signed as an undrafted free agent after a tryout with the Arizona Diamondbacks. A tall, lanky right-hander, Ferone says back then he was simply a thrower.

"I played outfield and pitcher in college, but it wasn't until I signed that I learned how to pitch," Ferone recalls. "My fastball was in the low 90s. My change-up and slider were my two best pitches."

In his first season in the Diamondbacks organization, he ran into a dugout railing while chasing a foul ball — one of those in-betweeners that all ballplayers hate. Knowing the dugout railing was

Continued on page 16

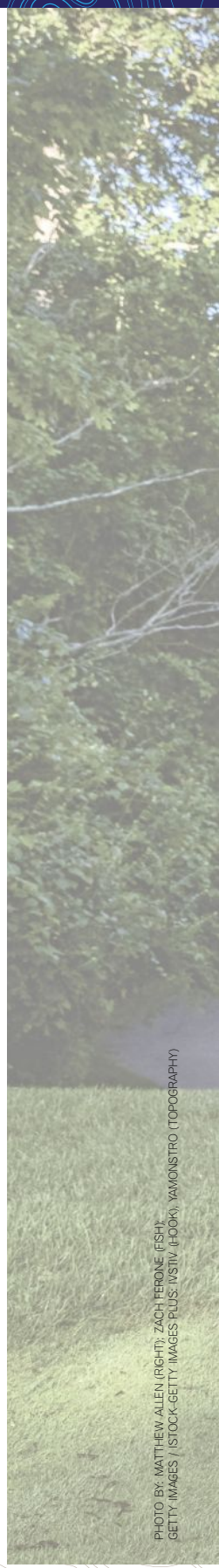

PHOTO BY: MATTHEW ALLEN (RIGHT); ZACH FERONE (FISH); GETTY IMAGES / ISTOCK-GETTY IMAGES PLUS: IVSTIV (HOOK), YAMONSTRO (TOPOGRAPHY)

> "I went from homeless and addicted to the routine and stability that there is in golf course maintenance — you get to work early, you look at the job board and you get to work."
>
> **ZACH FERONE,** SYCAMORE CREEK CC

(Left) Brian Burke, superintendent at Sycamore Creek CC, Springboro, Ohio, alongside Zach Ferone, second assistant superintendent.

Continued from page 14

close and trying to avoid his catcher and first baseman, he slid hoping to make the play and prevent a collision. He ended up jamming his knee into the railing post. The impact resulted in a lumbar disc injury that put him in a back brace and on the disabled list.

His first bullpen session after getting off the DL left him in excruciating pain. Not wanting his manager or coaches to know he was still injured, he went to a member of the medical staff after everyone else had left the clubhouse and asked for something to help with the pain.

Ferone cites an old baseball adage, "You can't make the club when you're sitting in the tub."

It's hard to keep a kid that age on the bench when his head is full of major league dreams. This mentality led him to what is now almost a cliché in professional sports: Young athlete gets injured, young athlete discovers painkillers allow him to continue to perform at a high level despite chronic pain, young athlete gets released with a pill addiction for a pension.

That is exactly how it went for Ferone. At first, he says he told himself, "Screw it — nobody cares if I do this to get by for now, and playing is my only way out of here."

Ironically, as his drug use increased from a once-a-day thing

Ferone in his college days at Muskingum University, when he was still a "thrower" and not yet a pitcher.

to get through his injury to a multiple-times-a-day habit, he was also pitching well enough to get promoted to high-A ball.

That promotion is what ultimately led to his undoing. Ferone was out of pain meds and sitting in a casino two hours before his first start, trying to win enough money to score more pills. For those unfamiliar with how things work in professional baseball, the only place a starting pitcher should be two hours before a scheduled start is at the ballpark. The fact he wasn't did not go over well with his manager or general manager.

Released and in denial

When Ferone finally showed up at the park, his manager came to his locker and found the pills and knew Ferone had a problem. Because Ferone's dad had flown in for the game, he was able to talk his manager into allowing him to make his start. After the game he was called into the GM's office and given three options: go on the DL and to rehab; a fine and a 60-day suspension; or accept an outright release.

Because Ferone was in complete denial that he had a problem, even when things were clearly starting to fall apart around him, he accepted his outright release. Ferone regards this as the most dangerous point of his addiction.

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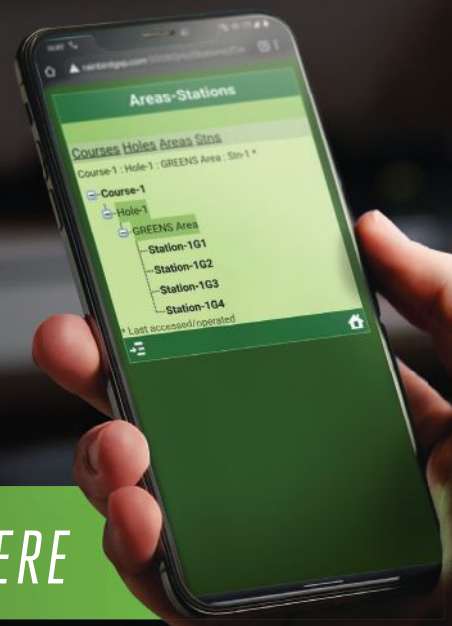

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Burke and Ferone with assistant superintendent Bob Herr (left.) "There are hundreds of guys in the industry like Bob, who are so dedicated and deserve to be in a magazine more than me," Ferone says.

PHOTO BY: MATTHEW ALLEN

Continued from page 16

"It's the point where the addict can either walk away from the cliff or they can jump off it," he says. "I jumped."

After being released by the Diamondbacks, he spent two-and-a-half seasons in the independent leagues before returning home with, in his words, "seven bucks and a pain killer addiction." Between a divorce, losing his job and becoming estranged from many in his family — all direct results of his addiction — Ferone ended up homeless for nine months, sleeping in his car along the Ohio River. He had nothing more to his name than the car, a change of clothes and a fishing rod.

The turning point in Ferone's life, the moment of clarity that recovering addicts frequently talk about, came one day while he was fishing. The fishing rod became the foothold, an anchoring point of sorts for him, a way to find some peace in the midst of the chaos of addiction and homelessness. Anglers understand the serenity of being on the water and the perspective it can provide.

While fishing he thought to himself simply, "You're better than this."

That was the moment Zach Ferone's recovery started.

It takes guts to stare down the beast of addiction and to face the collateral damage resulting from it. Fortunately, Ferone has guts for days. But to be fair, people who overcome the formidable odds of opiate addiction and homelessness rarely do so completely by themselves.

For Ferone, there was his cousin, a Catholic priest, who took him in shortly after his epiphany on the river and provided him a safe place to detox and get back on his feet physically, emotionally and spiritually. Then there was the young public defender who looked him dead in the eye during their first meeting and told him that his pride was going to be his undoing — words that Ferone knew were accurate and says were life-changing.

Stepping stones

After getting clean, his father, a tough love kind of guy who loved his son enough to not enable his addiction, allowed him to move back into his house with the understanding that he needed to find a job. Not long after that, Ferone saw a help wanted ad for a local golf course and applied. While that moment on the river may have saved his life, Ferone credits getting hired by Rick Grote at Oasis GC in Cincinnati as the stepping stone to the next chapter of his life. Despite knowing, as Ferone puts it, "that I was not the most ideal candidate," Grote gave him a shot anyway.

It was the routine and stability of the job that appealed most to Ferone.

"I went from homeless and addicted to the routine and stability that there is in golf course maintenance — you get to work early, you look at the job board and you get to work," he says. "I'm a manual labor kind of guy. I like to get my hands dirty. And there's also those moments where you lay down some stripes on a

green and you say to yourself, 'that looks sweet, let me take a photo of that.'"

Three years after being granted a fresh start by Grote, Ferone met his wife, Lesley, a woman who he unashamedly calls his rock both in life and in his continued recovery. That relationship led to him moving to be closer to her. As luck or fate would have it, Brian Burke, superintendent at Sycamore Creek in Springboro, Ohio, had an opening on his staff.

In his five years with Burke, Ferone has advanced from a member of the crew to his current second assistant position. He says Burke not only took a chance on him but also "has brought more stability to my life than I can even put into words."

He credits the consistency of Burke as playing a major role in his continued recovery and says, "You know what to expect from him and you know what he expects from you every day."

A major component of those expectations is mutual respect. Ferone repeatedly mentions his respect for Burke as a person and a boss as well as the respect Burke shows his team by listening to their input and valuing their experience and effort.

Now approaching eight years of sobriety, Ferone sits on the cusp of the next chapter of his life as a professional bass fisherman. He already has several sponsors including Regulator Bait Co. and Elite Anglr outdoor apparel company. While his goal is to eventually fish professionally full time on one of the major circuits, he credits his career in turf as giving him the foundation on which to rebuild his life.

PHOTO BY: MATTHEW ALLEN

For Zach Ferone, greenskeeping is a source of pride: "There's those moments where you lay down some stripes on a green and you say to yourself, 'that looks sweet, let me take a photo.'"

He's content to be where he is today, working on the golf course, no longer hooked.

Matt Neff, assistant superintendent at Wedgewood G&CC, Powell, Ohio, and regular *Goldom* contributor was recognized in 2014 as the industry's best columnist for his Assistant Living series. This is his first cover story for *Golfdom*.

Sanson's love of chemistry dates back to experiments with a Chemcraft chemistry set as a child.

"It took a lot of work, a lot of effort. It has left the nest, and it's doing great. What's really encouraging is whenever you happen to be at GIS and you hear SpeedZone and they're talking about it and I think, "*Oh, I did that.*"

PHOTO COURTESY OF: PBI-GORDON

The need for *speed*

BY SETH JONES

Dale Sanson, Ph.D., has worked for Kansas City-based PBI-Gordon for more than 25 years. Sanson oversees four laboratories as the senior director of formulation development and compliance chemistry, and has had his hands in the formulation of dozens of professional turf chemistries, such as Kabuto, Tekken and Trimec.

Golfdom caught up with Sanson over Zoom to discuss his career at PBI-Gordon, what it's like to have his job and how it feels to see a chemistry go from a concept to a solution for the end user.

As PBI-Gordon announces a new EW formulation of SpeedZone, we talk to the man who brought the herbicide to the market

Golfdom: Dr. Dale, it's great to see you, thanks for taking the time to chat.

Dale Sanson, Ph.D.: It's always a pleasure to talk business and formulation chemistry with those in the field.

Golfdom: You know I'm always talking formulation chemistry. Tell us about what you do for PBI-Gordon.

Sanson: I've been with PBI-Gordon for a quarter of a century. I've seen a lot of changes and a lot of progression. I wear several hats for PBI but the one I'm known for with your readers is the formulation of products that are in the golf industry, the turf industry, and in particular fungicides, herbicides and insecticides.

Golfdom: What is your educational background?

Sanson: I have a Ph.D. in organic analytical chemistry and I've done post-doctoral studies at Arizona State University. I learned a lot more of the aspects of formulation and analytical chemistry and just sharpened my skills to help me be successful in a career in formulation science.

Golfdom: On the golf side, what products have you had your hands on?

Sanson: When I'm asked that, I think of the calendar year and work my way through, the timing of the applications help in terms of what we're looking at. Starting going into spring, the preemergent applications — a lot of weed and feeds that consumers put out that contain dithiopyr, or some of those combos with 2,4-D and some of the phenoxy acids. As you progress through, on the professional side, the one PBI is known for is the SpeedZones. Those are applied in the spring and the fall. And then go further down the calendar, another thing PBI is recognized for, is the Trimec brand. You have the classic, the 992s. And then when you start getting into fungicide treatments, we have a long list. Union, Kabuto, Tekken, Pedigree … then, into the summer months you've got Surge, and we have Q4, which is patented and has done really well for us. There's quite an extensive list but most everything on the (PBI-Gordon) website I've touched.

Golfdom: When you get out on a golf course and look around, do you wonder what products you've formulated that might be making a difference at the course?

Sanson: Whenever I get on the golf course, my game suffers because I'm more focused on what the weeds are and how they look; the greens and how they look and if they've been treated properly with fungicides. That's in the

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back of my mind, it should be out of my mind. I pay more attention to the course than the game.

Golfdom: You told me a story, about when you were a kid ... what was your dream Christmas gift when you were going through the Sears, Roebuck & Co. catalog at 8 years old?

Sanson: I'm telling my age here. It was a Chemcraft chemistry set. It was a big trifold and it was metal. It was quite substantial. My parents were good about fostering my desire to go into science. My mother didn't like it very well when I'd unfold all that on the kitchen table and have burners and everything going. I didn't go by the guidebook; it's more fun to mix things and see what happens.

Golfdom: Let's talk about SpeedZone herbicide, how far back does it go? How many versions were there? Can you tell me the origin story?

Sanson: SpeedZone came about, the concept, we were very fortunate to obtain the rights to a very unknown chemistry at the time, carfentrazone-ethyl. It came into our hands and we started doing tank mixing, field plots. We were really excited whenever we started putting some combinations together with the phenoxy acids, the quickness at which we were killing broadleaf (weeds). At first, we went back and rechecked our math, thought there might be some issues with the level of the actives. If you're familiar with carfentrazone-ethyl, it goes out at a very, very low rate per acre. We confirmed those rates were correct. We knew we were on to something with SpeedZone. We thought, we've got such a good compound here, we've got to build the proper house that would marry the co-formulants to speed it up even faster. That started back around 1995, 1996. We learned and burned up a lot of weeds, a lot of turf plots, to get the right turf safety. There were in excess of 300 formulations. We finally came to the one that we selected.

We didn't know how well it would be received. The first year we introduced it, we had a budgetary number that we wanted to hit. By yearend of that season, it was four to five times what we were hoping to hit.

Golfdom: What was the timeline?

Sanson: '95 was when we first got the rights; we spent several years tweaking the formula and optimizing the efficacy for weed spectrum and making sure we had the right co-formulants in there to make it safe for northern and southern turf. It took probably three to four years of active research — that's biology as well as chemistry — to get to that formulation, which was introduced in the late 1990s.

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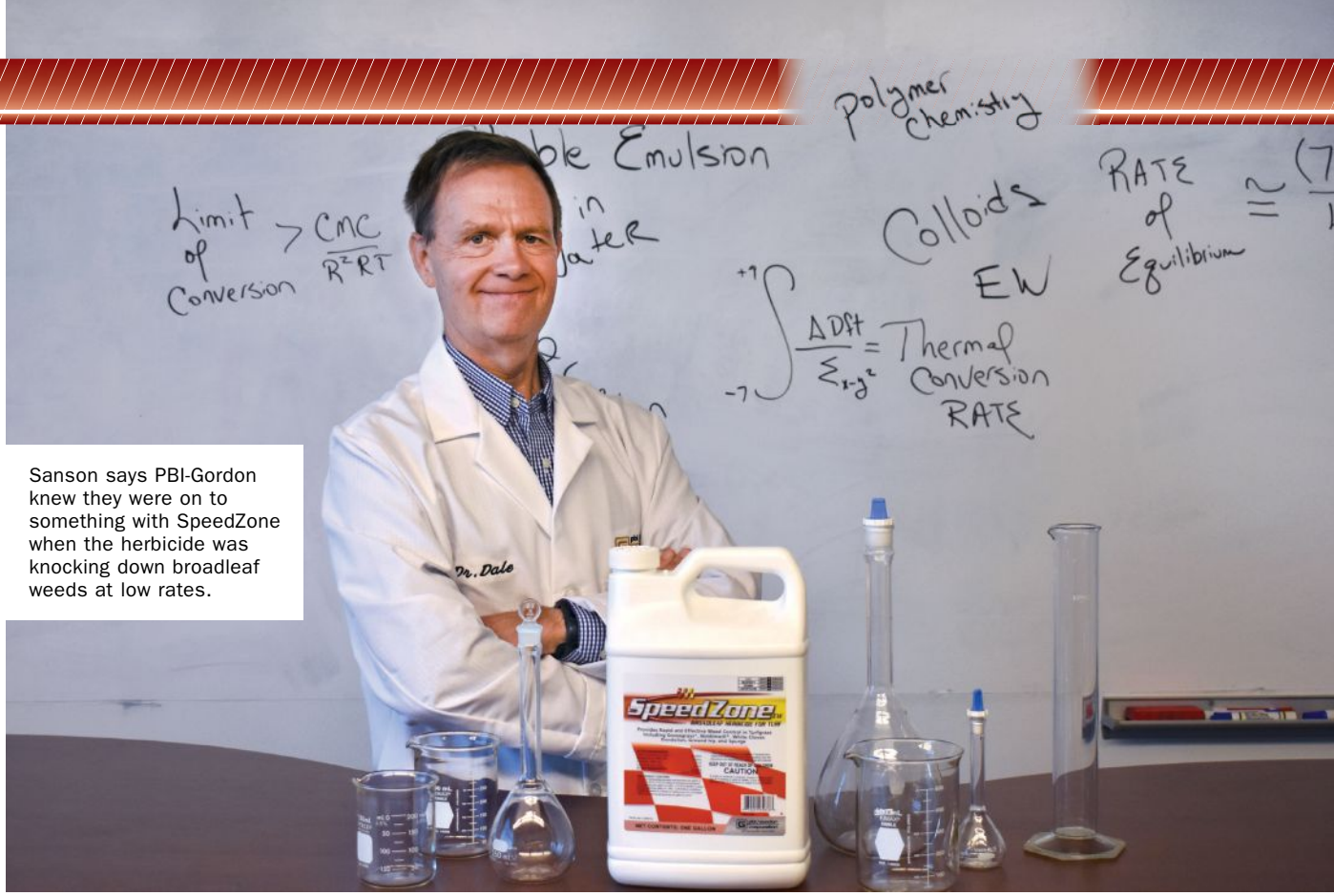


Sanson says PBI-Gordon knew they were on to something with SpeedZone when the herbicide was knocking down broadleaf weeds at low rates.

PHOTO COURTESY OF: PBI-GORDON

Continued from page 22

Golfdom: You said you went through 300 variations. Do you ever get a panicky moment where you thought, what if this doesn't work out?

Sanson: That's how my job is everyday — a panicky moment. You just hope that the planets align and everything is OK.

Golfdom: Recently PBI-Gordon announced there's a new version of SpeedZone coming to market, an emulsion-in-water (EW) version. What can you tell us about this new version?

Sanson: You mentioned there's everyday worry, worrying about if you get "The One." Whenever you're dealing with something that is a legacy product like SpeedZone, you want to be careful that you don't disturb something that is already good in the market. The benefit to (the EW) is if we get to the point that we have restrictions for volatility, drift, things of that sort. We developed this as a contingency if there were ever issues with our current SpeedZone. Fifteen years ago, the technology had not quite caught up to our needs. We're there now, we finally got there about seven years ago. Doing quite a bit of stability fieldwork we got a prototype that we thought was acceptable. We narrowed that down from a core of 50 candidates to three. We looked at these repeatedly for two to three years to make sure they were repeating what we were seeing: satisfaction with efficacy for broadleaf control and safe for turf. It finally came down to two candidates. We chose the one we thought was the candidate, and that's the one we're moving forward to commercialize.

Sanson and team spent four years trialing formulations before SpeedZone's release.

PHOTO COURTESY OF: PBI-GORDON

Golfdom: Do you ever get exposure with your end users and discuss a product like SpeedZone?

Sanson: The best analogy I can give you is, as a parent you have children and you raise them the right way and you hope that one day they go off on their own and make you proud. I will say SpeedZone is one of those. It took a lot of work, a lot of effort, just like a child in the early days. It has left the nest, and it's doing great. What's really encouraging is whenever you happen to be at the Golf Industry Show and you're walking around. You hear SpeedZone and they're talking about it and I think, *"Oh, I did that."* There's satisfaction there.

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

Super Science

// SPOT ON

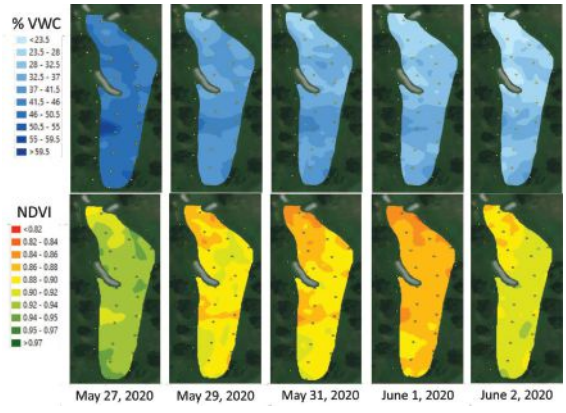
PRECISION IRRIGATION

By Mike Kenna

Researchers at Texas A&M University, University of Minnesota and The Toro Co. are evaluating the adoption of currently available soil moisture sensor (SMS) and mapping technologies. The goal is to see if golf course superintendents, with appropriate, actionable information, can make significant water and cost savings relative to ET-based and traditional irrigation scheduling methods.

This effort is the first on-course evaluation of soil moisture sensor and mapping technologies, and the knowledge gained will assist in creating practical protocols for implementing site-specific irrigation.

Nine fairways (six par 4s and three par 5s) at Edina Country Club in Minneapolis, Minn., were selected for use in the study and placed into groups of three based on size, soil moisture descriptive statistics and spatial maps of soil moisture variability.



Kriged maps of volumetric water content (VWC) and normalized difference vegetation index (NDVI) on SMS treated fairway No. 5 throughout a dry down event from May 27 to June 2, 2020, at Edina Country Club in Minnesota.

Each grouping of three fairways is one replication in the study, and each fairway was one of three irrigation treatments initiated in 2020. Irrigation scheduling treatments include 1) SMS or soil moisture sensor-based irrigation scheduling, 2) ET-based deficit irrigation scheduling (three times per week, precipitation-adjusted, 60 percent of ET, Kc=0.98 and 3) traditional irrigation scheduling.

The researchers used the Toro PS6000 in 2019 to complete two golf course surveys for placing nine soil moisture sensors. Those surveys provided field capacity-based segmentation and classification (wet, average or dry) of fairways assigned to the SMS-based treatment. Toro TurfGuard in-ground SMSs were installed in August 2019. They placed one sensor in each soil moisture class within each replication.

Following 1.5 inches of precipitation, the researchers conducted a dry down of the fairways from May 27 to June 2, 2020. On the SMS fairways, irrigation was withheld to determine a lower threshold for triggering irrigation applications. They conducted routine PS6000 surveys during the dry down to monitor soil moisture and normalized difference vegetation index (NDVI) across all fairways (See maps, above).

The SMS-based irrigation scheduling approach achieved significant water savings. Due to the humid climate and the talent of the superintendent, the traditional scheduling approach used less water than the ET-based irrigation treatment.

The research has continued this year. Based on preliminary results from 2020, the expectation is that this project will define and demonstrate a workflow for implementing spatial mapping and SMS technology on a golf course. The work also will provide a case study that shows the substantial water savings generated by using such an approach. This information will benefit the golf industry and provide an essential tool for superintendents and water managers. G

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USGA

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

NEWS UPDATES

FBSCIENCES DEBUTS TURF PRODUCT LINE

FBSciences, a producer of biologicals, including biostimulants, biopesticides and fertilizers, has launched FBS Turf, a new comprehensive climate-smart turf product line built with FBSciences' proprietary technologies.

FBSciences said this product line maximizes plant and soil quality in turf management by building on the company's comprehensive agriculture and food production products and programs including increased plant quality and nutrient density, improved stress mitigation and recovery and increased nutrient and water use efficiency.

The FBS Turf line includes 12 initial products with more products expected in the coming months. The line will address the entire life cycle of turfgrass through every season with formulations designed to increase stress mitigation and recovery from the biotic and abiotic stresses including frequent cuttings, water stress, compaction from high traffic and temperature-related stress. The turf management programs will also include event- and weather-based action plans. **fbsciences.com**

PHOTO BY: CHASE STRAW, PH.D., TEXAS A&M UNIVERSITY

//FINE AND SANDY

Light and frequent topdressing programs

By Brian Whitlark and Cole Thompson

Sand topdressing is one of the most important practices for producing smooth putting surfaces and diluting thatch and organic matter. Despite this fact, some courses only apply sand during aeration or infrequently during the golf season to avoid disrupting golfers and dulling mower blades and bedknives. The consequences of an inadequate topdressing program may not be observed immediately, but eventually, there will be significant negative impacts on playability and turf health.

This two-part article will provide recommendations on sand selection, topdressing rates and application frequency to help ensure that your topdressing program delivers the best results.

WHAT HAPPENS WHEN GOLF COURSES DON'T APPLY SAND TOPDRESSING?

In the absence of adequate sand top-dressing, putting greens accumulate excess thatch and organic matter. This results in soft, spongy surfaces that retain elevated levels of soil moisture. Putting surfaces of this nature are also susceptible to mower scalping and disease problems. Footprints, tire tracks from maintenance equipment, and deep ball marks are also problematic on soft greens. An infrequent sand topdressing program also creates distinct layers of sand and organic matter, which restricts water movement, oxygen diffusion and root development.

USGA

Research provided and funded by USGA.

FIGURE 1

Visible water squeezed from a putting green's surface layer is a good indication that more sand is required to dilute thatch and organic matter.

PHOTO BY: BRIAN WHITLARK, USGA GREEN SECTION

WHAT IS THE GOAL OF A SAND TOPDRESSING PROGRAM?

Everyone agrees that putting greens are the most important playing areas of any golf course. Maintaining smooth, firm but receptive healthy greens with a good pace is of paramount importance. A regimented sand topdressing program that considers the sand type, application rate and frequency is essential to achieve optimal playing surfaces.

Creating and maintaining a surface zone comprised of intermingled sand and organic matter is ideal for providing smooth, firm putting surfaces that hold up well to traffic. Additionally, greens that contain a healthy mixture of sand and organic matter will dry more evenly than greens containing excess thatch and organic matter. This means less localized dry spots and hand watering.

ASSESS ROOTZONE PHYSICAL CHARACTERISTICS

Before selecting appropriate sand for topdressing, it is critical to identify the physical characteristics of the existing rootzone material and evaluate the performance of the greens (Figure 1).

FIGURE 2A

FIGURE 2B

On the left, these creeping bentgrass greens were core aerated twice annually but received relatively infrequent topdressing. Organic matter accumulation caused soft conditions and localized dry spot. On the right, two growing seasons after initiating a topdressing program that applied no less than 30 cubic feet of sand per 1,000 square foot annually, organic matter has decreased by 30 percent, and surface performance has improved significantly.

There are a number of questions to answer in this process. Is there excess organic matter near the surface? Do the greens contain excess fine material, such as silt and clay? Do the greens hold too much or too little water? Do the greens rut when driving a riding mower or sprayer across the surface? Are the greens too firm or too soft? Is there an abundance of deep ball marks on greens?

While light and frequent sand topdressing will benefit all courses, some circumstances will require an accelerated program to improve rootzone conditions and playability. Field observations have revealed that significant improvement in turf performance and playability can be achieved in as little as 12 to 18 months if adequate sand is applied to dilute thatch and organic matter (Figure 2 A and B).

SAND SELECTION

Selecting the appropriate sand for routine topdressing and aeration begins with identifying the particle size range that will produce the desired outcome. The primary goal for any sand topdressing program is to dilute organic matter and produce smooth, firm putting surfaces while minimizing golfer and mower impact. Additional considerations include sand shape and mineralogy, cost, consistent quality, and long-term availability.

Field observations and research demonstrate that two or more sand materials can provide an effective greens topdressing program. One type of sand can be used for aeration and topdressing when playability is not a priority — e.g., using coarse sand to topdress greens prior to winter dormancy or during overseeding. Another less coarse sand could be used for routine topdressing when minimizing disruption to playability is important.

"Maintaining smooth and firm but receptive healthy greens with good pace is paramount."

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PHOTOS BY: BRIAN WHITLARK, USGA GREEN SECTION

FIGURE 3

A drop-style topdresser can deliver sand to the putting surface with high precision. This operator is applying 1 cubic foot of sand per 1,000 square feet.

Research Takeaways

- Sand topdressing is the most important cultural practice for managing organic matter.
- Recent research confirms the benefits of light and frequent sand topdressing programs that provide less immediate disruption, better playing conditions, and better rootzone characteristics over time.
- It is critical to assess putting green performance and the quality of the rootzone to determine if circumstances warrant an accelerated program for improvement beyond what is possible with light and frequent topdressing.
- Regardless of the selected topdressing program, silica sand is preferred because of its tolerance to weathering.
- Aeration back-fill should closely match the physical characteristics of the sand used at construction. Still, routine topdressing sand can be somewhat less coarse to ease incorporation and reduce wear on mowers. Ongoing research suggests that this will not impede infiltration or cause an overly wet surface.
- Regardless of the selected topdressing program, it is wise to assess rootzone physical properties regularly by submitting core samples to a soil-testing laboratory.

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Concerns with using two different sand materials for topdressing greens will be discussed in Part 2.

Aeration sand – Sand used to fill aeration holes should closely match the physical characteristics of the sand used to construct the greens, assuming the greens were built according to USGA recommendations or there is confirmation that the rootzone mix has desirable physical performance characteristics. For more information on selecting a rootzone material for putting greens, read the USGA Recommendations for a Method of Putting Green Construction. For native soil greens, it is often recommended to use sand that is more coarse than the existing rootzone material to improve aeration porosity and water infiltration.

Routine topdressing sand – Historically, the industry has worked under the notion that the physical characteristics of topdressing sand should closely match the sand used to construct greens. While this philosophy remains sound, research and field observations have revealed that golf courses can use sand with fewer coarse particles without compromising the integrity of the greens. Courses in the southeastern United States have recognized this and have been using less coarse sand for topdressing for more than 20 years with good success. Until only recently, researchers have more closely examined the impact on putting green performance when using sand containing fewer coarse particles than the existing rootzone.

Sand used to routinely topdress putting greens can be less coarse than the sand used to fill holes during aeration. A general guideline is to select a sand with a minimum of 50 percent of its particles in the medium-sized fraction (0.25 to 0.50 mm in diameter) and 15 to 40 percent in the coarse fraction (0.5 to 1.0 mm in diameter). The fine sand fraction (0.15 to 0.25 mm) should not exceed 25 percent, and the very fine fraction (0.05 to 0.15 mm) should not exceed 5 percent.

Ideally, the material should have no particles greater than 1.0 mm in diameter, given the difficulty in getting these larger particles to work down into the turf canopy. It is recommended to use a material with a coefficient of uniformity (CU) greater than 1.8. If the sand is too narrowly graded, producing a low CU may result in soft, unstable surfaces. However, the CU is not the only determining factor in stability — sand shape also plays a role, with angular sands being more stable. Utilizing a coarser sand during aeration will create more stability.

Fear of layering – Topdressing with sand with few or no particles greater than 1 mm in diameter and only 10 to 40 percent in the coarse sand fraction (0.5

PHOTO BY: BRIAN WHITLARK, USGA GREEN SECTION

to 1.0 mm) is not a concern. Removing this larger sand fraction will not create agronomic problems such as increased moisture retention and reduced infiltration rate. However, topdressing with sand with greater than 25 percent fine material (0.15 to 0.25 mm) could potentially lead to increased moisture at the surface of the greens. Superintendents are encouraged to collect soil cores and analyze for physical characteristics every few years to monitor putting green performance.

Mineralogy – While silica sands containing predominantly quartz and feldspars are most desirable due to their high tolerance to weathering, calcareous sands have been used successfully for many decades. However, it is recommended to avoid sand containing very high levels of calcium carbonate — i.e., limestone — such as coral sands.

Cost – The cost of quality topdressing sand for greens ranges considerably throughout the U.S. While some courses will pay $100 or more per ton of sand, the cost is worth every penny if this material makes the difference between good and great putting surfaces.

This article originally appeared in the May 2019 issue of the USGA Green Section Record (**https://gsr.lib.msu.edu/2010s/2019/2019-05-03.pdf**).

Brian Whitlark is an agronomist in the USGA Green Section West Region and Cole Thompson, Ph.D., is the assistant director of USGA Green Section Research.

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Ad Index

Companies featured in this issue

Soil moisture sensors such as the Turf-Tec, Field Scout and Pogo models pictured reduce the risk of overwatering greens.

Just enough water for greens

MOISTURE SENSORS DRAMATICALLY IMPROVE GREENS MANAGEMENT, BUT KNOW YOUR COURSE

A good soil moisture sensor only needs one chance to prove itself.

"If it saves you one application a year — you don't overwater and by not overwatering, you don't have to apply a fungicide to a set of greens because you didn't promote a disease — you've just paid for the sensor," says John "Trey" Rogers III, Ph.D., a turfgrass professor at Michigan State University.

Rogers calls time-domain reflectometry (TDR) sensors one of the Top 3 innovations in the golf world in the past three decades, alongside soft spikes and fans.

"If there's one area that we know is going to get a superintendent in trouble time and time again, it's overwatering," Rogers says. "We spend millions of dollars in drainage, millions of dollars learning how to design a putting green correctly so it drains properly. You can't play this sport when it's wet."

That said, even the best systems are no replacement for experience and common sense. Sensors tell superintendents moisture levels at specific spots on a course, but knowing what to do with that information is critical.

"Twelve might have been the number for July or the number for May or the number for the 12th green that has complete sun and a great growing environment," Rogers says. "A superintendent is going to have a number for each green. They might even have a number for each segment of each green."

To get the most out of sensors, Rogers says superintendents must:

- **Know their courses** — "Know the portions of your golf course that are going to be your indicators where things are going to dry out first."
- **Use the correct rod length** — "I've changed probes more than once on consultation visits."
- **Calibrate sensors** — Test the sensor in distilled water to set the 100 reading and in the air for 0.

PHOTO COURTESY OF: TURF-TEC INTERNATIONAL

Turf-Tec International

JOHN MOSCARO
President

Soils differ in mineral content, texture, particle size, organic matter content, air space and microorganism levels, so no two soils are the same. Find the soil moisture range for each specific area on a course. Determine the depth of turfgrass roots for that time of year and adjust the moisture sensor to that depth. Saturate the area with your irrigation water and allow it to percolate into the soil until it reaches field capacity and there is no standing water. Probe this area with a moisture sensor to get the wet reading. Next, find an area with turf just starting to wilt and test it to give you the dry reading. You can now adjust your watering practices to match the 50 percent reading between the wet and dry numbers.

GroundWorx

BRAD DAVID
CEO

Water and energy savings (decreased pumping) might be the initial focus, but sensors can help do so much more. Place sensors where they will be the most impactful across the entire course, not just in trouble spots. Consistent readings tell you just as much about a course as volatile readings. Trust the data: turf managers will often question accuracy because they had no previous real information as to salt issues they may discover. Sensors work in unison with information gleaned from spot-check devices to provide a full picture from surface level to the prime measurement depth of your root-bases on the course. Remember, most sensors are created with highly scientific devices with years and years of R&D behind them. Ultimately sensors can eliminate guesswork and create staff efficiencies.

Spectrum Technologies

MIKE THUROW
President, CEO and founder

It's necessary for golf course superintendents to monitor soil moisture over time with in-ground sensors, located in multiple locations, or with portable soil moisture meters. Greenskeepers are likely to get different readings depending on where they are on the course. Taking multiple readings in different zones of the putting green generates representative readings. Determining what is the right level of moisture can be a tricky proposition. Greens can have shallow root systems. So, if the moisture is 5 inches down, the roots from a golf course green or a high-end athletic turf field can't reach it. Using multiple-length, replaceable rods measure moisture, salinity and temperature in the soil, providing accurate soil moisture readings across a wide range of soil conditions and at various depths.

Pogo TurfPro

CARMEN MAGRO, CGCS
Vice president

The entire reason for sampling is to see the symptoms coming before they show up. With routine representative sampling, trending analysis with turf conditions gives that insight. Target the upper 6 cm when sampling as this region has the most significant influence on surface performance, moisture and nutrient exchanges, regardless of turf or soil type or root depth. Understanding equipment and its engineering is vital. If you don't properly calibrate your equipment along with the required number of samples, you cannot use the information as representative. So, know your sensor and its limitations, or it will not serve you well. Finally, never lose the skill of being a well-educated, sharp and open-minded superintendent. This art is what makes our profession so great. Sensing gives numbers. But never manage to a number. Use your eyes and intuition.

Biting back at mosquitoes

JANIS REED, PH.D., OFFERS ADVICE ON MINIMIZING MOSQUITO POPULATIONS

By Sarah Webb

There are more than 200 types of mosquitoes in the U.S., but a few general characteristics include long, slender legs, scales on their wings and legs and a proboscis they use as a needle to gain access to blood vessels, according to Janis Reed, Ph.D., board-certified entomologist and technical services manager for the Pest Control Division of Control Solutions Inc.

"If it's landing on you, biting you and getting blood out of you, it's probably a mosquito," Reed says. "More than a dozen species of mosquitoes bite people and transmit diseases. With players and crew members working, it's all about protecting them from the bite. There are some mosquitoes that transmit diseases, but there's also a factor of comfort."

Adult floodwater mosquito females lay their eggs in areas filled with water.

"There is a definite correlation with that group of mosquitoes between significant rain and about seven days later, a significant uptick in mosquito activity," Reed says.

Reed adds that container breeders can breed in any vessel that holds water, such as an old paint can or a 5-gallon bucket or even a yogurt container, as long as it holds about 3/4 to 1 inch of water.

"WITH PLAYERS AND CREW MEMBERS WORKING, IT'S ALL ABOUT PROTECTING THEM FROM THE BITE."

An uptick in mosquito activity is directly correlated to rain events. Container breeding mosquitos will lay eggs in water as shallow as a 3/4 inch to an inch deep.

To help control mosquitoes, superintendents should find and eliminate as many breeding sources — liquid standing water — as possible.

Reed suggests filling in tire tracks, low spots that constantly hold water and ruts with sand.

To treat a mosquito population that's already gotten out of control, Reed says mosquito granules and insecticides work well.

"You take the granules and you can sprinkle them by hand or right out of the jug or apply them into large areas with something like a belly spreader or handheld crank spreader," Reed says. "You can treat large volumes of water very fast and stop the mosquitoes from breeding in that area."

For insecticide treatments, Reed recommends putting down about 1 to 2 ounces per 1,000 square feet, ensuring that the technician is properly trained and licensed and following label instructions.

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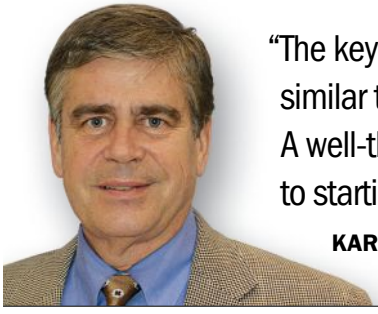

"The key to golf course restoration is similar to restoring a classic car. A well-thought-out master plan prior to starting construction is the key."

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

Expensive is what lies underneath

Owning and watching classic cars from the 1960s is a summertime passion. It is, outside of playing golf, my favorite diversion from the workday grind. Since I lean toward the muscle cars of that era, to see a 1964 Pontiac GTO, 1968 Dodge Charger R/T, 1969 Chevrolet Camaro ZL 1 or a 1970 Chevrolet Chevelle SS stopped at a stoplight is an immediate reason to grab my phone and take a picture.

Many of these cars and others like them, including my 1969 Pontiac Firebird (pictured), have undergone extensive renovation/restoration. Fifty-year-old cars are old and need to be refurbished often more than once to make it another 50 years.

Although, for those like me at the stoplight, what a car looks like from 25 feet away is much different than close up. Everyone notices the new paint job, the rims and tires, the interior and the sound from the headers and muffler system. It is the things that are not seen underneath the car that impact the drivability, stability and safety of the car. It is the installation of a new gas tank, new rear frame rails, power steering box, the QA-1 Pro coil front coil-over system with front control arms and the hundreds of other things that really make that car able to cruise down the street. All of that, however, costs money, actually, a lot of money for work that goes unseen. Yet, the expenses associated with and around the chassis are the foundation on which the car is built and what the future of that car is based on.

Golf course renovation/restoration is much like restoring a classic car. Golf course renovation occurs across the spectrum, but many are old classical courses in need of refurbishing.

Given the evolution of the game of golf, from the golfer perspective to new technologies, golf courses need to be refreshed or updated.

Most club members and golfers, when it comes to course renovation, are most interested in visual changes — the flow of the greens and associated greens complex, the bunkers, the location of new tees and what type of turfgrass will be used — much like what a classic car looks like 25 feet away.

Very few golfers care about the drainage system, green construction, cart paths or irrigation system that may be nonfunctional or dated. The less visible aspects of golf course renovation are very expensive and, for the most part, not visible to the golfer. It is part of golf course restoration that is often difficult to justify or a place where cost cutting is attempted.

The advances in drainage, green construction and irrigation systems over the last 20, 30, 50 or 100 years are what you would expect in any advancing field. There is really no comparison to what was available in the past to what we have now. Advances in drainage system technology provide improvements for both surface and subsurface water interception and movement. A well-drained course provides healthier turf during both winter and summer stress periods. From a golfing business perspective, a well-drained golf course reduces the number of closures or restrictions to golfing due to wet conditions.

For something in the ground, a new irrigation system only excites the golf course superintendent. With increased emphasis on best management practices and the importance of water management to the future of golf, investment in advanced irrigation systems is an investment in the future.

I know little about cart path replacement, but given the times riding around on them around the world, I have gained an appreciation for what is safe. Hardly an exciting topic, but degrading or obsolete cart path designs are increasingly becoming a safety issue for clubs, which can be reflected in insurance coverage.

The key to golf course restoration is similar to restoring a classic car. A well-thought-out master plan prior to starting construction is the key. I know from car restoration, planning that encompasses the entire car will reduce both frustrations and wasted money. With renovations, a master plan presents the future vision for the golf course that meets both the goals and costs of the restoration.

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

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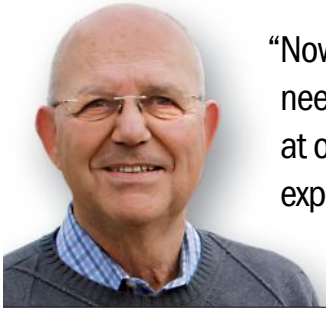

"Now, more than ever, golf is needed to maintain the programs at our universities and agricultural experiment stations."

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

Early USGA heroes

As we celebrate the last few months of the USGA Green Section's 100th anniversary, consider golf's deep roots in turfgrass science and how the game has played an instrumental role in shaping the academic programs at universities across the country.

Golf unknowingly discovered the complexity of the links ecosystem as the game traveled inland away from the coastline and south toward the tropics. The grasses and management practices that worked in Scotland were not as transportable as the rules, implements and balls used to play the game.

A few individuals interested in the advancement of golf believed it was necessary to reduce the high cost of building and maintaining golf courses. Out of this realization, the Green Section was formed in 1920 to devote itself to these problems.

In the early years, nearly all of the experimental work with turf was carried out at the U.S. Department of Agriculture's Arlington Farm in Virginia by C.V. Piper, Ph.D., and R.A. Oakley, Ph.D. In a 1925 funding request, titled "Cutting the Cost of Golf," they emphasized that research should be "carried on in different parts of the country, under varying climatic and soil conditions. Cooperation with the state agricultural experiment stations and with their trained investigators is also most desirable. Expansion of this character is extremely important."

Through the endeavors of the Green Section to educate and share research results, its pioneer scientists had the full cooperation of some of the country's best golf course superintendents and green committee members. John Monteith Jr., Ph.D., in a 1932 speech, said, "The immediate result of this educational campaign was to lead greenkeeping out of its dark ages of mysticism and bunkum and give it a modern scientific outlook. This does not mean that all greenkeeping before the advent of the Green Section was shrouded in mysticism and bunkum, neither does it mean that it has performed any miracle such as placing all greenkeeping on a scientific basis."

The education and research activities were the first to address maintaining a golf course and encouraged an exchange of opinions among early superintendents. The formation of small groups and the organization of what is now the Golf Course Superintendents Association of America (GCSAA) in 1926 all occurred within a short time after the Green Section's birth. Golf and turfgrass science were beginning to form the bond that still exists today, and there is still sufficient "mysticism and bunkum" for university scientists and superintendents to dispel.

In 1946, Fred Grau, Ph.D., then director of the Green Section, reported in a press release that the Crop Science Division of the American Society of Agronomy was asked to establish a turfgrass section and to appoint a permanent turf committee. Grau said, "It enables scientists to meet on an unbiased common ground for the purpose of integrating their research activities and harmonizing the future development of the national turf program in all its phases."

For the first time, turf achieved recognition as a critical national entity. Nine years later, turfgrass science had a division of the Crop Science Society of America. The USGA was fortunate to have scientists like Piper, Oakley, Monteith and Grau lead the Green Section, greenkeeping and turfgrass science in those early years. Accomplishments made by scientists during the last 100 years came, in part, due to the early efforts of these and other pioneers, supported by the game of golf.

In the 1931 *Golfers Yearbook*, Monteith wrote, "Nevertheless, the rapidly accumulating knowledge of turf culture is making it possible for clubs to maintain far better turf today than was possible only a few years ago, and the same marked improvement can reasonably be expected in the future. Progress, however, can only be made in any field in direct proportion to the finding and dissemination of new information, new methods and unfailing interest."

Golf is needed to help maintain the programs at our universities and agricultural experiment stations. USGA's Turfgrass and Environmental Research Program (recently renamed the Mike Davis Program for Advancing Golf Course Management) cannot support these institutions alone.

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

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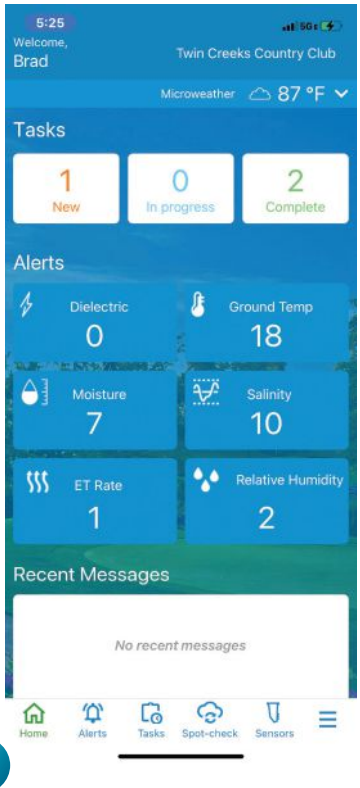

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1 Sand Star E

SMITHCO's Sand Star E bunker rake uses a 48-volt continuous AC induction Mahle industrial-rated motor with a peak torque of 83 N·m. Operators can travel from hole to hole at 10 mph and travel up to 5 mph in reverse. The bunker rake is designed to cover every bunker on an 18-hole course on a single charge.

Smithco.com

2 GroundWorx mobile app

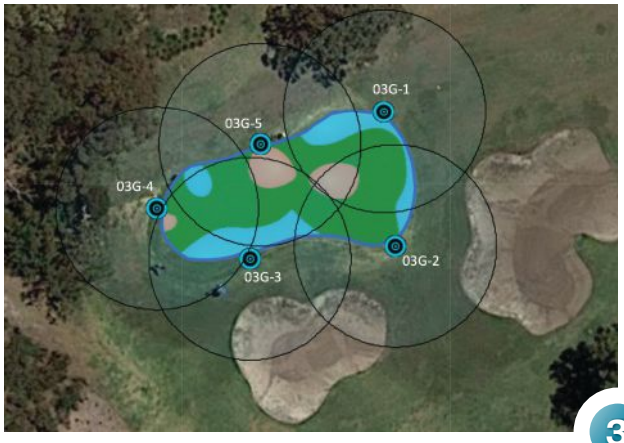
GROUNDWORX's GX-1 turf management platform is integrated into a dashboard, accessed at MyGroundWorx.com and the Groundworx mobile app. The dashboard logs 24 readings per day, taken at each sensor and stored within the sensor until the wireless radio turns on to transmit to the cloud. The Groundworx dashboard comes with pre-programmed disease and moisture settings. Users can create alerts and manage tasks using the dashboard.

GetGroundWorx.com

3 Pogo's Turf Pro System

POGO's Turf Pro System lets users monitor water conditions as they impact turf. It provides more than a set of numbers. Data surrounding the monitoring of water conditions is about a representative number of samples, moisture trends and other combined variables and their correlation with turfgrass conditions. Pogo's visual insight analyzes irrigation distribution and its impact on turfgrass conditions.

PogoTurfPro.com



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4 | Echo PB-2620

ECHO's X Series PB-2620 handheld leaf blower can move leaves and debris quickly on busy golf courses without disturbing golfers. All Echo X Series models are powerful and lightweight for greater productivity. The PB-2620 boasts a 25.4 cc two-stroke engine with 172 mph maximum air speed at the nozzle.

Echo-USA.com

5 | Shortstop 2SC plant growth regulator

Shortstop 2SC plant growth regulator from **ARBORJET** suppresses tree and shrub growth. The systemic plant growth regulator slows above-ground vegetative growth, reduces pruning and enhances fine root hair growth. Shortstop 2SC benefits trees and shrubs by redistributing energy to increase root production, altering leaf physiology to reduce water vapor loss and increasing the production of chlorophyll for photosynthesis.

Arborjet.com

6 | Liberty golf car

The **E-Z-GO** Liberty golf car has four forward-facing seats, providing a spacious second row for passengers and extensive storage space with a shorter wheelbase. Powered by a Samsung SDI lithium-ion battery system, the car's shorter wheelbase enhances maneuverability with a tighter turning radius. Accessories can attach to Liberty's 2-inch rear universal hitch receiver, including a cargo storage holder or golf bag holder.

EzGo.com

The 19th Hole

Bill Murray

SUPERINTENDENT // Pine Brook Golf Course, Monmouth County, N.J.

What can I get you? Either a nice, ice-cold Bud Light or a big, frosty Guinness.

Tell me about Pine Brook. It's an 18-hole executive course for the Monmouth County Parks system. We do about 23,000 rounds a year. It's a fun little place to work. I've been with the county for 24 years and at Pine Brook for about five years.

What was the last great golf trip you took? In 2019, I went to Ireland with two friends. We volunteered for the Irish Open at Lahinch, where I'm a member. Then we went to Royal Portrush and worked The Open. That was an incredible time.

Give me a tip on visiting Ireland. Go out and meet the people. It is a very friendly island. The golf courses along the shorelines are just fantastic. You'll fall in love with the place.

What was your favorite car you've owned? The first car I owned was a 1966 Ford Mustang, British racing green. I couldn't kill that car, it was the best car I've ever had.

What's a challenge you have in your area? In this part of the country, we have a big ABW problem. The lower the cut goes, the more problems we seem to have.

What is the best thing about having your job, your career? I'm an outdoors guy. I don't mind getting up in the morning, morning is the best time of the day. The birds singing, the sun coming up, it's awesome working outside. Being in the golf business, there's nothing better. You get to see some of the best places in the world. Sometimes you even get to play them.

Any advice for the young guys trying to make it in the industry? Read the articles, talk to your peers. The biggest one is talk to your peers. Don't be afraid to ask an older superintendent questions. You're going to get an answer. And I really like reading articles and trying new things. I'm not afraid, if someone has a new pesticide I'm happy to try it.

So, the obvious question: what's it like sharing a name with a famous actor? It's actually pretty cool. Everybody comes up when they find out my name. I've never met the man. I'd like to someday. He has a brother Brian, I have a brother Brian. When he's playing in the Pro-Ams, I'm always watching him. He's more out there than I am. I tend to be out there sometimes, but not quite like that man.

I've been trying to interview him for 25 years. Now I can finally say I have interviewed Bill Murray, so thanks Bill! Who knows, maybe he'll see this. Tell him I'll play golf with him anytime he wants.

As interviewed by Seth Jones, June 8, 2021

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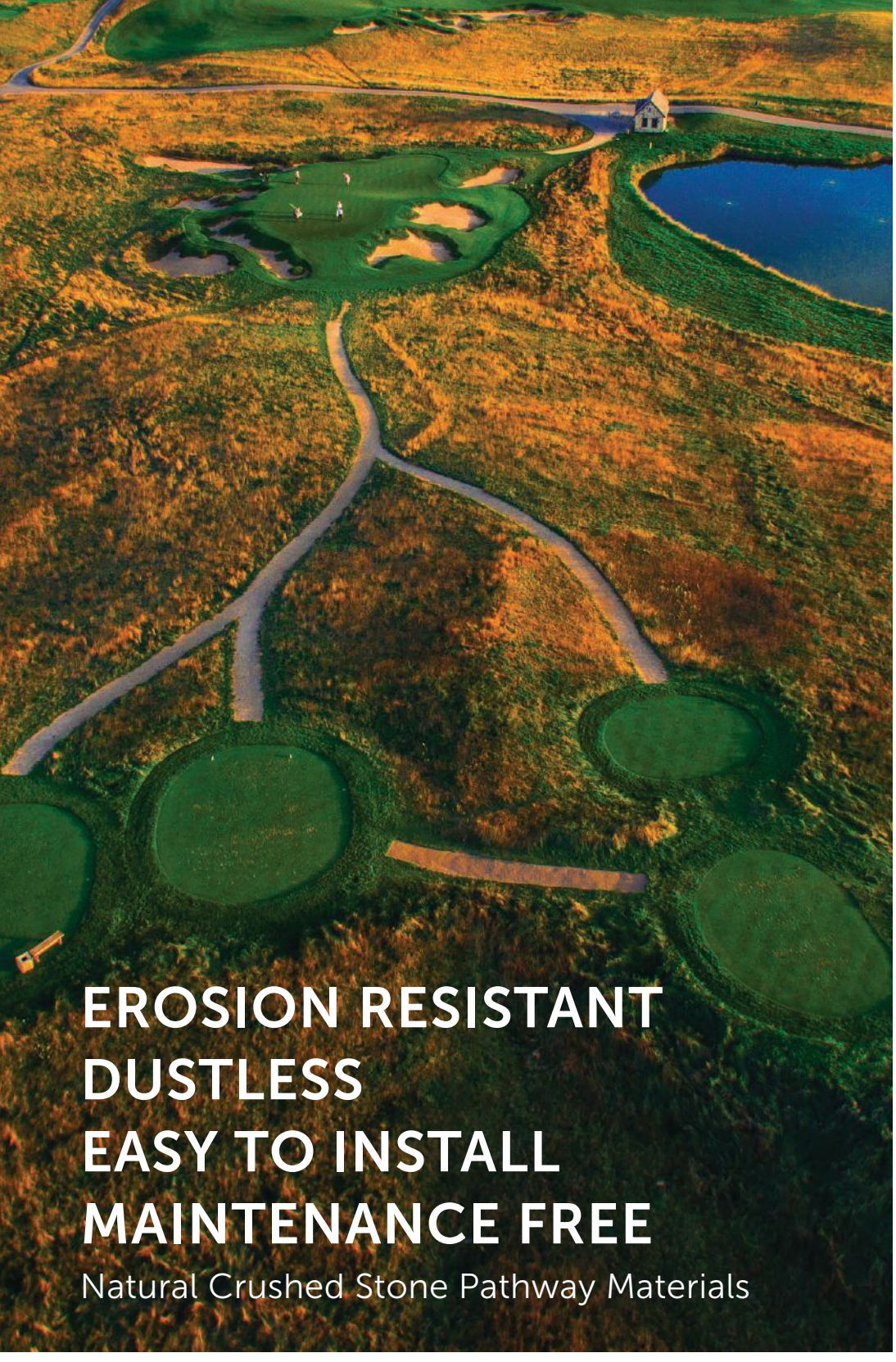

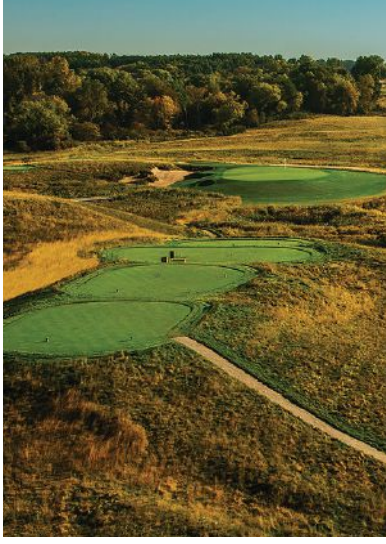

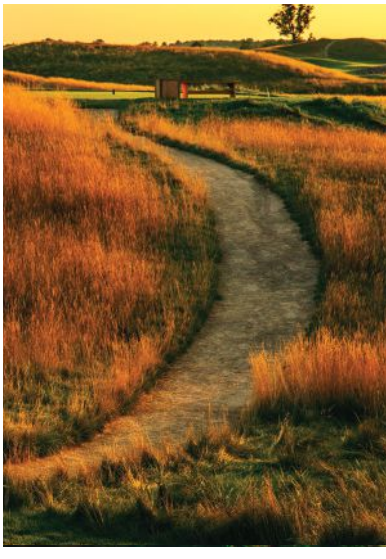

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