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# Golfdom

01.24

## Returning to Arizona

The GCSAA Conference  
and Trade Show returns  
to Phoenix for the first time  
since 1987

The Ambiente Course at Camelback GC  
in Scottsdale, Ariz. will host the  
2024 GCSAA National Championship

**PLUS**

**CHINCH BUGS — KNOW WHAT IT IS**

**THE USGA GREEN SECTION'S GOOD NEWS**

**TRAVIS KELCE THANKS A SUPERINTENDENT**



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01.24

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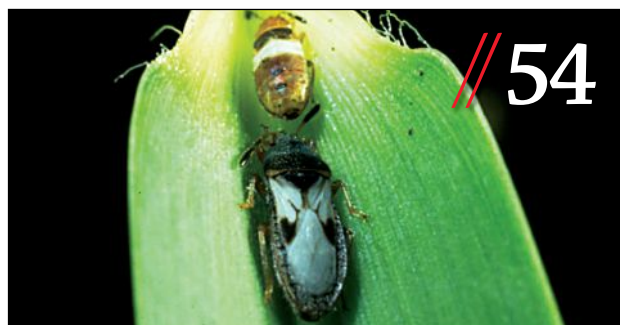
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COVER PHOTO BY: DAVE SANSON



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“He emailed me the next week and sure enough, there was Bret Saberhagen, Tony Romo, Brett Hull and Grant Fuhr, all clips of mine, autographed and in frames, displayed in his office.”

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

# Inspiration at the GCSAA show

**I**t’s time for the annual GCSAA Conference and Trade Show, and I’m excited to see many of you in Phoenix. One of the many things I love about the show is that you don’t know when you might see someone you haven’t encountered in years. And you don’t know if they might say something nice or even inspire you.

This happened to me last year at the show in Orlando. I was speed-walking through the trade show, running late for a meeting. As I turned a corner, I heard someone say in my direction, “Mr. Jones, how have you been?” It was Tim Powers, a longtime superintendent out in California.

I stopped and we chatted for a bit. Before we parted ways, he asked, “Hey, why don’t you ever do celebrity interviews anymore?”

*Whoa!* I didn’t expect that. It’s been a minute — about 15 years since I last chased celebrities to talk to them about their golf game and their appreciation for the work of superintendents. If you’ve been reading industry

trade publications for a long time, maybe you remember when I worked for GCSAA and in their publication *Golf Course Management*, I did a monthly interview with celebrities and Tour pros called Reflections — it ran on the last page of the magazine every issue for several years.

Tim told me that he not only enjoyed that department and missed it but back then, he would clip them out of the magazine and get them autographed by the celebrities when they attended celebrity golf tournaments. I told him, I’ve got to see that! He emailed me the next week and sure enough, there was Bret Saberhagen, Tony Romo, Brett Hull and Grant Fuhr,

all clips of mine, autographed and in frames, displayed in his office. It gave me a thrill!

When I left *GCM* to take the helm at *Golfdom*, I considered bringing it back. Instead, I opted to use the back page of this magazine for the 19th Hole, a monthly Q&A with a superintendent, that I’ve been doing for over a decade. I think that was a smart move, as that Q&A is something this magazine is well known for, and it’s allowed me to meet some great characters over the years. But after my conversation with Tim, I thought, what the heck — there’s room for a celebrity interview in *Golfdom*.

We’re calling the new department Friends

in High Places and including the hashtag [#ThankASuperintendent](#). This department will see a celebrity answer why they love the game, and how important playing conditions of the course are to their enjoyment of the game.

The first installment is with Travis Kelce. It appears on page 8, and while it’s not an earth-shattering interview I got with my favorite tight end in the NFL, it’s a fun moment in the issue — something different. It was certainly exciting for me, as a Chiefs fan, to get to chat with Kelce and even take a selfie with him. I hope you enjoy it and appreciate that we’re trying to do something fun, something different and maybe even something cool.

I love getting feedback on the magazine, what you like and even if it’s something you dislike; what you think we should do more of, or any big ideas. You don’t have to see me at a trade show to help us make this magazine better. If you ask us, you might just see us do it.

Do you know of someone who we should consider for the 2024 Herb Graffis Businessperson of the Year award winner? Want to volunteer to be featured in the 19th Hole? Or maybe try your hand at writing a column for the magazine?

Maybe 2024 is the year you do it. Why not? 📧

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# Starter

NEWS, NOTES AND QUOTES



Attendees of the 2023 Syngenta Business Institute left with a certification, GCSAA education credits and several new connections with fellow superintendents.

## // DOWN TO BUSINESS

## A FRESH LOOK AT THE SYNGENTA BUSINESS INSTITUTE

BY SYDNEY FISCHER // Digital Media Specialist

➔ The Syngenta Business Institute (SBI) recently wrapped up last month at the Graylyn Conference Center in Winston-Salem, N.C.

Now in its 15th year, SBI welcomed 26 superintendents for four days of a business curriculum and networking. Since this was my first time attending SBI, I had a fresh, unbiased opinion going into the event and it did not disappoint.

From the moment I stepped onto the plane in Atlanta, I could pick out all the superintendents seated before me. Not only by their branded quarter zips and blazers but by the instant chatter among the rows. This was a connecting flight in the middle of the afternoon and there was laughter. Syngenta did that.

Once we arrived, the week consisted of sessions ranging from work-life balance to learning how to confidently

negotiate on the job.

After the sessions, supers talked candidly about issues they experience on the job with their staff, club owners, members and more. This allowed them to receive advice from their peers and build relationships.

At the end of the conference, each attendee received a certificate of completion, GCSAA credit for continued learning and maybe most important: 25 new contacts in their phone.

"This has been one of the best education events that I've attended," Brandon Razo, superintendent at Panther Creek CC, Springfield, Ill., said. "This whole course provided me with a lot of tools moving forward to not only better myself and better my course, but also allow me to better my crew not only in how they work but in their lives, too."

## // A NEW POWER COUPLE

### GCSAA AND PGA OF AMERICA PARTNER FOR ADVOCACY

The Golf Course Superintendents Association of America (GCSAA) announced the formation of a collaborative advocacy initiative between GCSAA and the PGA of America. According to the association, the partnership will enable the two organizations to expand the industry's grassroots advocacy efforts with a larger, united voice.

The partnership will begin as a pilot program, with GCSAA working with the PGA of America and the Southern California PGA Section.

"We have seen the positive impact of our grassroots advocacy programs, and we appreciate the opportunity to expand the industry's voice in tandem with the PGA of America," Rhett Evans, CEO of the GCSAA, said. "Together, we will have more members with established relationships with lawmakers, more members with expert knowledge on the issues and more members attending hearings, writing letters and making phone calls that can make a difference for the industry."

The first advocacy training will take place in the first quarter of 2024 and the pilot program will continue through September 2024.

## // PEACH STATE HONORED

### GCSAA PRESENTS OUTSTANDING CONTRIBUTION AWARD

Tenia Workman, executive director of the Georgia Golf Course Superintendents



Tenia Workman

Association, has been selected to receive the 2024 Outstanding Contribution Award from the GCSAA.

The Outstanding Contribution Award is given to an individual who has made a significant contribution to the membership, through outstanding contributions for the golf course industry.

"Having strong local chapters has always been crucial to GCSAA's success, and Tenia has been helping keep the Georgia GCSA strong for more than two decades," said Rhett Evans, GCSAA CEO.



## // START OF SOMETHING SPECIAL

# Green Start Academy brings 60 assistants to Pinehurst

BY ROB DIFRANCO // Associate Editor

➔ For the third time in its 18-year history, Green Start Academy — presented by John Deere, Rain Bird and Envu — brought some of the nation's top assistant superintendents to Pinehurst Resort for a week of networking, learning and golf.

According to Deere, Green Start 2023 received a record 220 applicants. The final pool of 60 attendees included assistants from Congressional CC in Bethesda, Md., the CC of Detroit and Valhalla GC in Louisville, Ky. — host of the 2024 PGA Championship — among others.

Assistant superintendents spent most of their time in groups with superintendent mentors. Mentors included Todd Bohn, director of agronomy at Desert Mountain Club in Scottsdale, Ariz., a GSA alumnus from the event's first class in 2006.

In addition to presentations on diversity and inclusion in the industry, the basics of building a budget and

how to build a successful culture, attendees toured the site of Pinehurst No. 10 — Pinehurst's first new course since 1996.

Superintendent Daniel Whisenant and Kevin Robinson, CGCS, manager of golf course maintenance, led tours of the Tom Doak-designed course. Set to open on April 3, No. 10 required 55 acres of sod with Tiftuf and Tifeagle making up most of the grass on the course.

Brant Mackey, an agronomist at Bobby Jones GC in Atlanta, told *Golfdom* the event lived up to his expectations and then some.

"I would recommend this to anyone who is looking to move forward (with their career), it's professional and personal development," he said. "It's a great place to learn the things that are going to propel you into thinking about the bigger picture of running a golf course, and not just worrying about the grass being watered or the bunkers being raked."

## // CAPTAIN PLANET

# MILLS NAMED ENVIRONMENTAL STEWARDSHIP AWARD WINNER

Wayne Mills, a 39-year GCSAA member and superintendent at La Cumbre CC in Santa Barbara, Calif., is the recipient of the 2024 President's Award



Wayne Mills

for Environmental Stewardship from the GCSAA.

"The numerous ways in which (Wayne) advocates for the protection of the environment, both at La Cumbre and other local golf courses, makes a measurable difference and embodies all that the President's Award represents. We commend his efforts and congratulate him on this honor," GCSAA President Kevin P. Breen, CGCS, said.

A member of the GCSA of Southern California, Mills' efforts helped establish La Cumbre CC's golf course as an Audubon International Certified Cooperative Sanctuary, receiving the Audubon Certification for Water Conservation.

Mills served as a founding member of the Goleta Valley Golf and Water Taskforce, which was instrumental in advocating for local golf courses and reasonable water use restrictions during recent times of extreme drought.

## // WELCOME TO CHICAGOLAND

# DRYJECT ADDS MIDWEST FRANCHISEE

DryJect recently announced the expansion of its business operations with the addition of a new franchisee. The establishment of this new franchise territory will provide service to the states of Wisconsin, Indiana and the Northeast corner of Illinois.

Jim Alvarez, of Sod Squad Chicago, Sod Squad Wisconsin and Sod Squad Indiana, purchased these DryJect franchise territories.

Alvarez has owned Innsbrook Country Club in Merrillville, Ill., since June 2021.



Out of more than 200 applicants, the 2023 Green Start Academy class featured a diverse cast of superintendents from the nation's top courses.

PHOTO BY: JOHN DEERE

# Starter

## Friends in High Places

#THANKASUPERINTENDENT

### Travis Kelce, Tight End, Kansas City Chiefs

**FRESH OFF HIS WIN** in “The Match” with Patrick Mahomes and pretty fresh off his most recent Super Bowl victory, *Golfdom* caught up with Travis Kelce, tight end for the Kansas City Chiefs.

The two-time Super Bowl Champion (2020, 2023) has a first-ballot NFL Hall of Fame resumé in the works. He is the fastest tight end in NFL history to record 6,000, 7,000, 8,000, 9,000 and 10,000 yards receiving. He has been named to the Pro Bowl every season since 2015. In 2020, Kelce set the all-time single-season receiving record for tight ends with 1,643 yards.

A native of Cleveland Heights, Ohio, Kelce entered the NFL in 2013 following his collegiate career at the University of Cincinnati. The former high school and

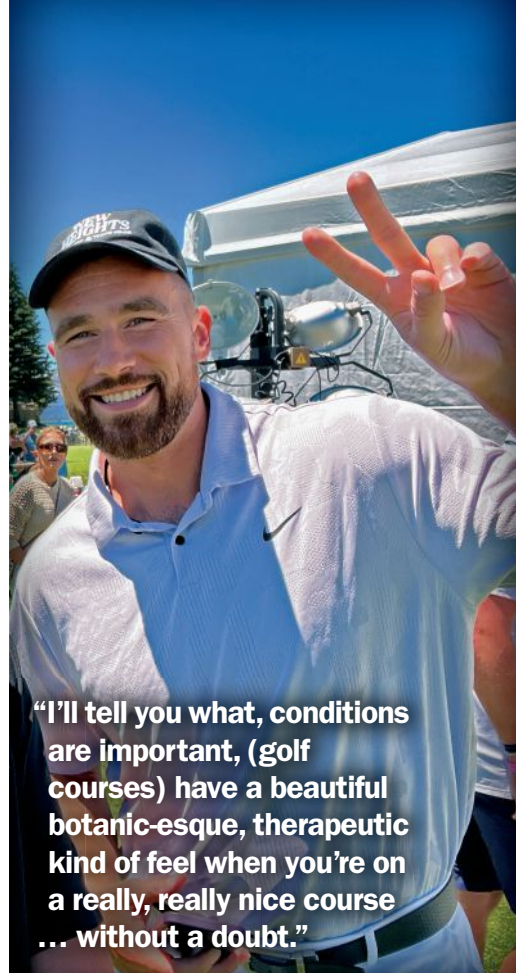
college quarterback was the 63rd pick overall. Beyond the football field, Kelce has recently risen to pop culture stardom, first as a guest host on Saturday Night Live, then for his relationship with pop superstar Taylor Swift.

— **Seth Jones** // Editor-in-Chief

**“The feeling you get when you hit that thing in your driver as far as you can... you feel it in your bones, man... it’s the best feeling in the world.**

**I’ve got a few favorite spots in Kansas City, I don’t like to get political but I’ll name three: The National, Loch Lloyd and Wolf Creek.**

**I’ll tell you what, conditions are important, (golf courses) have a**



**“I’ll tell you what, conditions are important, (golf courses) have a beautiful botanic-esque, therapeutic kind of feel when you’re on a really, really nice course ... without a doubt.”**

beautiful botanic-esque, therapeutic kind of feel when you’re on a really, really nice course ... without a doubt.”

## X #TurfPostoftheMonth

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**Anthony Williams**

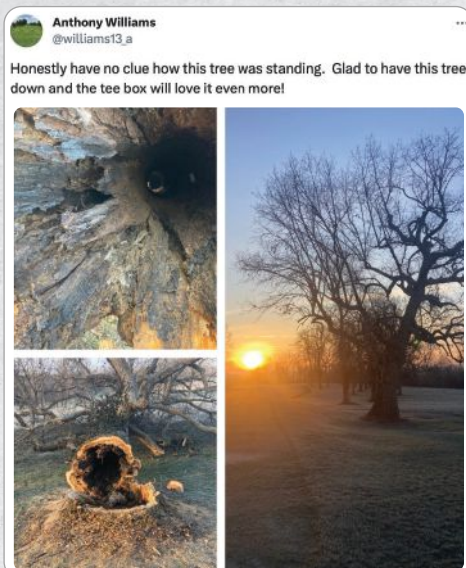
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### // SAME FACES, NEW NAME

## AQUATROLS AND PRECISION LABORATORIES MERGE

Aquatrols and the turf division of Precision Laboratories recently merged to form The Aquatrols Co. The newly formed company will continue to offer the full line of Aquatrols and Precision Laboratories soil surfactants, as well as Precision Laboratories tank mix adjuvants, colorants and additives.

VerdeLNX, a novel line of advanced nutrient products, will be added to the portfolio in early 2024.

“We have a unique opportunity to expand these industry-leading brands with our significant investment in marketing and R&D,” said Casey McDonald, director of marketing and portfolio management.


According to the new company, owned by Lamberti, the operation will benefit from new state-of-the-art manufacturing and vertically integrated technology sourcing. The headquarters of the turf business will remain in Paulsboro, N.J., while manufacturing and warehousing will move to Kenosha, Wis.

PHOTO BY: GOLFDOM STAFF (KELCE); COURTESY OF ANTHONY WILLIAMS (X)



## // FINDING COMMON GROUND

# COLORADO SUPERINTENDENT EARNS GOVERNMENT AFFAIRS AWARD

 Mitchell Savage, CGCS, golf course superintendent at CommonGround GC in Aurora, Colo., has earned the 2024 Excellence in Government Affairs Award from the Golf Course Superintendents Association of America (GCSAA).

A 21-year GCSAA member, Savage served on the Rocky Mountain GCSA board. He has led its government affairs committee and he continues to work closely with the Colorado Golf Coalition and has been instrumental in the push to maintain uniform state-wide pesticide regulations in Colorado.

"I am incredibly honored that my peers from Rocky Mountain GCSA thought that my efforts on behalf of our



**Mitchell Savage**

association and coalition were worthy of a nomination for this award," Savage said. "Winning this award reaffirms that the work we are doing in the state of Colorado with our golf coalition is making a difference and hopefully serving as a model for others to follow in advocacy efforts around the country."

In his work as a Grassroots Ambassador, Savage crossed paths with Lisa Blecker, a Colorado State University faculty member who hosts Pesticide Regulatory Education Program compliance and enforcement management courses for pesticide regulators. Savage recently hosted a field trip at CommonGround.

During the visit, Savage explained the importance of his focus on environmental stewardship and discussed his approach to managing the course at CommonGround, which sits on a piece of land that resides in two different cities under different jurisdictions.

## // A LITTLE SOMETHING FOR THE EFFORT

# GCSAA NAMES BILL MURRAY 2024 MORLEY AWARD WINNER



The Golf Course Superintendents Association of America (GCSAA) named William "Bill" Murray, retired superintendent and 27-year member of the GCSAA, the 2024 Col. John Morley Award recipient.

The GCSAA presents the award annually to an individual who is, or has been, a GCSAA Class A or B superintendent member and has made a significant contribution to the advancement of the golf course superintendent's profession.

Murray spent the final 26 years of his career in the seven-course Monmouth County (N.J.) Park System before retiring in 2022. Prior to that the Lee, Mass., native spent time at courses in Connecticut, Massachusetts, New York and New Jersey.

"Bill is a prime example of what Col. John Morley stood for and what the Morley Award is all

about," said GCSAA CEO Rhett Evans. "Throughout his long and successful career, he has given back so much to the profession through his service to his fellow GCSAA members on both the local and national level."

Murray is currently wrapping up a two-year term on GCSAA's Political Action Committee and has served on numerous national GCSAA task groups and committees over the years, including the scholarship, member relations, communications/outreach and more.

He spent 17 years on the Golf Course Superintendents Association of New Jersey (GCSANJ) board of directors, including two as president and is currently a trustee of the GCSANJ Foundation. He was recognized as the GCSANJ Member of the Year in 2009 and won the Shaun Berry Distinguished Service Award in 2019.

## Ask Thad

**BY THAD THOMPSON**

Superintendent  
Terry Hills GC, Batavia, N.Y.



### Will AI eventually doom your advice column, Seth's job and all trade publications?

This should be an easy one. I have a strong opinion about AI and its many uses. I'll answer this question in two parts.

#### 1 My opinion.

I think if any of the golf industry trade publications were relying heavily on AI, as an industry, we'd sniff it out. This is a deeply personal industry with experience, sharing and personal connections at its core. To take individuality out of the equation and rely on algorithms and a collection of opinions across the board takes our very essence out of the equation. As far as my advice column and Seth's job? I'm pretty sure that whether you like or hate our take on a particular topic, it wouldn't be as interesting if those takes were AI-generated. The best part of doing this is the interactions that I have with people who don't agree with my opinion.

#### 2 AI's opinion.

I asked an AI chatbot a similar question. Here's what it told me.

"Human advice columnists bring their expertise, experience and personal touch to provide tailored advice to readers. They can analyze specific situations, consider various factors and offer personalized recommendations that take into account the unique circumstances of each reader. This level of personalized guidance and empathy is challenging to replicate with AI."

The whole question boils down to humanity. I'd rather read someone who understands what I'm going through and how to deal with some of the stresses that are affecting my work or home life. Or, at least, a human being who understands sarcasm and smartassery.

Got a question for Thad? Tweet to @TerryHillsMaint and @Golfdom or email Thad at [thadthompson@terryhills.com](mailto:thadthompson@terryhills.com)

# The Golfdom

## FILES

FROM THE ARCHIVE

The golf course agronomy profession has come quite a way since 1973 when *Golfdom* ran this piece on the struggles of superintendents. Still, as you read through this piece from January 1973, you might notice some common threads that ring true more than 50 years later. For the full article, visit [Golfdom.com](https://www.golfdom.com).

## A new breed of superintendent

BY SHERRY CHRISTIE

Ten years ago superintendents were called greenskeepers. All the average golfer knew about them was that they were nice guys who always seemed to be out moving sprinklers or mowing—inevitably, in the middle of his play.

These days, a golf course superintendent, just back from a professional turf seminar, may have a pocketful of notes on urea-formaldehyde, phosphorous/lime ratios, plant clones and apomictic hybrids, and he may be about to go out to try and sell a \$100,000 automatic irrigation system to his management.

But to John Q. Golfer, he's still the head gardener, with a little extra status because someone saw him playing the course by himself on Monday morning.

Today's golf course superintendents are better educated, better trained and more sure of themselves than were their predecessors. But, ironically, the more expert they become, the more they end up selling their expertise to the people paying their salaries. They have to.

Pressures are greater. Clubs that once shrugged and went along with parched brown fairways don't anymore. Well-traveled golfers, who might be in Boyne Highlands one day and Delray Beach the next, have begun demanding the same championship standards at home, year-round.

For the average superintendent, this



demand for excellence means keeping his head above an ever-rising flood of sophisticated new products: nitrogen urea fertilizers, non-mercurial fungicides, triplex greensmowers and verticutters and aerators. No wonder universities now offer majors in turf management. And no wonder top superintendents' salaries have doubled and tripled what they were 10 years ago.

Expertise is necessary to manage a tight budget, to maintain a playable and photogenic course and to be able to sell every major decision to an ever-watchful management committee.

Superintendents have changed. The men taking over jobs now are in their 20s and early 30s, are university-trained, analytically minded and are not afraid of selling their expertise.

At 34, Don Clemans has been in the business 19 years, in Indianapolis, St. Louis, Detroit and now at Columbus (Ohio) CC. He feels that the golf superintendent's job is getting tougher and he is blunt about the reason why.

"Maybe 75 percent or 85 percent of the business today is not really growing grass, but learning how to coordinate people and how to convince them that you need to do this or that. Going out and actually doing the job—that's the least of my worries."

Clemans has almost made a career of turning golf courses around. In St. Louis, he gave himself an ulcer working 18 to 22 hours a day on the job, putting in a quarter-million-dollar irrigation system and supervising \$756,000 worth of improvement in three years.

At Columbus CC, which hosted the PGA tournament in 1964, the members had almost resigned themselves to a 100 percent turf failure annually when Clemans arrived in 1971. He recognized the problem as compaction and broke the seven-year losing streak by aerating the club's 70-year-old fairways five times last year.

It seems incomprehensible to Clemans that clubs are more willing to pay for a pound of cure than an ounce of preventive maintenance. He thinks the ultimate absurdity already has arrived: "People will go out and spend fantastic sums for artificial turf on football fields — \$250,000, \$350,000 — when the grounds man, the year before, could've asked for another \$5,000 to put the grass in great shape and they wouldn't have wanted to spend the money." **G**



# Golfdom Gallery

**1 SBI 2023** Mark LaFleur (left), communications lead for turf and landscape for Syngenta and Stephanie Schwenke (right), marketing manager for Syngenta, hosted *Golfdom* Digital Media Specialist Sydney Fischer at the 2023 Syngenta Business Institute in Winston-Salem, N.C.

**2 U.S. Open preview** The view from the 18th tee on Pinehurst No. 2 with (left to right) Seth Jones, *Golfdom*; Jonathan Bym, *The Pilot*; caddies Dave and Doak; and Matt LaWell, *Golf Course Industry*. Jones reports his putt from off the green earned him a golf clap from the patio.

**3 Pointers from Points** North Coast Media CEO Kevin Stoltman (left) and NCM's vice president of finance and operations Steve Galperin (right) were joined for 18 holes by PGA Tour player D.A. Points at Reunion Resort near Orlando.

**4 Quality time with Quali-Pro** The *Golfdom* team, along with its sister publications *Landscape Management (LM)* and *Pest Management Professional (PMP)*, traveled to Houston to visit the team at Quali-Pro. From left to right are: Marty Whitford, *PMP*; Jones; Mayra Castorina, Quali-Pro; Stoltman; Bill Roddy, publisher, *LM*; Erica Cardenas, Quali-Pro; Sam Pass, Quali-Pro; Mike Joyce, *PMP*; Craig MacGregor, publisher, *Golfdom*; and Tim Walker, Quali-Pro.

**5 More wisdom from Waco** Jones caught up with Jim Moore, retired USGA Green Section director of education, while at a conference in Dallas. Moore now spends his time farming and writing the occasional column for *Golfdom*.

**6 Chance encounter on the River Walk** Jones bumped into (left to right) Selena Sutton-Jensen of Sutton Irrigation; Carmen Magro, Ph.D., CGCS, of Pogo / Stevens Water Monitoring Systems; and Scott Sutton, superintendent at the Club at Sunrise, Las Vegas, Nev.





"It doesn't matter if the club has endless resources or is run on a shoestring, Mother Nature can quickly nullify our best intentions so we desperately look for answers."

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

## Focus on the controllable in 2024

**A** new year and a new set of resolutions. It always starts out great; eat better, exercise more and lose weight. All of that sounds great on January 1, but is a distant memory by February. Like everyone, I start with the best of intentions, but the realities of life catch up and they fall by the wayside. Every year I'll throw one or two work-related ones in there too, but usually, by the fall, I'm kicking myself that, yet again they somehow slipped through the cracks. This year will be different!

By the time you read this, I will either be about to or have just finished a presentation at the GCSAA Show called *Control the Controllables*. My co-presenter was a roommate of mine at Penn State, so he has the privilege of knowing me for my entire life in the U.S. Maybe our communal living back then had enough of a profound effect on all of us roommates that, over time, has resulted in us consistently thinking alike.

Being the smart one, he is a proper soils guy, so he has helped me tremendously over the years —nurturing my obsessive need for better turf. As time passed, we started to think that, as superintendents, we possibly are our own worst enemies, making more work for ourselves as we go

(which I discussed back in October 2020). This was the genesis for our presentation and by basing it on our experience it came together quickly.

While the fundamentals of it are basic Turf 101, to work properly it is very interactive. We'll revisit the questions: What exactly is a superintendent? What do we do? Why do we do it? These questions get the conversation started so you can challenge the content. Since there are no right or wrong answers, the idea is for people to think more about what they do and more importantly why, which hopefully can result in a more efficient use of resources.

As we struggled to find a title, we realized that no matter what happens there is usually something we have

no control over, such as the weather, the environment, etc. While our seminar is based on the agronomic side of things, the same goes for the business side.

Budgeting is a great example where we can present all the info, help influence the decisions and provide feedback, but ultimately, we do not make the final decision. Every aspect of what we do depends on something else, so why should we get agitated trying to make the impossible happen? As simple as it seems, why not just worry about controlling the controllable items? At the end of the day, it is the most we can do.

It doesn't matter if the club has endless resources or is run on a shoestring, Mother Nature can quickly nullify our

best intentions so we desperately look for answers.

An accident is defined as a specific unplanned event or uncontrolled sequence of events that has a specific undesirable consequence; removing one part of the sequence of events can prevent a problem from occurring. Concentrating on maximizing the controllable items breaks up the sequence of events, leading to success. Worrying about the ones you can't control, will consume your time, and steal your focus. It is not about doing less or becoming complacent but recognizing an uncontrollable problem encourages you to think about what is happening, helping guide better decisions and maximizing any available resources.

So, my resolution for 2024 is to prioritize what I can control and not lose focus worrying about what I can't. I have finally found a resolution that will stick, and by limiting the impact of an unmanageable event, I can minimize mistakes, quickly adapt to situations and make a quick recovery from a problem. Maybe this year by controlling the controllables, I might actually make some other resolutions stick too! **G**

Alan Fitzgerald ([superintendent@rehobothbeachcc.com](mailto:superintendent@rehobothbeachcc.com)) is superintendent at Rehoboth Beach (Del.) Country Club.



# What's good with the Green Section

BY SETH JONES

The United States Golf Association (USGA) Green Section may have celebrated its 100th anniversary in November 2020, but the group waited until late 2023 to reflect on the good work it has accomplished in the past, as well as what's on the horizon.

Assembling a handful of select media — *Sports Illustrated*, *Golf* and *Golfdom* among them — at Pinehurst Resort, the group saw progress on the construction of Golf House Pinehurst, the USGA's newest campus a mere par four's distance from the Pinehurst clubhouse.

Media also learned more about the USGA's Greenkeeper Apprenticeship Program (GAP), the 15/30/45 initiative and the GS3 golf ball. They also got to play a round on No. 2 to ap-

preciate the challenge the clubhouse leader will face when he steps onto the first tee on Sunday during the 2024 U.S. Open.

## Mind the GAP

2023 was the first year for the GAP, a partnership between the USGA, Sandhills Community College in Southern Pines, N.C., and several local courses.

*Continued on page 14*

With a big 2023 now behind them, the USGA Green Section takes a moment to reflect and look ahead



John Jeffreys with Pinehurst Resort speaks about the Greenkeeper Apprenticeship Program at Pinehurst Resort & Country Club in Pinehurst, N.C.

PHOTOS COPYRIGHT USGA / CHRIS KEANE

Continued from page 13

The program combines on-the-job golf course maintenance training with in-person classroom education and mentorship, at no cost to the golf maintenance employee. The inaugural class recently graduated all 21 of its students.

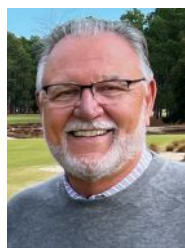
"If you ask any superintendent, 'What is your biggest challenge?' (They'll respond) labor, attrition, turnover," says Chris Hartwiger, director of agronomy for the USGA. "There's a need for a skilled workforce, with credentials in golf. This has worked in other parts of the world; we're cautiously optimistic that if we cause a little fire here in the Sand Hills it will flame up and expand into other parts of the country."



Chris Hartwiger

Bob Farren, CGCS, director of grounds at Pinehurst, compares the GAP to apprenticeships common in other trades, like electricians or plumbers.

"There are so many hours of on-the-job training, work hours, classroom hours and studying. Then you become a journeyman, you have a certification card that



Bob Farren

will travel with you — this one will have the USGA brand on it, which will add value to it," he says. "This one is for the practice of greenkeeping. You can aspire to go on to a two- or four-year degree if you like. But it's really to qualify you with a skill set that is marketable at a higher value than a non-trained journeyman."

To earn a GAP certificate, apprentices must complete 2,000 hours of working on the golf course, along with 200 hours in the classroom.

"One of the neat things about turf science is, it's an applied science. In the classroom, we try to help them with the

## "I think (the Greenkeeper Apprenticeship Program) will change the industry in ten years. It's changing it for us now."

— Bob Farren, CGCS

science and the basic principles. Under the guidance of their mentorship and working on the course, that's really where the art comes into play," Hartwiger says. "It's the science foundation in the classroom combined with the art on the golf course. That's what will make them high-quality employees that will make them in demand."

Farren says GAP has already made a positive impact at Pinehurst.

"I think it'll change the industry in ten years," he says. "It's changing it for us now."

### Long-term commitment

In early 2023 Mike Whan, CEO of the USGA, unveiled the 15/30/45 program. In short, the program is a \$30 million investment from the USGA in the industry to reduce water consumption in golf by 45 percent over 15 years.

Cole Thompson, Ph.D., director of turfgrass and environmental research for the USGA, notes that saving water has been a goal of the USGA Green Section dating

back to its founding in 1920.

"It's a challenge for the industry, not a mandate — we know that's not our role," Thompson told *Golfdom*. "Our role is to demonstrate the research and practices that we know are effective that can save water, (then) demonstrate those on golf courses in a real-world situation. Show how much water (courses) can save, and then tell those stories to other golf courses so if they have water conservation goals, they can benefit."

Thompson points out that the technology to irrigate the course wall-to-wall wasn't available during No. 2's construction. Now that many courses are going back to their roots and reclaiming how they originally looked, a common question is, just because we can irrigate the entire course ... should we?

"Reducing resource use is a generational change," he says. "We'll make incremental improvements, but the next generation is really going to realize the benefits."



Cole Thompson, Ph.D., USGA director of turfgrass and environmental research, says the 15/30/45 initiative isn't meant to be a mandate, but a general goal for courses who wish to conserve water. "(We can) show how much water (courses) can save, and then tell those stories to other golf courses."

PHOTO COPYRIGHT USGA / CHRIS KEANE





Eric Mabie, assistant superintendent at Pinehurst and a second-generation greenskeeper, demonstrates to members of the media how the GS3 is used in the field.

## Measuring success

Chris Hartwiger has attended every U.S. Open at Pinehurst since 1999. In those 24 ensuing years, he's eye witnessed how evaluating the conditions of the course's greens has advanced.

"In 1999, our key performance indicator was green speed. In 2005, we had access to soil moisture meters and green speed and that helped us dial in the conditions. We took it to another level with firmness, green speed and moisture in 2014," he says. "In 2024, we'll have access to information gathered by the USGA's GS3 ball, which Pinehurst has been using over the last year. We'll not only be able to measure firmness, smoothness and trueness, (but also) green speed, clipping volume and soil moisture, and we're going to be able to do it all in a way that optimizes turf conditions for the competitors, really at the request of our championship staff."

The GS3 was another advancement unveiled by the USGA at the 2023 GCSAA Conference and Show in Orlando.

Hartwiger says the GS3 will be a game changer for superintendents, allowing them to assign a number to the efforts they make daily to achieve their ideal greens conditions.

"They're always managing for green speed, they're always managing for smoothness, they're always managing for firmness, and now they can assign a number to that," he says. "They're going to have a complete historical record of how the greens have performed around those parameters. Once they have a deeper understanding of that historical record, they're going to be able to use that data to optimize the conditions they want to provide and learn more and more about, 'When I do X, then Y happens.'"


John Jeffreys, CGCS, superintendent of No. 2 at Pinehurst, says his team uses the GS3 to record greens conditions daily. He says having data that shows how smooth and true a ball rolls is helpful because the golfer's eye can be deceived.

"We have a number now. That num-

ber isn't just good for daily play, but say we do a cultural practice, an aerification. We can quantify that recovery," he says. "We can take the number the day before we aerify, and then tell (golfers) how many days post-aerification it takes to get back to that number ... not just speed, but smoothness and trueness."

Jeffreys adds that the GS3 allows him to quantify everything he tried to defend previously because now he can show the data. "It shows we're invested in the product more than they may have realized," he says.

With the 2024 U.S. Open only a few months away, Jeffreys says he's thankful to have the USGA Green Section on his side and so close to his course.

"One of the benefits of being at Pinehurst is having the smartest guys in the room right next door and living in our neighborhood," he says. "One of the opportunities of hosting championships is getting to learn from their experience ... it makes us all better." 

# PHOENIX RISING

BY SETH JONES

Events and products to look for as GCSAA's Conference and Trade Show returns to Arizona

When the Golf Course Superintendents Association of America's Conference and Trade Show rolls around, Jared Brewster, superintendent at Rolling Hills CC in Newburgh, Ind., tries to pack in as much education and trade show floor time as he can. But that isn't the biggest part of the show for him, he says. It's the community.

"It's hard to walk the trade show floor and not have someone stop you and say hello," Brewster says. "We're a tight-knit community. Someone has always worked for someone else, or vice versa. Or you get dinner with super-

intendents who brought you up, who you interned for. There are so many mentors in our industry, you get everyone in the same area, it allows us to have conversations and look at past memories and just have a good time."

## TEE IT UP

GCSAA CEO Rhett Evans says that attendance for the show in Phoenix — the first time the show takes place there since 1987 — is looking to be an increase over what attendees saw in Orlando last year. When *Golfdom* spoke to Evans in early 2024, he said attendance was





## THE AMBIENTE COURSE AT CAMELBACK GC

Friend of *Golfdom*, Jason Straka, ASGCA, previews one of the two GCSAA National Championship host courses

For those attending the 2024 GCSAA Conference and Show, we hope you're packing your sticks because the golf this year's show offers is quite the line-up. Talking Stick, Whirlwind and Camelback are all hosting GCSAA tournaments, and these courses all display the best of desert golf.

The GCSAA Championship will be decided on the two 18s at Camelback, the Ambiente and the Padre. We reached out to Jason Straka, ASGCA, who redesigned Ambiente in 2013 on behalf of Hurdzan/Fry Environmental Golf Course Design, to get some insight on the course.

Prior to the redesign, the course struggled with flooding. The course removed 110 acres of maintained turfgrass in favor of a native mix of desert riparian plants, upland desert trees, shrubs and grasses and a palette of native winter and summer desert wildflowers

"The golf course was so flat that even though it is in the desert,



it was unplayable for days after it flooded," Straka says. "In some instances, the golf course itself might not have received a drop of rain but if it rained in the watershed above the course, it would flood, causing massive maintenance problems and lost revenue."

The redesigned course drains better and has reduced the amount of inputs necessary to maintain it. The accolades were numerous: *Golf Digest* named it best new course of 2013 and *Golf Inc.* named it renovation of the year in 2014. Greg Brandriet, CGCS, is the superintendent of the course.

eight percent ahead of where it was at the same time last year for the Orlando show.

He attributes part of the success to the lure of a new city where many attendees might not have visited before.

"San Diego and Orlando have been consistent fixtures, and then we rotate that middle show, going back to San Antonio and Las Vegas," Evans says. "We wanted to look at another West Coast city that could become a landing place that may be a little unique from San Diego. When we sent out a survey to members, Phoenix kept com-

ing up high on the list."

Ernie Pock, director of agronomy at Grayhawk Club in Scottsdale, Ariz., recalls the last time the conference was in Phoenix — when he was a kid.

"It's been, gosh, my dad was a superintendent for 40-plus years and it was in the '80s the last time it was in Phoenix," he says. "I was kind of surprised to hear they were going to Phoenix but (the city) has done a really great job with the restau-

rants and the bars and they've cleaned up downtown — there are some pretty cool venues."

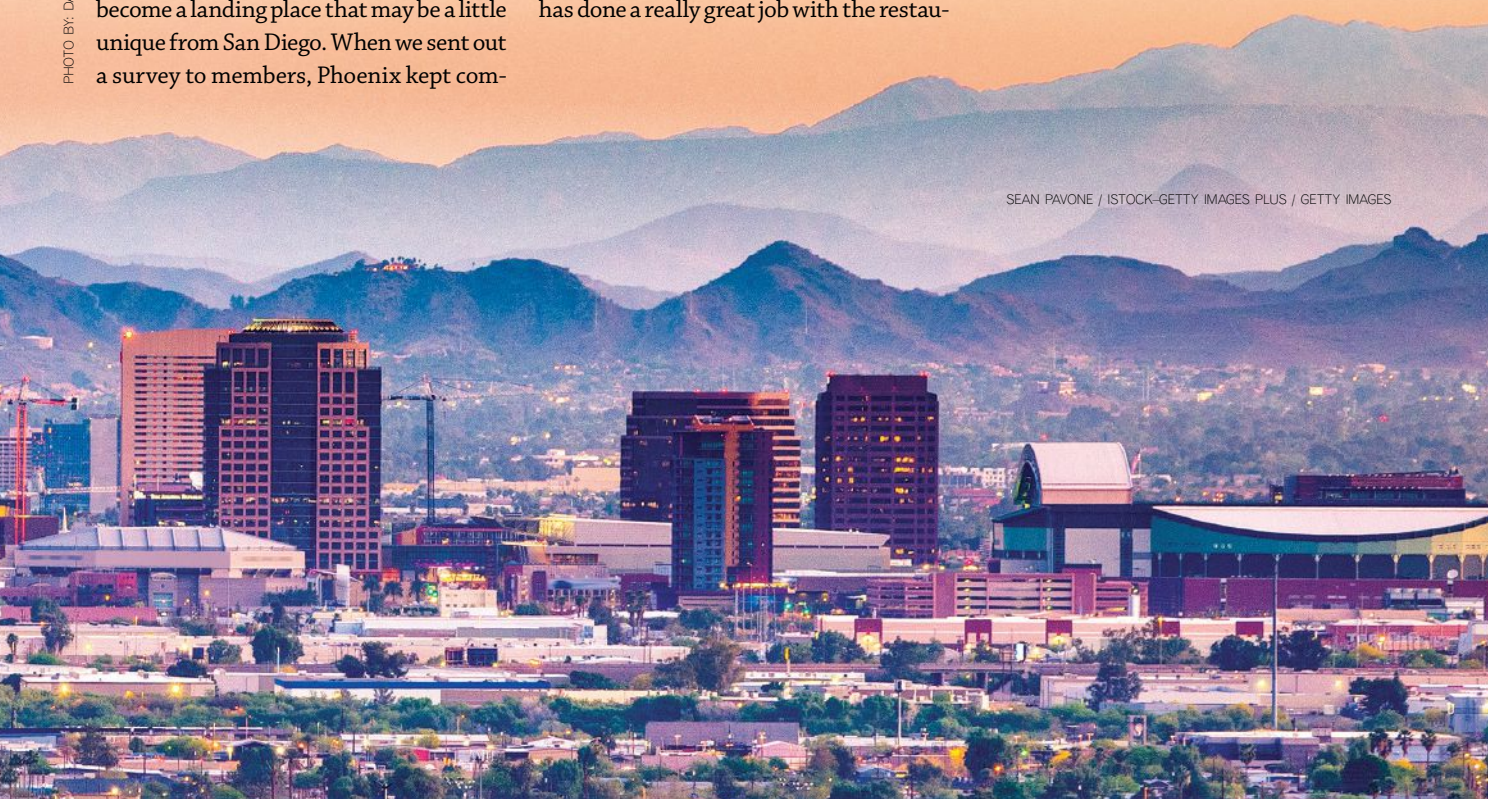
Pock, president of the Cactus and Pine GCSA chapter, has helped the national association plan this show by lending his local knowledge.

"We're trying to get creative," he says. "We're going to do a coffee kickoff before

*Continued on page 18*

PHOTO BY: DAVE SANSON

SEAN PAVONE / ISTOCK-GETTY IMAGES PLUS / GETTY IMAGES





# THREE RECOMMENDATIONS FOR 2024 GCSAA C&S

## HOSTING A FIRST GREEN FIELD TRIP CLASS

How often has the story been told of the superintendent who didn't know that working on a golf course was an actual job until a superintendent pulled him or her aside and told them, 'Maybe this is a career you should consider.'

The GCSAA's First Green program is aiming to quell that narrative. And if numbers tell the story, it's trending in the right direction. In 2023, 11,000 students learned directly from

a superintendent about the work that goes into maintaining a golf course.

Presented in partnership with Par West and in association with PBI-Gordon, "Launching a First Green field trip is easier than you think" is hosted by Steve Kealy, CGCS; Jeffrey Gullikson, CGCS; David Phipps and Leann Cooper and takes place at Cottonwood CC at Sun Lakes.

"Once somebody hosts a First Green event, they're inclined to do it again because

it's been so successful with teachers, students, the community and the golf facility," Evans says. "It's a great opportunity for introducing young people to the profession, seeing the various jobs that are available and seeing what superintendents do day in and day out."

## HERB GRAFFIS BUSINESSPERSON OF THE YEAR AWARD PRESENTATION

Traveling from Ijamsville, Md., is the 2023 Herb Graffis Businessperson of the Year Award winner, Chris Navin, superintendent at the Club at PB. Dye. This former middle school teacher made the leap back into golf maintenance after six years of being in education. After returning to college to earn his turf degree and then serving as an assistant, Navin was named superintendent at the Club at PB. Dye. He turned the course around from a state of disrepair to hosting a U.S. Open qualifier in just six seasons.

And traveling from Montclair, N.J., is Rees Jones, ASGCA. The son of Robert Trent Jones Sr., Jones has designed more than 260 courses in his career, including numerous major championship venues, earning him the



GCSAA's First Green program allows K-12 students to participate in hands-on educational stations and learn about the many jobs a golf course offers.

*Continued from page 17*

the first day of the trade show. We'll have some parties planned during the week of the show where everybody can share stories of successes and failures in turf, and if you've got a beer in your hand, it just makes it better."

A new city and convention center are great, but perhaps the most alluring thing about a new location is a slate of new golf courses for GCSAA's various golf tournaments. Talking Stick GC, Whirlwind GC and Camelback GC will play host to superintendents from across the country.

"These are some really great tracks that are right there in the Phoenix Valley,"

Evans says. "If you want an indication that people are excited to play these courses, the National Championship is sold out; the Classic is sold out; the Four-Ball is sold out. We've got more players than we've had in over a decade. We have close to a thousand playing slots filled. That's over 600 unique players registered for the tournaments."

## SHOW STOPPERS

Along with the networking, educational opportunities, site visits and golf, another thing the GCSAA Conference and Trade Show offers is the chance to see new products and technologies in person.

"There's always new products from

companies you know, but there are also products that you just don't know, or aren't familiar with, from the companies you don't know," Brewster says. "There are a lot of things for everyone."

"We want people to leave a little stronger, a little smarter and better equipped to excel in their careers," Evans says. "That's the goal. It's about education, networking and seeing the trade show floor and the new products."

In the following pages are 13 products from *Golfdom's* partners, products we hope you'll take the time to see in person once the trade show floor opens in Phoenix on January 31st. **G**



nickname of “The Open Doctor.”

Jones has presented every Herb Graffis Businessperson of the Year award since the award's inception in 2013.

“I was brought up with *Golfdom* magazine in my house,” Jones says. “My father and Herb Graffis were very close friends. Herb Graffis was a real visionary in the golf business. He and my father did a lot of business together, and that was during the Depression, so they had to be really creative. It's an honor every year to honor these people who are deserving in the golf industry for being visionaries themselves.”

This year's ceremony takes place at 2 p.m., Wednesday, January 31st, at the *Golfdom* booth No. 3508.

### ATTEND AN INTERACTIVE FACILITY TOUR

A program now entering its second year, GCSAA's interactive facility tours take Conference and Show attendees away from the Convention Center to see area courses and listen to industry experts present on subjects vital to the business of golf maintenance. A few of the classes include:

- Tournament preparation, presented by John Deere and hosted at TPC Scottsdale, home of the Waste Management Open
- The latest in golf tournament management, hosted at Desert Highlands Club and featuring Frank Rossi, Ph.D.
- The technology of implementing BMPs, presented by Helena and



Rees Jones (left) and *Golfdom* Editor-in-Chief Seth Jones (right) present Alex J. Stuedemann, CGCS, with the 2022 Herb Graffis Businessperson of the Year Award at the 2023 conference.

presented at Camelback GC

“They're all unique topics and the fact that our members are presenting and showcasing their golf courses, you're going to see them in full bloom,” Evans says. “These are events where you can touch and feel and have that interactive opportunity ... it's definitely something I'm looking forward to and hopefully our member attendees are as well.”

PHOTO BY: GOLFDOM STAFF



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# PRODUCT SHOWCASE



## BRANDT

## Q+A

with **Kym Wood**

Turf and Ornamental Business  
Development Manager

### How do your products or services save golf course superintendents time?

The BRANDT Turf Kits offer a comprehensive nutritional program for all turf types, featuring our unique Manni-Plex line. These kits are designed to be cost-effective, with each application covering an acre for less than \$100.

They are tailored to meet the diverse needs for golf courses, available in both weekly and bi-monthly spray options. This flexibility ensures that different turf management requirements

are effectively met, whether for routine maintenance or specific seasonal needs.

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# PRODUCT SHOWCASE



## BUFFALO TURBINE

**Q+A** with **Guy Gabbey**  
Sales Manager

Buffalo Turbine is proud to present the Blitz stand-on debris blower, designed to enhance operational efficiency, reduce labor demands and prioritize operator comfort for golf course superintendents. It is offered in two models to meet diverse needs: the Blitz BT-SB26 with a 26HP EFI gas engine and the Blitz BT-SB40 with a robust 40HP EFI gas engine.

"The Blitz stand-on is 20 percent faster than our tow-behind units," says Brian Coyne, superintendent of Springville Country Club. Effectively opening greens quicker for golfers.

### How does the Blitz stand-on debris blower make superintendents more efficient?

All-day comfort is met with its high-performance independent suspension, contoured lean pad and adjustable shock stand platform. All are engineered to reduce operator fatigue to promote all-day productivity. The Blitz features high-strength LED headlamps for pre-dawn and evening convenience.

The key to its effectiveness is the integrated turbine blower, which provides unmatched blowing power. The 360-degree nozzle rotation control, strategically placed within the drive handles, allows operators to rotate the nozzle seamlessly while in



motion, ensuring optimal efficiency in debris-clearing tasks. Speed and comfort were the focus of the design and a compliment to Buffalo Turbine's already-known high level of quality.

"We are thrilled to introduce the first fully-featured stand-on turbine debris blower. The Blitz provides best-in-class performance and productivity," says Louis Horschel, owner of Buffalo Turbine. The Buffalo Turbine Blitz stands out for its exceptional performance, durability and customer satisfaction commitment, backed by a 10-year warranty.

For golf course superintendents seeking a tool to save time and labor, the Blitz is a game-changer. Its rapid debris-clearing capabilities, combined with a smooth ride, translate to heightened productivity on the golf course.



180 Zoar Valley Rd., Springville, NY 14141 (716) 592-2700 [BuffaloTurbine.com](https://www.BuffaloTurbine.com)



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**GCSAA Conference & Show Booth 3142**



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# PRODUCT SHOWCASE



## DRYJECT

# Q+A

with **John Paddock**  
Owner and president

### How does your service save superintendents time?

Managers of DryJect service centers supply all the labor to operate our injection equipment. This simplifies the magnitude of planning out a large core aeration project.

### How does your service save superintendents labor?

Labor associated with operating aerators is eliminated. Because our machines fully fill each injection hole with sand or other amendments, topdressing and aggressive dragging to work the material in the holes is either greatly reduced or, in most cases, not needed at all.

As a result, several grounds crew workers are freed up to perform other duties that may have been neglected or have required overtime to accomplish.

### How does your service save golf courses materials or fuel?

Using the DryJect service will aid substantially in retaining the golf course's normal rounds played pattern when compared to coring, topdressing and aggressive dragging, which diminishes the putting surface playability (or the



golfer's perception on playability).

Whether the course is daily fee or private, using DryJect will help retain golfers, resulting in more successful revenue streams.

With DryJect's newly designed hopper with agitation, we now have the ability to inject wet sand. Depending on availability and pricing for kiln-dried sand, having the capability to inject wet sand may save the golf course a substantial amount of money.



### How does your service help generate additional revenue for golf courses?

Golfers marvel at how well the greens putt just after our service. So, happy golfers equal better profits! Here's what one satisfied customer had to say:

*"Our data shows that when we core aerate and topdress in early September, we see about a \$30,000 drop in revenue over the next two weeks. When using DryJect, we realize only one day of lost revenue. We estimate a \$19,000 savings in using DryJect over core aeration."*

— JUSTIN N. SMITH, general manager  
Olde Homestead Golf Club, Pa.

307 Lincoln Ave., Hatboro, PA 19040 215-444-0310 DryJect.com

DryJect Hatboro @DryJect

**GCSAA Conference & Show Booth 2139**





# Take good care of your babies.



## Put DryJect® to work for you.

It can be a first step in taking your greens to the next level. DryJect is quite affordable compared to traditional core aeration and can boost revenue. There are few if any lost or discounted rounds with DryJect.

The agronomics have been proven over two decades. Thousands of superintendents rely on DryJect to help them keep their babies looking and playing great.

Just think. When the DryJect crew leaves, your greens are ready for play right away. And that's a beautiful thing.

### HOW DRYJECT SERVICE WORKS

*DryJect applies dry or wet sand, or your amendment choice. We come early in the day with three or four machines. You provide crew for each machine to help keep the amendments flowing.*

*Before you know it the job is done. We're gone. And you're ready for play with few if any lost or discounted rounds. Find your local DryJect Service Center – call, visit our website or social media.*



**Aerate, amend and play right away<sup>SM</sup>**



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**DryJect.com**

# PRODUCT SHOWCASE



## FMC

## Q+A

with **Jonathan Petrillak**  
Golf and Lawn Care Market Manager

### How do your products or services save golf course superintendents time & labor?

Durentis™ insecticide offers applicators the flexibility to apply earlier in the year. Its tank mix compatibility gives the



## DURENTIS™

INSECTICIDE

applicator the opportunity to mix with applications for pre-emergent, disease control and liquid fertilizer. These options and ensuing time savings give golf course superintendents the ability to manage other aspects of their course. They can be rest assured that their turf is protected.

### How do your products or services save golf courses materials or fuel?

Preventive products such as Durentis™ provide season-long coverage of all grub species, armyworms, cutworms and more. Treating pests preventatively will save from costly curative applications.

### In what other ways do your products or services make golf courses profitable?

Volume buys and early order programs help golf courses save the most while deferring payments until the summer. Utilizing these buying programs could set a superintendent up for a year's worth of protection from the most troublesome insect issues. When their course is protected and looking its best, good news travels fast. A superintendent is then able to take time to manage other aspects of their course while increasing membership.

# FMC

2929 Walnut Street, Philadelphia, PA 19104 (215) 299-6119 [GSS.FMC.com](https://www.GSS.FMC.com)

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**GCSAA Conference & Show Booth 4012**



Visit Us at  
Booth #4012  
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# INNOVATION IN EVERY OUNCE

FMC is proactively moving the golf industry forward. Our upcoming insecticide, Durentis™, is a prime example of that innovation. Chlorantraniliprole was discovered and developed by FMC scientists into a long-lasting, highly concentrated formulation that controls white grubs, armyworms, cutworms, and other above- and below-ground chewing pests. Soon, you can harness the power of Durentis™, a proprietary formulation from FMC. Find out more at [discoverdurentis.com](http://discoverdurentis.com)

**DURENTIS™**  
**INSECTICIDE**

**FMC** Innovations You Can Trust.  
People You Can Count On.

Durentis™ insecticide is not yet registered for sale or use in the United States. No offer for sale, sale, or use of this product is permitted prior to issuance of the required EPA and state registrations.

# PRODUCT SHOWCASE



## HUNTER INDUSTRIES

**Q+A** with **Carl Eberts**  
Golf Category Manager

### How do your products save golf course superintendents time?

TTS-800 Series golf rotors from Hunter Industries integrate advanced technology with unrivaled power, reliability and performance to simplify irrigation management and cultivate impeccable playing surfaces in every application. TTS-800 rotors combine the field-proven benefits of our robust, highly efficient G-80 and G-85 gear drives with a completely redesigned Total-Top-Service body featuring the largest flange compartment in the industry to ensure unmatched ease of serviceability. Furthermore, the pressure regulator and solenoid are easily serviceable without system de-pressurization, which saves significant time during routine maintenance.

### How do your products save labor?

Our no-dig total-top serviceability means all TTS-800 rotor components

are easily accessible from the top without digging, making routine maintenance a breeze. The TTS-800's robust inlet valve includes a replaceable seat seal and an



exclusive Filter Sentry® mechanism — an industry first. Thanks to a powerful wiper, Filter Sentry scours the filter clean during each valve's opening and closing cycle, which dramatically reduces the inlet valve service frequency. Finally, at the heart of any golf rotor is the gear drive. The high-torque planetary gear drive is the strongest in the industry to mitigate the challenges of reclaimed water and debris infiltration.

### In what other ways do your products make golf courses profitable?

Golf course superintendents have a difficult job when it comes to irrigation management. Playability directly impacts revenue, so effective irrigation is critical at all times. The

TTS-800 Series golf rotors provide industry-leading distribution uniformity to reduce water use, decrease pump costs and improve playability. Our proprietary PressurePort™ nozzle technology optimizes the incoming pressure at each nozzle to increase consistency and maximize distribution uniformity. In water audit challenges comparing distribution uniformity at courses globally, Hunter systems achieve a 17 percent savings in water use over the competition on average. This will often make the ROI for a new irrigation system very attractive when you factor in savings from water costs, pump energy and reduced labor from hand watering.

### Why do you believe Hunter's new TTS-800 Series rotors represent the future of golf course irrigation?

We have been on the leading edge of golf irrigation technology for more than three decades. We build performance, reliability and serviceability into every product we make. Now, we are proud to advance our legacy of golf industry innovations with the ultra-serviceable TTS-800 Series rotors — the most innovative and technologically advanced gear-driven rotors on the market.

**Hunter®** | *Golf Irrigation*

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**GCSAA Conference & Show Booth 3534**



# POWER. CONSISTENCY. PERFORMANCE.



## **GOLF'S BEST SYSTEM FOR 10 YEARS RUNNING**

For optimal efficiency and uniformity, choose field-proven Hunter Golf irrigation systems! Powerful TTS-800 Series Golf Rotors pair perfectly with the intuitive Pilot® Control Network for consistent, reliable performance and easy upkeep, allowing you to maximize playability while saving time and energy — from any location on any device.



[hunter.info/lifeisbetter](https://hunter.info/lifeisbetter)

**GOLF IRRIGATION** | *Built on Innovation®*

# **Hunter®**

# PRODUCT SHOWCASE



## HUSQVARNA

## Q+A

with **David Plaster**

Sr. Director of Business Development

### How do your products or services save golf course superintendents time?

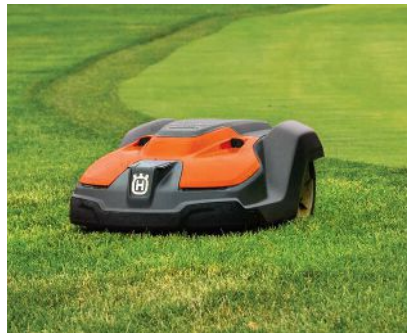
Husqvarna CEORA™ and the 500-series Husqvarna Automower® product line help golf course superintendents and their crews save time throughout their busy days.

1. Mows day and night, quietly, to help keep your crews focused on detailed work, such as maintaining greens as well as bunkers and waste area management.
2. Easy to install with Husqvarna EPOST™ (Exact Positioning Operating System) satellite-based technology.
3. Ability to monitor and control your fleet remotely with Husqvarna Fleet Services™.

### How do your products or services help generate additional value for golf courses?

Battery-powered robotic mowers generate many benefits for golf courses, including:

1. Improves turf health, daily consistent cut quality and appearance.
2. Robotic mowers are water-resistant and can mow turf even when it is raining.



3. Blades are easily replaced without specialized knowledge.
4. Battery-powered, so no fuel or hydraulic leaks.
5. Significantly reduces cutting equipment maintenance costs; no grinding and manual height adjustment.

In addition, our battery-powered handheld equipment helps golf courses reduce their emissions and noise so it is not a bother to guests.

### How do your products or services save golf course superintendents labor?

Husqvarna's autonomous mowers are a labor enhancement. They improve the efficient use of existing crew by allowing them time for more valuable tasks that raise the overall quality of the golf course.

### In what other ways do your products or services make golf courses profitable?

Robotic mowers have a compelling value proposition in both acquisition costs and total costs of operation versus traditional mowing equipment.

### How do you manage the robots?

Monitor and control your fleet remotely with Husqvarna Fleet Services. By using our mobile app, it is easy to adjust the height of cut, set golf-specific mowing patterns, create a mowing schedule for each robotic mower, map out virtual boundaries and much more.

Check out one of our latest installations at The Philadelphia Cricket Club: <https://www.youtube.com/watch?v=rbsyclFRLuY>



9335 Harris Corners Pkwy, Ste. 500, Charlotte, NC 28269  [Husqvarna.com/US](https://www.husqvarna.com/US)

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**GCSAA Conference & Show Booth 1155**



# Changing the game in course maintenance



Husqvarna CEORA™ and Automower® robotic mowers operate quietly, day and night, rain or shine to help keep your course pristine.

- 1 High quality cut, consistently**  
On par with reel mowers
- 2 No mowing labor required**  
Crews can focus on the details
- 3 Lower total cost of ownership**  
Fewer wear parts and no fuel required

Visit us at GCSAA to learn more!



**Booth #1155** **LIVE DEMO ON MONDAY!**



Automower® 535 AWD

CEORA™

Automower® 550(H) EPOS™

Scan to  
learn more



# PRODUCT SHOWCASE



## POGO TURF PRO

**Q+A** with **Carmen Magro, CGCS**  
President

### How does POGO save time?

Superintendents demand precision. Without it, failure is imminent. The POGO TurfPro system allows supers to know precisely the true condition of their turf, while providing many other insights and measuring stress on turf performance. POGO helps superintendents make the best use of their time with only minutes per day, as we understand both the short- and long-term impacts of less-than-optimal decisions.

### How does POGO save labor?

All superintendents want to know their operations are efficient and precise. The POGO system clearly indicates what the turf sees and what influences it — bad or good — so that the right decisions can be made quickly and efficiently. Further, it is especially insightful at trending conditions and predicting the impacts of current or planned irrigation, fertilization or cultural practices, allowing users to make efficient labor decisions. With POGO's innovative mapping features, users can quickly visualize their practices and see the results of their operations over time while logging features and attributes specific to their property.



the natural performance of turf to meet the demands of the game. POGO is the only scientifically based monitoring and analytical system in the industry that never requires calibration and always measures the most influential component of the turf system that impacts surface performance and true health. It remains accurate and precise through the ever-changing dynamics of turf systems and allows for instantaneous mobile mapping analytics.

### How does POGO save materials?

In only minutes a day, POGO provides supers with the knowledge that they are using materials efficiently and effectively. With the world increasingly putting pressure on the green industry to utilize strong fundamental practices in lieu of pesticides and other plant protective products, we must be efficient and precise in our decision-making now more than ever. This is especially true with the use of water, nutrients and cultural practices designed to improve

### How does POGO impact revenue?

It is difficult to put a price on the loss of value due to suboptimal conditions. Such a loss has terrible consequences on facilities and the quality of life of the superintendent and staff. Using the POGO system prevents the loss of revenue by informing superintendents of turf stress long before symptoms appear. Making the best decisions for advancing turf performance requires knowing what the turf conditions are and where they are going with every influential variable that impacts it. The POGO system is the essential monitoring and analysis system that the industry depends on to know what the actual conditions of the turf system are.



Superior insight | Better decisions | Healthier turf

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215-908-0044



PogoTurfPro.com



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**GCSAA Conference & Show Booth 2150**



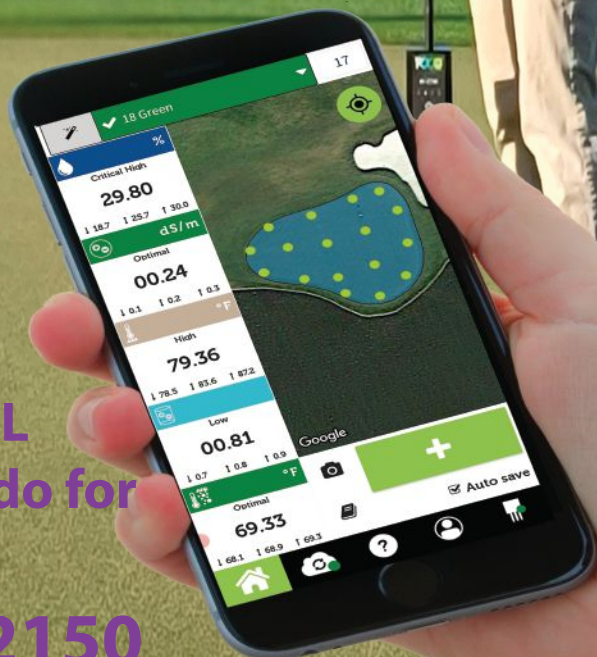


You get paid to make the  
**BEST** decisions...

**So make them, with POGO!**

THE industry standard precision monitoring,  
mapping and analysis platform.

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# PRODUCT SHOWCASE



## POROUS PAVE

**Q+A** with **A. John Harvey, ASGCA, ASLA**  
Parks, landscape and  
golf industry specialist

### What are the benefits of the Porous Pave Paths and Sand Guard Bunker Lining system?

- The Porous Pave Paths and Sand Guard Bunker Lining System are incredibly permeable and help drain thousands of gallons per hour, about 9,300 inches.
- It is made from recycled tires and is great for the environment. The rubber eliminates damage if a golfer grounds a club.
- It is flexible and expands and contracts with freeze/thaw cycles and expansive soils and high heat to resist cracking.
- It is durable, with a 15-to-20-year life expectancy.
- There are minimal site impacts on turfgrass. It is mixed right at the bunker, with no heat process or cement trucks required, minimizing course damage
- No sub-base is needed.
- It reduces bunker sand maintenance and keeps sand in place after storms with great ROI.
- We can train maintenance staff and contractors to install paths or bunker liners.
- Many states offer grants for funding



the reuse of scrap tires in golf and landscape applications.

- Only simple landscape and concrete tools are needed for mixing and installation. Vegetable oil is used as the release agent from the mixer, while water misting helps cure the binder.

### What separates your product from others on the market?

Porous Pave and Sand Guard is a poured-in-place material that is mixed on site. There are fewer steps and vendors involved with procuring materials and the installation process.

We have solutions that come in different colors and reduce ball bounce by 73 percent, when compared to traditional concrete or asphalt paths.

Use Porous Pave as a pour over an existing path (depending upon its condition) or as a new 2-inch thickness path with a specified aggregate base material.

In bunker liner applications, Sand Guard's strength, permeability and flexibility of the 1-inch thickness is cost-effective and resilient to accidental strikes by maintenance equipment, bunker rake attachments and golf clubs.

Recycling materials is fast becoming an important part of environmental stewardship in the construction and golf industry.

Part of our mission at Porous Pave is educating our customers on the benefits of using our path-paving materials and bunker liners — sustainable and functional resources that are cost-effective.



4385 East 110th St., Grant, MI 49327 888-448-3873 PorousPaveInc.com

@PorousPave LinkedIn.com/company/porous-pave-inc-/

**GCSAA Conference & Show Booth 4428**





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“ Porous Pave is a great product for cart paths and parking areas due to the permeability, flexibility and durability of the product. Porous Pave rounded out our renovated driving range and practice green with an aesthetically pleasing pavement our members will enjoy for years to come. ”

*Craig Henderson  
Spring Meadows Country Club Superintendent*



“ At Bull’s Bridge Golf Club in South Kent, Connecticut, we selected to use Sand Guard liners for our Fazio designed bunker renovation project. We recently experienced an extreme 6.4 inches of rain overnight, and Sand Guard performed as advertised.

Little to no maintenance was required after the storm, night and day compared to our existing bunkers.

We considered several liner options during the project planning process, and after this rain event, I’m sure glad that we selected Sand Guard to help protect the Club’s new investment from the challenges of severe weather. ”

*Stephen Hicks  
Golf Course Superintendent*



**Without Sand Guard**



**With Sand Guard**



**Sand Guard  
Bunker Liner**  
*Your Long Term Bunker Solution*

# PRODUCT SHOWCASE



## QUALI-PRO

**Q+A** *with* **Allan Fulcher**  
Vice President

### How do your products or services save golf course superintendents time?

With the broadest portfolio in the industry, Quali-Pro serves as a one-stop shop for your turf pesticide needs. The Quali-Pro portfolio makes it simple for golf course superintendents to save time and money. Our platform for innovation, Combination Chemistry™, is intended to save superintendents time by taking the guesswork out of mixing multiple products and loading sprayers.

### How do your products or services save golf course superintendents' labor?

Quali-Pro products save labor by reducing the chance of errors. Our labels are simple and easy to follow. In a lot of cases, our products contain multiple active ingredients allowing golf course superintendents to control a broad spectrum of weeds, diseases, or insects with just one product.



### How do your products or services save golf courses materials?

Superior Efficacy! Quali-Pro products are tested and proven to perform every time. Quali-Pro prides itself on offering the most cost-effective solutions in the industry. Check us out, you will notice a difference in cost, without sacrificing results!

### How do your products or services help generate additional revenue for golf courses?

When you are using products that work, your golf course will look well-maintained and pest-free. Golfers and other customers who enjoy your course will be your biggest advocates. Referrals and retention drive revenue and profitability, and we aim to help you grow both.

### In what other ways do your products or services make golf courses profitable?

Quali-Pro offers excellent products to control pests (insects, weeds and diseases) along with offering a competitive price. Quali-Pro products will lower your overhead by offering a more competitive price for your pesticide needs. Quali-Pro is continuously working to develop new solutions that save you time and money and increase your bottom line. Check out our portfolio today!

5903 Genoa Red Bluff Rd., Pasadena, TX 77507



800-242-5562



Quali-Pro.com



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**GCSAA Conference & Show Booth 5128**



# NIMITZ® PRO G



## THE POWER OF SIMPLICITY

Nimitz Pro G is a highly effective, non-fumigant nematicide that simplifies every aspect of nematode control. Easy to apply with less stringent regulatory restrictions and no specialized equipment needed. No Fumigant Management Plans or complicated PPE. No disruption of the delicate soil balance.



For more information, visit  
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# PRODUCT SHOWCASE



## STEEL GREEN MANUFACTURING Q+A

with **Matt Smith**

Co-founder and sales manager

### What brings Steel Green to this year's GCSAA Conference and Trade Show?

We're pleased to return for our second year to share the updated SGXL and the SGXL hopper attachment kit with attendees. We spent time with superintendents over the past year and applied their feedback to the design of the machine. It's going to be a game changer for the industry — come check it out at Booth #1142!

### How does the SGXL save time and labor?

With a 120-gallon capacity and 14-foot spray boom, the SGXL allows golf course crews to cover more ground in less time. Its 12-mph transport speed and 27-GPM centrifugal pump make the SGXL a highly efficient machine.

### How does the SGXL save golf courses materials or fuel?

The SGXL is ideal for high-volume applications. Its large capacity makes tank-mixing more precise and chemicals more efficient. The SGXL comes standard with a 2.5-gallon



foam marker, which helps prevent overlapping or missing applications.

### In what other ways does the SGXL make golf courses profitable?

The SGXL eliminates the need for multiple sprayers on a golf course. It is light enough for putting greens but powerful enough for fairways. And with an optional 350-pound granular kit, the SGXL can become a high-capacity spreader as well.

### Other than the SGXL, what does Steel Green offer the golf industry?

We pride ourselves on providing excellent service to all our customers, whether superintendents, distributors or other turf professionals. We partner with more than 30 repair facilities around the country to offer authorized machine service. Plus, our service team is available to answer maintenance questions and send replacement parts when needed. We understand how busy a superintendent's life is, and it's our goal to make them as efficient as possible.



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**GCSAA Conference & Show Booth 1142**





# **SGXL**

***LIGHT ENOUGH FOR GREENS,  
POWERFUL ENOUGH FOR FAIRWAYS***

The SGXL is a versatile machine that eliminates the need for multiple sprayers on a golf course. Add an optional 350-pound granular kit, and the SGXL becomes a high-capacity spreader.

***See it in action here:***



# PRODUCT SHOWCASE



## TARGET SPECIALTY PRODUCTS

# Q+A

with **Steve Loveday**

Turf Fuel Product Development Manager

### How do your products save time?

Since its inception, Turf Fuel has made it easier to maintain high-quality turf. Our products produce an unparalleled plant fitness level, conditioning plants to overcome stress and adversity through increased photosynthetic activity and plant defense system activation. That means when you use Turf Fuel your plants will look great and be ready for whatever you have to throw at them.



### How do your products save labor?

One of the most significant examples of our products saving labor costs is our portfolio of wetting agents and soil remediation products. Anyone who has stood over localized dry spots (LDS) for hours with a hose can appreciate the amount of time it takes to hydrate these areas adequately. We have technologies that effectively rewet dry areas

with little effort and even solutions that eliminate LDS. Our specialty line also has product solutions to make pesticide sprays more effective. Whether you're dealing with drift, high pH, active ingredient mobility in the plant, on-target deposition or even rain fastness, we have a solution for your need.

### How do your products save materials and fuel?

Our specialty products improve a plant's drought stress resistance by creating a unique balance between water and air in the root zone while conditioning plants for better water use efficiency. This combination improves irrigation cycle effectivity and reduces the need for hand watering. Our soil and nutritional products create a synergy between plant and soil, resulting in extremely healthy plants that are highly resistant to stress.

We also have nitrogen control technologies to improve growth rates in areas like fairways. More growth control allows golf courses to save fuel with decreased mowing needs and significantly fewer clippings.



### How do your products help generate additional revenue?

Our products help turf managers achieve optimal playing conditions while maintaining peak aesthetics by optimizing photosynthetic abilities and overall turf quality. We've blended high-quality raw materials with cutting-edge stress-fighting technology. The result is turf that can withstand the traffic of outings and tournaments, allowing extra revenue opportunities without jeopardizing daily play.

### In what other ways do your products make golf courses profitable?

Our product solutions help turf managers build strong turf capable of standing up to the cultural practices needed for exceptional putting surfaces. Higher-quality playing surfaces bring in more rounds while increasing the overall stress and disease resistance of the turf to help save budget dollars.



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TargetSpecialtyProducts

**GCSAA Conference & Show Booth 5551**



# CONNECT WITH OUR EXPERTS AND LEARN HOW TO WIN EXCITING PRIZES!

## VISIT BOOTH #5551 AT GCSAA!

### THREE INNOVATIVE TECHNOLOGIES REVOLUTIONIZING THE INDUSTRY



**NUTRIFENSE**

- Activates plant defense systems
- Increases plant fitness level
- Gives plants chemistry for better recovery
- Increases amino acid and protein production in plants

**FOUND IN:**

Vertical | Element 6  
Photo Fuel | Respo Fuel

**REACTION**  
PLANT • ROOTS • SOIL

- Provides carbon-rich food source for beneficial root zone bacteria
- Triggers root production
- Improves physical properties of soil
- Facilitates nutrient uptake and mobility within the plan

**FOUND IN:**

Vertical | Mic Drop



- Makes turf more water efficient
- Improves stomatal function
- Increases plant energy production
- Speeds up drought stress recovery process

**FOUND IN:**

Infinite

**Contact your target Specialty Products Sales Representative for More Details**



# PRODUCT SHOWCASE



## TURFCO

## Q+A

with **Scott Kinhead**  
Executive Vice President

### How do Turfco's products save golf course superintendents time?

Our slogan is "the beauty of productivity," to us, that means superintendents get to create the beauty they want at their course by being more productive. The Turfco Edge started with listening to what frustrates superintendents with topdressing. They're tired of doing wheel-to-wheel, overlapping spreads, dealing with complicated mechanical adjustments and wasting time checking in with their crews to verify settings. The 1550 solves that problem by reducing the number of passes and decreasing traffic on your greens with WideSpin edge-to-edge applications and nine different settings for areas like greens, tee boxes, approaches and heavier applications.



### How do your products save golf course superintendents labor?

Our Torrent 2 Debris Blower we have our MagnaPoint technology which makes operations more effective when you're sending out lesser-skilled staff to run the blower.

Where previously, you had someone out there turning the nozzle 50 to 100 times a day and they're just guessing. With the MagnaPoint, you can set the correct angle and know the person using it will be set up for success.

With the magnetic stops, we've now added operator-friendly icons that allow the superintendent to just slide the stop to the correct angle easily for things like grass clippings, leaves and aerification cores. Our research shows that if you don't have the correct angle, you could lose close to two hours a day.



and how much they're putting down.

We also have the patented idle resume button and remote start-stop on our Torrent 2. Traditionally, when you see someone driving around with a blower, they don't idle down when they're traveling from one spot to the next. On our machines, it's one button. I hit the button once and it drops to idle. I hit it again, it goes back up to full speed. So now I'm not burning gas when I don't need to.

### How do your products save materials or fuel?

On the 1550, we offer a rate calculator that allows superintendents to know their spinner speed, belt speed, gate opening and how much material they're putting out. The rate calculator allows superintendents to dial in on their application rate, how much material they need to buy

1655 101st Ave. NE, Blaine, MN 55449 763-785-1000 [Turfco.com](http://Turfco.com)

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**GCSAA Conference & Show Booth 5150**



# Time. Our greatest invention.

Creating a perfectly breathtaking course requires your passion and knowledge. It also takes something you don't always have: Time. At Turfco, we're always looking for ways to free-up your time. Ways like saving up to two hours per day with the Torrent 2 Debris Blower. Reducing up to 720 passes on your greens per year with the WideSpin Topdresser. And seeding more quickly to achieve better results with the TriWave Overseeder. We bring innovative technologies that improve performance, while giving you back what matters most. Your day.

It's worth your time to see the difference. Schedule your demo today at [www.turfco.com](http://www.turfco.com) or call 800.679.8201

**Torrent<sup>2</sup>**  
DEBRIS BLOWER



**WideSpin<sup>™</sup> 1550**  
BROADCAST TOPDRESSER



**TriWave<sup>™</sup> 45**  
45-INCH OVERSEEDER



Schedule your demo today at [www.turfco.com](http://www.turfco.com) or call 800.679.8201



# PRODUCT SHOWCASE



## FROST

**Q+A** *with*  
**Ken Rost**  
President

### What is special about the way Frost serves Superintendents?

Being a 'spray technology' company, Frost has found it most beneficial to work directly with superintendents to help improve their experience. Whether it is mixing equipment with GPS technologies, or just the best set of nozzles to use; having direct conversations with

superintendents helps match the right tools with expected results.

Working directly has also proven to be more **efficient** for supplying parts and services. We also have a centralized parts inventory that can be sent overnight when needed.

Instead of dealers and distributors, Frost utilizes **strategic partners** to help strengthen its service and support to Superintendents. Partners like Novatel

ensure that GPS signals are accurate using the latest technologies in satellites. Universities we partner with perform third-party validation of the overall performance of our technologies.

A new partnership with GreenKeeper has proven to be a great resource for superintendents to manage data and create maps.

### What does Frost offer that is different from other companies?

We've listened to superintendents for many years and have applied a full toolbox of solutions to solve problems that you might experience. Frost is **focused** on the equipment used to perform successful spray applications. We don't work with mowers, blowers or rollers, just spray equipment! Frost is committed to **customer success** and is a great resource to improve your spray day.

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# Super Science

## // NEW KIDS ON THE GREEN

### THE NEWEST COLD-TOLERANT BERMUDAGRASS PUTTING GREENS

By Mike Kenna, Ph.D.


**A**t Oklahoma State University, researchers are developing hybrid bermudagrasses for putting greens that have improved cold temperature tolerance. The susceptibility of bermudagrass hybrids (*Cynodon spp.*) to winter injury in the transition zone is a significant concern.

Hybrid bermudagrass putting greens may help superintendents in the transition zone focus on peak season, putting green playability in the summer rather than on its survival during the summer months. Current ultradwarf cultivars are susceptible to winter injury. Protective covers reduce winter injury, but significant labor costs are associated with covering and uncovering greens.

The objectives of their recent studies were to evaluate five golf course putting green-type experimental genotypes (OKC6318, OKC0805, OKC1609, OKC0920 and OKC3920) and three commercially available bermudagrasses (Champion Dwarf, Tifeagle and Tahoma 31) for freeze tolerance by subjecting them to 11 freezing temperatures (25 to 7 degrees F) under controlled growth chamber conditions.

We conducted experiments in batches, with four genotypes per batch, and each batch replicated in time. The mean lethal temperature to kill 50 percent of the population ( $LT_{50}$ ) for each genotype was determined. There were significant differences in  $LT_{50}$  values among the bermudagrass genotypes. 'Champion Dwarf' had an  $LT_{50}$  value ranging from 23 to 22 degrees F across all three batches.

The experimental genotypes tested in this study had  $LT_{50}$  values ranging from 19 to 17 degrees F and were each lower than that of Champion Dwarf. Tahoma 31, the top performing genotype, had an  $LT_{50}$  value ranging from 18 to 16 degrees F across all three batches.

OKC 3920 was the only experimental genotype with an  $LT_{50}$  value in the same statistical group as Tahoma 31. OKC3920, targeted for use on putting greens, shows improved freeze tolerance that is significantly better than the current ultradwarf cultivars. 

#### Reference

Gopinath, Lashmy, Justin Quetone Moss, Yanqi Wu. 2021. Quantifying Freeze Tolerance of Hybrid Bermudagrasses Adapted for Golf Course Putting Greens. *Hort Science*, 56(4):478-480.



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

## NEWS UPDATES

### SYNGENTA PARTNERS WITH SPIIO

Syngenta recently announced a collaboration agreement with Spiio, uniting Syngenta's portfolio of turf solutions with Spiio's wireless soil sensor technology.

According to the companies, the goal of the collaboration is to help golf courses evolve toward a future of precision agronomy and data-driven decision-making that complements the existing range of tools and services from Syngenta.

"Our combined strengths in technology and agronomy will enable turf managers to make smart agronomic decisions for a better golfing experience for their players while providing hyperlocal soil data to complement existing weather and modeling services provided by Syngenta," Mike Parkin, global head of Syngenta Professional Solutions, said.

Spiio adds that their technology complements existing Syngenta tools including precision weather forecasts, disease and insect models, as well as turf growth models.

**“WE DO NOT HAVE A GOOD UNDERSTANDING OF WHETHER EXPOSURE TO FREEZING TEMPS AT THE SEEDING STAGE IMPACTS PLANT VIGOR AND ESTABLISHMENT RATE FOR CREEPING BENTGRASS.”**

**Michelle DaCosta, Ph.D., and Eric Watkins, Ph.D.**

(see story on page 46)

// **DON'T CALL IT A COMEBACK**

## Factors affecting the reestablishment of putting greens following winterkill

By Michelle DaCosta, Ph.D., and Eric Watkins, Ph.D.

**W**inter damage of golf turf is a persistent challenge in the northern U.S., particularly on courses that have higher populations of annual bluegrass (*Poa annua*). In the last decade, widespread winter damage caused significant turf loss on putting green surfaces across the northern U.S., resulting in costly re-establishment, delays in course openings, and lost revenue.

Reseeding is often a necessary and costly investment to promote recovery and to maintain adequate density and uniformity for play. However, adverse conditions such as cold soil and air temperatures, poor seedbed quality, sub-optimal light intensity and spectral composition typical of early spring plantings can often delay seed

germination, diminish establishment vigor and increase competition to weeds and summer stress.

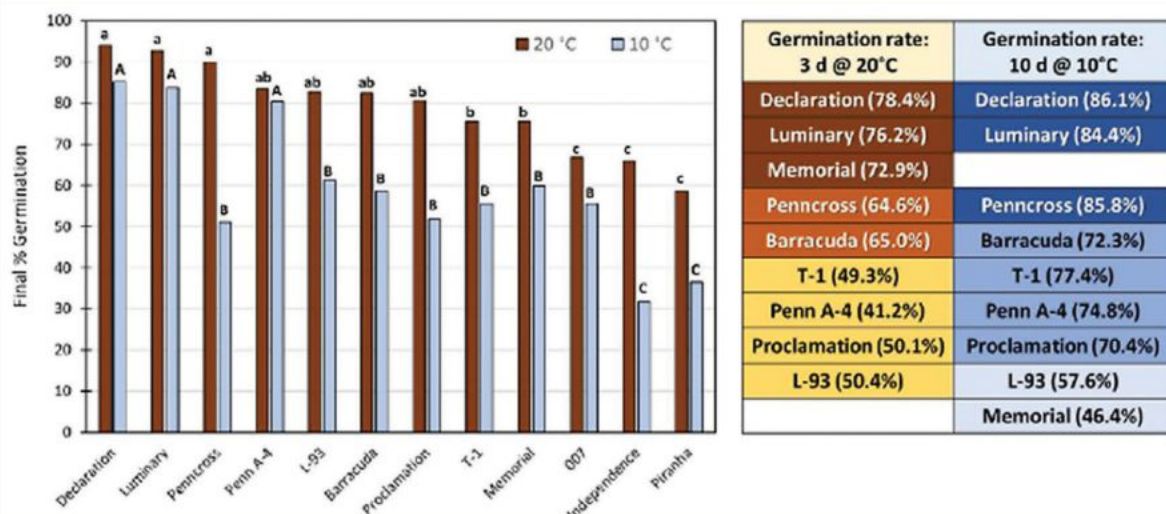
Our research aimed to evaluate factors affecting spring re-establishment of creeping bentgrass, the most widely used turfgrass on golf course greens and fairways in the northern U.S. The objectives were to assess the genetic variability among creeping bentgrass cultivars for post-germination seedling vigor, particularly interactions with low temperatures and variable light intensities typical of spring plantings at northern latitudes. In addition, we examined the effectiveness of chemical priming agents and biostimulants to enhance seedling vigor at low temperatures.

This research will help adjust plant selection and management practices for golf course superintendents to utilize

more effective strategies to enhance re-establishment success in the spring months. A unique aspect of our research is establishing an international collaboration with the Norwegian Institute of Bioeconomy Research (NIBIO) and the Scandinavian Turfgrass and Environment Research Foundation (STERF). We have collaboratively defined our research objectives to explore potential barriers more broadly and identify solutions for successful spring re-establishment in northern climates.

We selected 12 creeping bentgrass cultivars representing a range of cold germination or spring green-up traits as identified in our previous research at the University of Massachusetts (UMass) and the University of Minnesota (UMN). Both locations used seed from

**FIGURE 1**



Response of creeping bentgrass seedlings grown at 15 degrees C (59 degrees F) for three weeks and then exposed to -5 degrees C (23 degrees F) for eight hours during the dark period. Plants were recovered at 15 degrees C under low or high light intensity for three days and visual quality was used for injury symptoms such as leaf discoloration and wilting.



the same lots shipped by the breeders. We used two general approaches to address our main questions, including testing in climate-controlled growth chambers to simulate early spring stresses as well as field locations at UMass, UMN and Norway to achieve natural stress conditions.

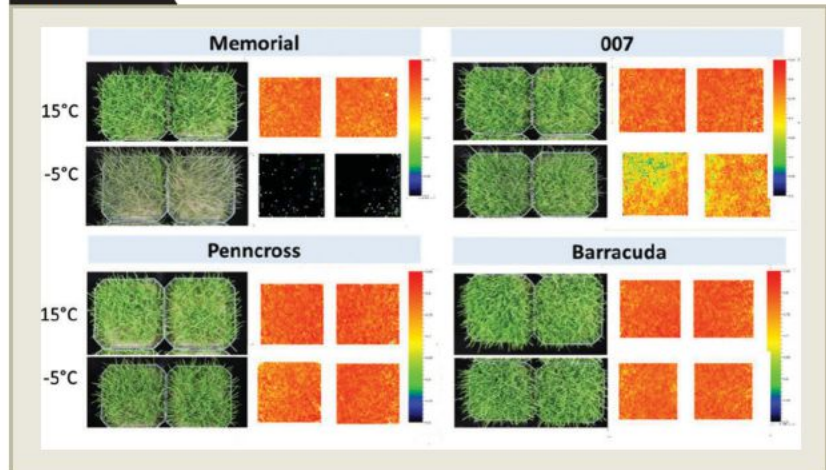
### CONTROLLED ENVIRONMENT EXPERIMENTS

Although creeping bentgrass is known to have excellent freezing tolerance at the mature plant stage, we do not have a good understanding of whether exposure to freezing temperatures at the early seedling stage impacts overall plant vigor and establishment rate for this species. Therefore, our first sets of climate-controlled experiments were designed to test the post-germination seedling cold tolerance of the 12 bentgrass cultivars exposed to simulated overnight freezing temperatures. Creeping bentgrass seedlings were germinated and grown in pots filled with USGA soil at 15 degrees C (59 degrees F) for three weeks and then exposed to -5 degrees C (23 degrees F) for eight hours during the dark period. Plants were then recovered at 15 degrees C for three days, and visual quality was used to assess the presence of injury symptoms such as leaf discoloration and wilting. Photosynthetic efficiency based on chlorophyll fluorescence imaging was used as an additional screening tool to detect potential damage to photosynthetic machinery in response to freezing events.

Following freezing at -5 degrees C, the cultivars with the highest visual quality and photosynthetic efficiency included Piranha, Declaration, T1 and Penn A4, while some visual injury was observed for cultivars Barracuda, Memorial, Independence and Luminary (Figure 1). We found that the level of post-freezing injury was worse when seedlings were returned to conditions

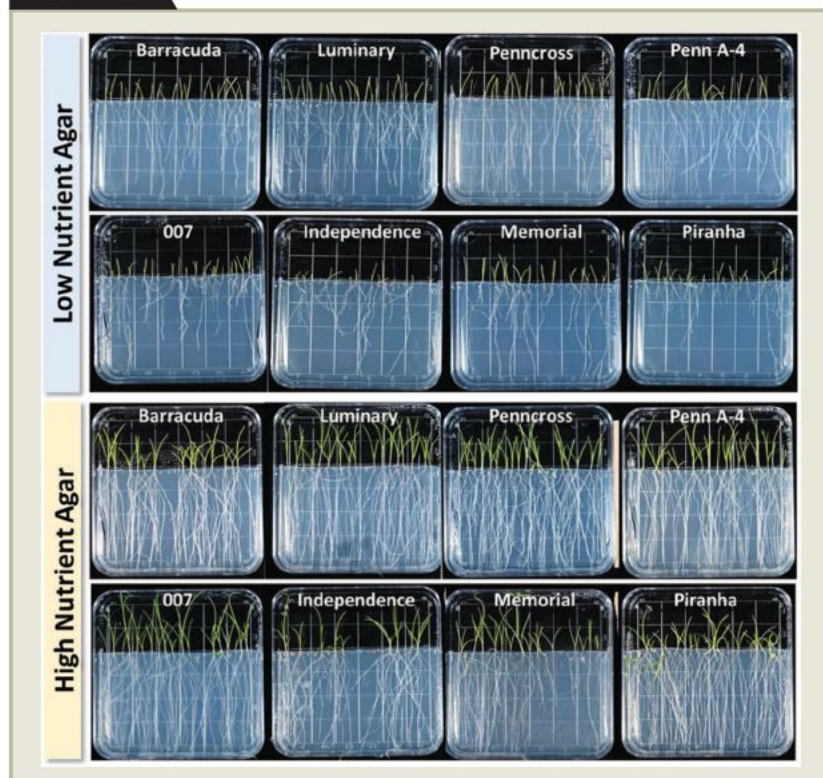
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FIGURE 2



Chlorophyll fluorescence imaging of creeping bentgrass seedlings in response to a simulated overnight freezing event at -5 degrees C (23 degrees F). Images represent the measurement of the percentage of photochemical efficiency pre-freezing, and then post-freezing under low or high light conditions. A higher photosynthetic efficiency is indicated by a higher amount of red and orange pixel colors. In contrast, lower photochemical efficiency is indicated by colors of green to dark blue, indicating post-freezing damage to photosynthetic machinery.

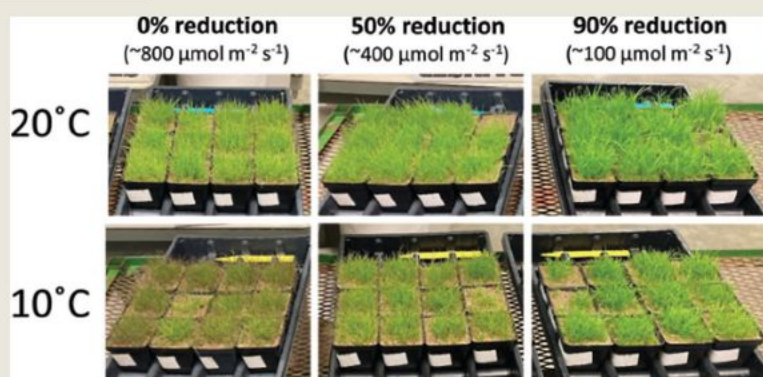
FIGURE 3



Creeping bentgrass seedlings exposed to combination treatments consisting of high or low temperatures (20 or 10 degrees C) and three light intensity levels (800, 400 and 100  $\mu\text{mol m}^{-2} \text{s}^{-1}$  PPFD). We used light-intensity treatments with shade cloths to reduce 0 to 90 percent light. The top panel photos show plants at seven days of treatment. The bottom panel highlights the growth changes for one cultivar, Memorial creeping bentgrass.

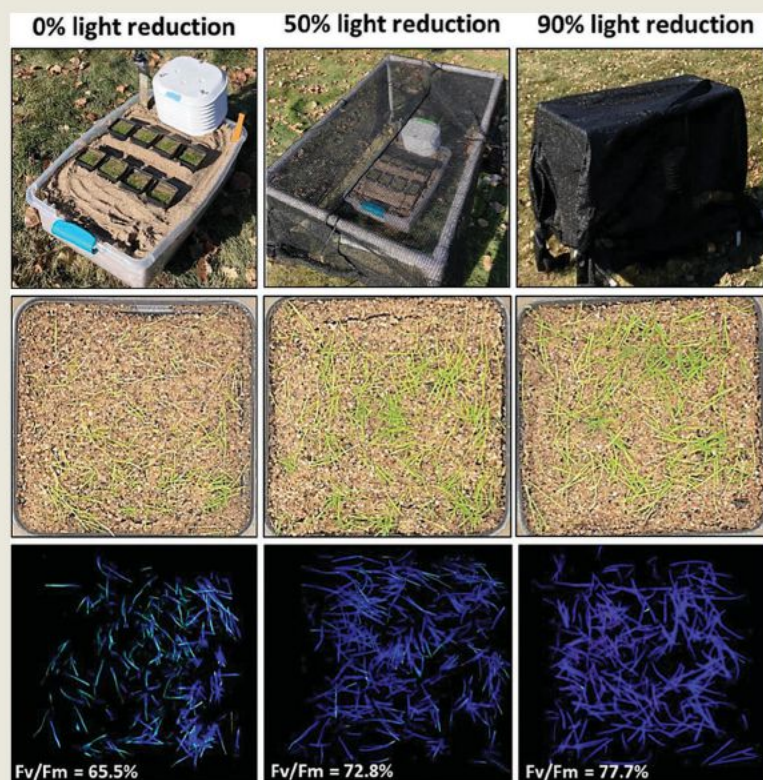


**FIGURE 4**



Controlled environment experiments using petri dish assays to assess the seedling vigor of different creeping bentgrass cultivars when grown at 15 degrees C (59 degrees F). Seed were sown into agar media amended with either low nutrient (top two rows) or high nutrient solution (bottom two rows).

**FIGURE 5**



Field trials at UMass (South Deerfield, Mass.) and UMN (St. Paul, Minn.) testing the effects of creeping bentgrass genetics and the use of a permeable cover on spring establishment. The top panel shows the effects of cover treatments on increasing time to 50 percent green cover, and the bottom panel includes overhead plot images during the trial period at UMN.

Continued from page 47

simulating a higher daytime light intensity, which negatively impacted the photosynthetic efficiency (Figure 2). Although it is important to note that the seedlings recovered following freezing, the data suggest that exposure to freezing temperatures at the seedling stage may temporarily inhibit photosynthesis and growth of some cultivars to a greater extent than others, especially in combination with higher light intensities.

To gain a better understanding of the interactions of low temperatures and light intensity on seedling establishment, optimization of growth chamber conditions was first required to allow for different light treatments within a single growth chamber. With a maximum chamber light intensity of  $800 \mu\text{mol m}^{-2} \text{s}^{-1}$  photosynthetic photon flux density (PPFD), we utilized different shade cloth combinations to achieve variable levels of light intensity reduction while minimizing any effects on canopy temperature underneath the shade cloths.

In early spring, light intensity in the field generally peaks around  $1,500 \mu\text{mol m}^{-2} \text{s}^{-1}$ , and while our unshaded treatments were about half of this,  $800 \mu\text{mol m}^{-2} \text{s}^{-1}$  is well above the amount of light intensity needed to promote efficient photosynthesis in creeping bentgrass. The same 12 creeping bentgrass cultivars were grown for three weeks at  $15^\circ\text{C}$  under a light intensity of approximately  $800 \mu\text{mol m}^{-2} \text{s}^{-1}$  PPFD. Using shade cloth, we then exposed plants to combination treatments of low or high temperatures (10 or 20 degrees C) and three light intensity levels (0, 50 and 90 percent reduction of full light intensity in the chamber,  $800 \mu\text{mol m}^{-2} \text{s}^{-1}$  PPFD).

The different temperature and light treatment combinations resulted in visible changes in creeping bentgrass seedling growth and development (Figure 3). Under the highest light intensity (0 percent light reduction,  $800 \mu\text{mol m}^{-2} \text{s}^{-1}$  PPFD), the leaves of most creeping bentgrass cultivars exposed

PHOTOS BY: MICHELL DIACOSTA



to the low temperature of 10 degrees C exhibited a purple coloration. This response is generally associated with anthocyanin pigment accumulation and is considered a photoprotective mechanism at low temperatures.

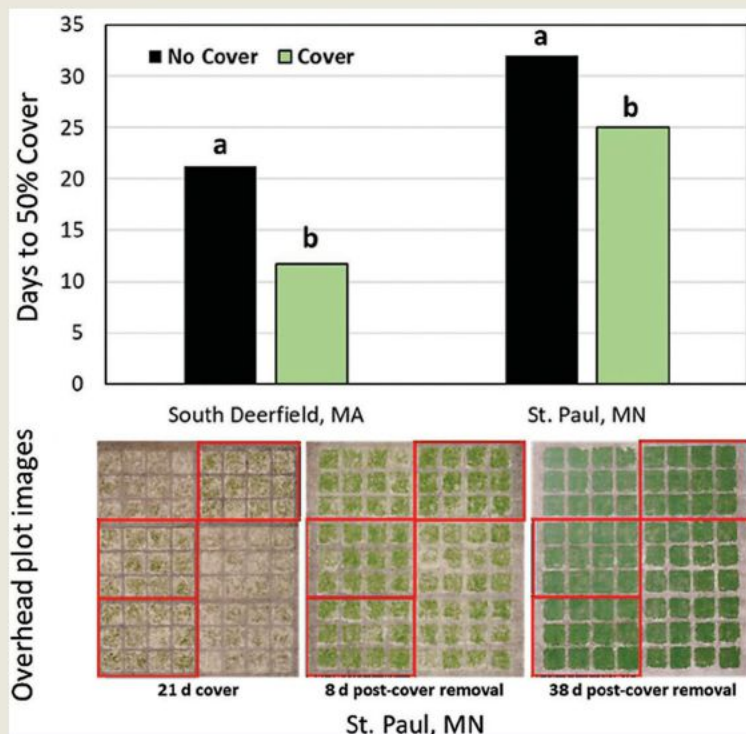
Cultivars such as Memorial, Piranha, and 007 produced the most anthocyanin pigment at 10 degrees C under  $800 \mu\text{mol m}^{-2} \text{s}^{-1}$ , while Penncross and Penn-A4 accumulated the lowest amounts. At this same low temperature of 10°C, creeping bentgrass seedlings exposed to a 90 percent reduced light intensity (approximately  $100 \mu\text{mol m}^{-2} \text{s}^{-1}$  PPFD) exhibited increased growth and higher photochemical efficiency. For cultivars such as Penncross and Memorial, photochemical efficiency levels were the same at 20 and 10 degrees C, regardless of light intensity. This suggested that covering creeping bentgrass seedlings with 50 to 90 percent shade cloth before a cold temperature event could decrease the potential for low-temperature photoinhibition. To confirm these findings, the effectiveness of light reduction treatments in field environments was also tested, as described below.

Next, we tested whether cultivars responded differently to nutrient availability at the early seedling stage. Seeds of each cultivar were established in petri dishes using an agar-based medium. Two nutrient treatments included a non-amended agar (low nutrient) and a nutrient-amended agar (one-quarter strength Hoagland solution). We maintained the Petri dishes with seeds vertically in racks in a growth chamber at either 15 degrees C or 25 degrees C.

Seed germination and seedling growth were monitored for approximately three weeks. As expected, nutrient availability significantly impacted seedling growth at the lower temperature of 15 degrees C, with higher nutrient availability resulting in the highest shoot and root growth across all cultivars (Figure 4).

Differences in seedling vigor were observed, particularly at low nutrient

**FIGURE 6**



We conducted shade trial field experiments at St. Paul, Minn., in March 2021. Shade cloths provided 0, 50 percent, and 90 percent light intensity reduction. The bottom panel shows the effects of shade treatment on the seedling establishment of four creeping bentgrass cultivars, with the 90 percent shade treatment resulting in the highest turfgrass percent cover.

availability, with the highest shoot and root growth observed for the cultivars Barracuda, Declaration, Luminary, Penncross, Penn A-4, Proclamation and T-1. For cultivars exhibiting lower growth rates at low nutrient availability (e.g., 007, Independence, Memorial and Piranha), the availability of nutrients was critical to achieve higher root and shoot growth rates at the lower temperature of 15 degrees C.

## FIELD EXPERIMENTS

Field experiments were designed to evaluate the effects of creeping bentgrass cultivar and covering treatments on spring establishment. Bare soil plots were seeded with the 12 bentgrass cultivars when average soil temperatures reached approximately 10 degrees C (April 8, 2021, in South Deerfield,

Mass., and April 16, 2021, in St. Paul, Minn.) Following seeding, two covering treatments were applied, which included either a no cover or Evergreen Radiant permeable cover. Covers remained on plots until a minimum of 50 percent turfgrass cover was achieved.

The use of a permeable cover decreased the time to achieve 50 percent turfgrass cover by approximately seven to 12 days, depending on location and regardless of cultivar (Figure 5). This was due to higher soil temperatures achieved under the permeable cover, which were approximately 4 to 5 degrees C higher on average compared to plots with no cover. However, following the removal of covers and by the end of the trial assessment period (early June), there were no differences in the turfgrass percent cover

Continued on page 50

Continued from page 49

based on the use of a covering treatment. Compared to a covering treatment, the effect of creeping bentgrass cultivar did not contribute to large differences in spring establishment rates.

An additional set of experiments was conducted to examine whether different chemical priming compounds and biostimulants could be used to enhance creeping bentgrass seedling vigor in early spring plantings. Field trials were conducted in 2021 and 2022 at UMass and with collaborators in Landvik, Norway. Luminary creeping bentgrass was seeded when soil temperatures reached 10 degrees C. Treatments were then applied weekly following seedling emergence and included products containing different formulations of urea, chitin, silicon, salicylic acid, glycine betaine, seaweed extracts, and growth regulators such as gibberellic acid and trinexpac-ethyl. Among the 12 treatments tested over two years

and two locations, we did not identify any specific biostimulant or chemical priming compound that consistently enhanced early spring establishment.

Lastly, one of the important findings from this research is the identification of important light-intensity interactions for early spring plantings. Based on the initial controlled environment studies, a preliminary field trial was conducted at UMN to test the effects of different shade cloth combinations to achieve 50 or 90 percent light intensity reductions. We seeded the cultivars Memorial, Penncross, Penn-A4 and Barracuda into pots and then placed them into large plastic tubs filled with USGA soil to buffer soil temperature effects in the field.

Similar to growth chamber studies, shade treatment of either 50 percent or 90 percent light reduction improved seedling growth and photochemical efficiency compared to plants exposed to full light intensity, with similar responses across the different bentgrass cultivars (Figure 6). This result suggested that reducing light intensity at low temperatures typical of spring plantings could decrease the potential for low-temperature photoinhibition in creeping bentgrass, particularly in more northern climates. Additional research is underway to better understand these light responses and to determine best practices to translate this information for golf turf management. **Ⓜ**

## Research Takeaways

- We evaluated a set of 12 creeping bentgrass cultivars for differences in seedling vigor and establishment in response to low temperatures and variable light intensities.
- Exposure of creeping bentgrass seedlings to freezing temperatures temporarily inhibited photosynthesis and growth of some cultivars to a greater extent than others, with cultivars such as Piranha, Declaration, T1 and Penn A4 showing highest tolerance to freezing events.
- Creeping bentgrass cultivars differ in their overall seedling vigor when grown under lower nutrient availability and at lower temperatures.
- Based on replicated field experiments in Minnesota and Norway, using shade cloths to achieve 50 to 90 percent reductions in light intensity increased photochemical efficiency and growth of creeping bentgrass seedlings during low temperatures typical of spring months.
- Different creeping bentgrass cultivars did not significantly vary in their overall establishment rate, but synthetic permeable cover decreased the time needed to achieve 50 percent turf coverage during spring establishment.

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**Consistent fungicide applications** are key to both the prevention and control of yellow tuft on golf courses.

# How superintendents can prevent and control yellow tuft

Above all else, focus on poorly-drained areas, while also applying fungicides

By Chris Lewis

Although yellow tuft is a relatively minor turfgrass disease, superintendents must focus on doing everything they can to control it, as a majority of turfgrasses are susceptible to the pathogen.

After all, it tends to have a wide host range, according to Jim Kerns, Ph.D., professor and extension specialist, turfgrass pathology at North Carolina State University.

Typically prevalent during the spring and autumn, as it's the most active whenever temperatures are more moderate, yellow tuft usually develops in poorly drained areas first — areas that superintendents should especially dedicate their treatment initiatives to.

“Also known as downy mildew, yellow tuft is related to the *Pythium* species, which requires water, in order to grow and infect turf,” Kerns says. “If the course has particularly wet areas, they should strive to minimize them as much as possible.”



Jim Kerns

If they're unable to diminish wet areas enough to prevent the growth of yellow tuft to begin with, Kerns says superintendents shouldn't be overly stressed about it, as infected plants rarely die. In other words, prevention isn't critical.

“Since yellow tuft is a biotroph, it can't grow and reproduce without its host,” he states. “So, while it does cause symptoms, it doesn't actively kill cells in order to feed.”

That doesn't mean superintendents shouldn't do everything they can to either treat the pathogen or prevent it outright. To do so, Kerns advises applications of a curative product like mefenoxam as soon as they notice symptoms. Generally, one or two applications are sufficient.

To achieve prevention outright — before any symptoms are noticeable — Kerns recommends superintendents to utilize a phosphite material consistently.

“They should apply phosphite materials every two to three weeks throughout the growing season,” he emphasizes. “In addition, they should address their courses' drainage issues as quickly as they can by adding drain tiles and lines, while also engaging in a drainage master plan.”

PHOTO COURTESY OF: SYNGENTA



## Albaugh Specialty Products

### BRET CORBETT

Product Development Manager,  
Specialty Products

The best management practice, regarding any turf diseases, is to maintain healthy turf and eliminate problematic areas on the course. Yellow tuft, caused by a water mold fungus, known as *Sclerophthora macrospora*, is most common on cool-season putting greens, particularly in areas with poorly draining soils. With this in mind, to reduce disease pressure, consider implementing cultural preventive methods like regular aeration, dethatching, overirrigation avoidance and proper drainage installation. If prevention of yellow tuft isn't possible, there are several active ingredients that can provide control. With regards to all turf diseases, preventative fungicide applications are often more successful than curative. For curative control, superintendents should consider applying mefenoxam, metalaxyl and fosetyl-AI on yellow tuft.



## Syngenta

### LISA BEIRN, PH.D.

Technical Manager

Although yellow tuft can be found in a majority of turfgrass species, it's most frequently found on annual bluegrass and creeping bentgrass putting greens. Symptoms begin as stunted growth and thickened leaf blades. As the disease progresses, small (less than one inch), yellow patches become evident in the turf. These patches contain groups of plants with excessive tillers, which superintendents can easily remove from their turf. In St. Augustinegrass, symptoms appear as white streaks, parallel to the leaf veins, instead.

The pathogen produces swimming spores that infect seedlings and stem buds during rainy periods in the spring and fall. Because water is necessary for spore movement, yellow tuft is commonly seen in wet, low-lying areas. To help prevent yellow tuft, air circulation must be adequate, and superintendents should drain areas if they have a history of the disease. Fungicides containing mefenoxam can be effective too — if superintendents apply them preventatively. If tufted plants interfere with ball roll, vertical cutting can physically detach them as well.



## Envu

### JESSE BENELLI, PH.D.

Green Solutions Team Specialist

Yellow tuft's symptoms include stunted growth, leaf swelling and excessive tillering from the crown, which is more yellow in color, compared to the surrounding turf. Typically, symptoms are most often observed on turf that's mowed at a low height in poorly draining sites.

The best long-term control strategy is to improve surface drainage. Another best management practice is to conduct routine irrigation audits, to ensure the uniform distribution of water onto the surface — without too much overlap from multiple sprinkler heads. Superintendents can also physically remove any 'tufted' plants with their hands or knives. However, in severe infestations, this may not be practical.

Fungicide applications can work well if superintendents use them preventively. Generally, most fungicides (which have strong activity on *Pythium*) will also provide adequate control of yellow tuft. Unfortunately, curative applications of fungicides will not provide much value if tufted plants, which have excessive tillering, are already present.



## Quali-Pro

### BOBBY KERR, PH.D.

Technical Service Manager

Yellow tuft is a disease that's most commonly found on annual bluegrass and creeping bentgrass greens. Nonetheless, it can occur on all turfgrass species, especially when weather conditions are cool and wet. Preventative control is the best management method, as yellow tuft is challenging to control curatively. Superintendents should consider both mefenoxam and fosetyl-AI for control.

Apply mefenoxam as preventative treatment at a rate of 0.49 to 0.98 fl. oz. in one to 5 gallons of water, per 1,000 ft. sq., at a 10- to 21-day interval. During periods of prolonged conditions that are favorable for disease development, they should use 0.49 to 0.98 fl. oz. at a 14-day interval instead.

For fosetyl-AI, as a preventative treatment, apply at a rate of 4 fl. oz. in one to 5 gallons of water, per 1,000 square feet, at a 14-day interval — or at a rate of 8 fl. oz. in one to 5 gallons of water, per 1,000 ft. sq., at a 21-day interval for success.





# How to keep chinch bugs at bay

Get to know the warning signs of this turf-killing pest

By Rob DiFranco, Associate Editor

**S**teve McDonald, chief plot sprayer and owner of Turfgrass Disease Solutions — a Pennsylvania-based consulting company — says identification is the most crucial thing a superintendent can do to stay on top of their chinch bug problem.

Chinch bugs — the most common being the hairy chinch bug — are turf killers that, according to McDonald, are elusive and indiscriminate feeders.

“I’ve seen it damage fescues and bentgrass. I’ve seen it on some zoysia-grass as well as ryegrass,” he says. “Once it gets into a stand, it can do a lot of damage pretty quickly.”

## WHAT TO LOOK FOR

Chinch bug damage will look similar to drought stress, according to McDonald.

“Many times, people will mistake it for drought stress and add water to it,” he says. “It won’t get better and then, around a week later, is when they’ll start to investigate more.”

Chinch bugs prefer dry and open areas, he continues, noting that you can sometimes see chinch bug damage stop at a shade line.

If superintendents suspect a chinch bug infestation, McDonald says there’s one surefire way to know.

“Pull the grass back and look at the soil surface where it meets the turf,” he says. “If you have hairy chinch bugs,



Steve McDonald



Of the several species of chinch bugs, the hairy chinch bug, identified by the white X on its back, is the most common for superintendents in North America.

you’ll see small insects with what looks like a white X on their backs, scurrying around. You won’t see one, you’ll see hundreds of them.”

He adds that there are other methods — including using soapy water on turf to float bugs to the surface — but getting hands on is your best shot.

## ALL ABOUT CONTROL

McDonald’s top recommendation for the control of chinch bugs is Syngenta’s Acelepryn Xtra.

“Acelepryn Xtra is a pretty unique solution. It contains chlorantraniliprole, which is the Acelepryn, and it contains thiamethoxam, which is the insecticide active ingredient in the Syngenta product Meridian. So it has two modes of action” he says.

McDonald adds that chinch bug control during tests of Acelepryn Xtra was a secondary effect found during cutworm trials on bentgrass in 2023.



“We had low rates of Acelepryn Xtra, but we saw phenomenal control of hairy chinch bugs for 45 to 60 days following the application in the summer, even at those low rates,” he says.

When applying Acelepryn Xtra for chinch bugs, McDonald says superintendents should aim for a mid-to-late June application. Damage will typically appear in early July, so the June application — which can coincide with white grub applications — will take hold before chinch bug populations build.

McDonald says a successful preventive program can last a few years.

“Many times, when I see superintendents intervene, they make an application and it decreases the pressure the next year substantially,” he says. “But it’s still important to remember that these insects have a pretty high population. So even if you get control of 90 or 95 percent, you could potentially have some issues the following year.”

PHOTOS BY: DAVID SHETLAR

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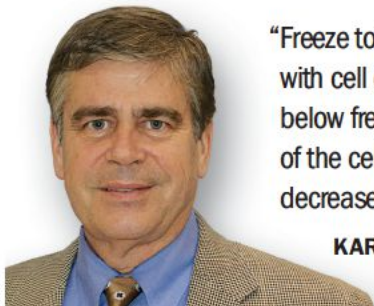
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"Freeze tolerance of a turfgrass plant is associated with cell dehydration. When temperatures fall below freezing, cellular water begins to flow out of the cell into the intercellular spaces causing a decrease in water potential outside the cell."

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

## A closer look at winter injuries

**T**hree major injuries comprise the most common winter injuries in golf course turf. In a previous column, I discussed one of those injuries, snow molds. The remaining two are freeze injury and winter desiccation.

Freeze injury includes, besides the low-temperature injury, freeze smothering (ice covers) and chilling injury. Turfgrass plants gather cold tolerance during late summer through the fall as they are exposed to low, nonfreezing temperatures, normally below 50 degrees F. This process, known as cold acclimation, is also sometimes called hardening off.

The freeze tolerance of a turfgrass plant is associated with cell dehydration. When temperatures fall below freezing, cellular water begins to flow out of the cell into the intercellular spaces causing a decrease in water potential outside the cell.

Unfrozen water moves down the gradient and out of the cell. The colder the temperatures, the more water travels down the gradient. Quite literally, cell dehydration is a function of freeze tolerance.

### WARMER TEMPS RETURN

With warmer temperatures in late winter and early spring, water flows back,

resulting in rehydration. If no damage occurred to the cell membranes — a puncture or rupture — the cell is alive and well. However, if the cell rehydrates and damage has occurred to the membranes cell death is imminent.

The most prevalent type of freeze injury on golf courses in the U.S. occurs at relatively high freezing temperatures — 25 to 28 degrees F — during late winter and early spring. This type of freeze injury is described as expansion-induced lysis because it occurs during freeze/thaw cycles.

The expansion and contraction of the cell membrane results in injury when ice rapidly forms or collapses and ruptures cell membranes. Excessive water around the crown of the plant during these freeze/thaw cycles in late winter increases the severity of the damage.

### CULTURAL PRACTICES

Freeze resistance is comprised of two components — tolerance and avoidance. Tolerance is the plant's direct

response to freezing temperatures.

Avoidance is where the plant is present, but not exposed directly to the freeze. For example, if the air temperature is below zero, but the turf is covered with snow, the crown or stems do not experience the temperatures, as under the snow is considerably warmer.

Reducing freeze and winter injury through cultural management practices focuses on promoting avoidance, for example:

**1 Promote dry surfaces.** Improved drainage will reduce potential damage caused by ice covers by helping reduce the severity of ice encasement. Current research has found that the use of winter covers is enhanced when combined with proper drainage, specifically concerning ice covers.

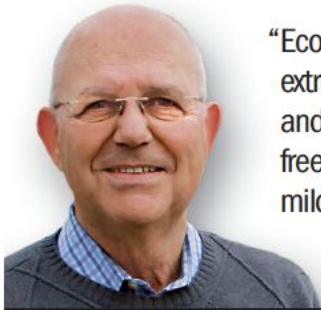
**2 Raise mowing heights.** On warm season turfgrasses, specifically beginning in late summer through the fall, raising the mowing height will provide increased protection to the growing point during freezing temperatures.

**3 Manage thatch accumulation.** A significant thatch layer results in the plant's crown losing contact with the soil. As the crown elevates into the thatch layer, exposure to freezing conditions increases. Reduce the likelihood of excessive growth going into the winter. Overstimulation of growth promotes succulent high water content cells that are more likely to encounter freeze injury.

**4 Minimize shade.** Although not fully researched, a degree of correlation has occurred between freeze injury and shade. Shade may contribute to increased freeze injury due to more succulent turfgrass growth and lower carbohydrate levels. Physically shaded areas tend to be wetter than full sun areas contributing to freeze/thaw cycles. ©

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





"Ecotypes from Québec, better insulated from extreme subfreezing temperatures by reliable and abundant snow cover, developed less freezing tolerance than those evolving under milder winter climates in the U.S."

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

## Evaluating winter injury on annual bluegrass greens

**E**xtensive winterkill of annual bluegrass (*Poa annua*) golf greens is a major problem in northern climates. In a three-year (1993 to 1996) field study at Laval University and Montreal Country Club, Canada, researchers conducted research on covers to protect annual bluegrass greens from winter damage.

Julie Dionne, a graduate student under Yves Desjardins, Ph.D., documented the environmental conditions under protective covers at the turf crown level and 4- and 8-inch depths.

Treatments included permeable and impermeable covers, curled wood shavings mat, straw mulch protected by an impermeable cover, geotextile material with an impermeable cover and 4-inch air space under an impermeable cover compared to a control treatment. Results showed the influence on the temperature profile of winter protection covers and snow depth. Temperatures at crown level were stable and just below 0 degrees C under plots with significant snow. However, temperatures varied considerably when snow cover was less than 6 inches.

The insulating material covers (curled wood mat, air space and straw) reduced soil temperature variation ranges, minimized the impact of freezing air temperature and thin snow cover, and consequently enhanced the winter survival of golf greens under thin snow cover.

Temperature profiles were comparable for 4-inch air space treatments and were not significantly different from impermeable covers spread directly on the turf. Straw with an impermeable cover and wood shaving mats maintained crown temperatures at more than 0 degrees C and disease incidence was higher under these materials.

Thus, depending on local conditions, and particularly on snow cover, the characteristics of specific protective covers can influence golf green soil temperatures and turfgrass survival during the overwintering period.

In 1994, David Huff, Ph.D., joined the Department of Crop and Soil Sciences at Penn State. In 1998, he received a grant from the USGA Davis Research Program to develop annual bluegrass cultivars for greens.

Huff, with the help of USGA Green Section agronomists, collected more than 2,500 samples of greens-type *Poa annua* from regions including the northeast U.S. (Pennsylvania, New Jersey, New York), the mid-Atlantic (Delaware, Maryland, Virginia) and

the Pacific Northwest (Oregon and Washington). The performance and variation were tremendous.

In a 2010 peer-reviewed article, Dionne, Huff and their collaborators evaluated 42 *Poa* ecotypes from Canada and the U.S. They analyzed cold-induced biochemical changes in a subset of ecotypes with varied tolerance to winter injury. There was an extensive range of variability among the ecotypes for freezing tolerance expressed as the lethal temperature for 50 percent of the plants (LT50) with values ranging from < -27 to -17 degrees C (-16 to 2 degrees F).

Ecotypes from Québec, better insulated from extreme subfreezing temperatures by reliable and abundant snow cover, developed less freezing tolerance than those evolving under milder winter climates in the U.S. They observed differences in concentrations of specific amino acids and carbohydrates among ecotypes.

However, only fructans of high molecular weight were significantly correlated with freezing tolerance and accounted for as much as 50 percent of the LT50 variance. A protein that markedly accumulated in cold-acclimated crowns was more abundant in plants from Québec.

The researchers suggested natural selection pressure of the different environmental conditions at the site of origin and freezing tolerance suggest that adaptive genes were present. It was thought at the time the extensive genetic variability for freezing tolerance among perennial biotypes of annual bluegrass would allow breeders to mitigate winter damage to golf greens.

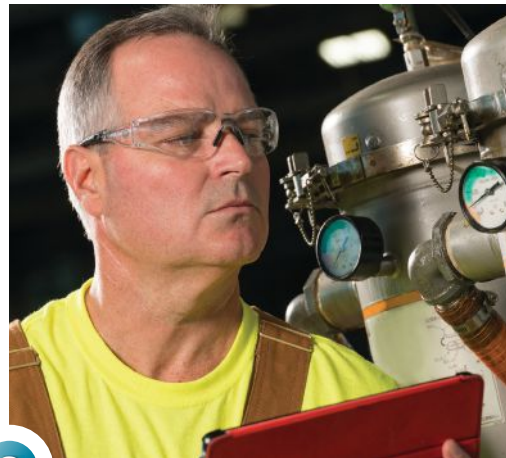
Unfortunately, nearly 20 years later from some of the early research on *Poa*, there has not been a breakthrough cultivar for golf course putting greens — more on that story in a later column. **G**

Mike Kenna, Ph.D., retired director of research, USGA Green Section. Contact him at [mpkenna@gmail.com](mailto:mpkenna@gmail.com).



# The Shop

// MUST-HAVE NEW PRODUCTS



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### 1 Trim Ex

Long-reach trimmers from **FECON** a manufacturer of heavy-duty site preparation attachments, allow superintendents to perform tree maintenance with machines they already own. Designed to fit small to midsize carriers. Previously manufactured by TreeFrogg, the new line includes the Trim Ex 26S and Trim Ex 18C for skid steers.

[Fecon.com](https://fecon.com)

### 2 920LS and 922LS log splitters

The 920LS and 922LS log splitters from **BARRETO MANUFACTURING** feature torsion axle suspension, cushioned contact points, vertical or horizontal splitting positions and a standard two-handed operation control system for safety. Previously discontinued in 2022, the 920LS and 922LS are now available for purchase.

[BarretoMfg.com](https://BarretoMfg.com)

### 3 BK Read-6010

The BK Read-6010 safety glasses from **BRASS KNUCKLE** provide proper eye protection essential for workers who wear corrective lenses. The BK Read is available in five diopter strengths: 1.0, 1.5, 2.0, 2.5 and 3.0, with ANSI-rated center and BK-Anti-FOG coating.

[BrassKnuckleProtection.com](https://BrassKnuckleProtection.com)





#### 4 | SG Pro Hole Cutter

The SG Pro Hole Cutter from **STANDARD GOLF** machine-grade tool promises precision that achieves the perfect hole. The SG Pro features a user-friendly hammer mechanism and a ratchet ejection handle to help save time and effort on the job. The cutter is capable of cutting through the hardest push-up greens and also performs on USGA greens.

[StandardGolf.com](https://StandardGolf.com)

#### 5 | L95

The L95 from **BOBCAT** provides a range of material-handling capabilities such as large bucket capacity, high lift height, swift travel speeds and maneuverability. The L95's compact size with tight turning radius and Power Bob-Tach interface help maximize performance by enhancing versatility for construction and concrete applications. The L95 is equipped with a standard bucket capacity of 1.2 cubic yards and 10.5 ft. of lift height.

[Bobcat.com](https://Bobcat.com)

#### 6 | ISOtunes Free Aware

Free Aware are OSHA-compliant, true wireless Bluetooth earbuds from **3M**. The earbuds won the Workwear Hearing Protection winner in the 2022 Pro Tool Innovation Awards. Built with Aware Technology, Free Aware provides safety and situational awareness by amplifying sounds and blocking out unnecessary noise. It comes complete with 13 hours of battery life and a waterproof design.

[3M.com](https://3M.com)

# The 19<sup>th</sup> Hole with...



## Jared Brewster

**CHIEFS**

**SUPERINTENDENT** // Rolling Hills CC, Newburgh, Ind.



### Jared, drinks are on me ... what are you having?

Whatever the group is having — a pitcher of beer or a bourbon. Whatever keeps the conversation going.



**Congrats on baby No. 2! Tell me about your family.** Thanks! My wife is Jessica, we've been married since 2014. We had our first daughter, Avery, in 2018. We recently had our second, Olivia. Let's see, we're on day 14? Somewhere around there. Sorry, it's the lack of sleep, but she's doing well. We also have two full-size dogs, about 50 pounds each, Max and Ruby.

**What does Avery think of Olivia?** She was nervous to hold her at first. But now, she's a big sister — feeding, holding, cuddling, all of the above.

**What should I know about Rolling Hills CC?** It was built by William H. Diddel back in 1965. It's a very active, very busy club. It's family-oriented, with down-to-earth members. It's a blessing to be at a club where they think of me as almost a member rather than a person who's in a leadership position.

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**“LEAD BY  
EXAMPLE,  
TREAT PEOPLE  
FAIRLY AND  
THE REST WILL  
TAKE CARE  
OF ITSELF.”**



**What teams do you root for?** Illinois basketball. The Kansas City Chiefs. And anything St. Louis — Blues hockey, the Cardinals and I'm excited for their new MLS team, St. Louis City SC. But I enjoy watching good sports all around. I was a huge Peyton Manning fan, so I followed the Colts and the Broncos. When I moved to St. Louis, I picked up the Chiefs because they were so good. It was a no-brainer.

**What's your favorite tool in the shop?** I love the cup cutter. The cup cutter in the game of golf plays a huge role in the member experience and what goes on as far as playability on the golf course. I enjoy presenting the course with a new hole, whether it's every day or every other day. I take some gratitude in knowing that I gave them the best I could each day.

**What is your favorite golf memory?** I had the opportunity back in 2012 to work at Augusta National, so I got to play with my dad as part of the employee golf. That was a really memorable experience. I shot 79 and almost aced the 16th. But that was the highlight for my dad, he talks about it to this day. I have one more ... they say the superintendent isn't supposed to win the member/guest. Well, I decided to win the member/guest this year. We had a member drop out the Wednesday before, so I called up a good friend and it was just the time of our lives. We not only won the championship flight, but we won the shootout as well. If you've been in one of those, it's nerve-racking. The first obviously blows everything away, but that was a close second.

As interviewed by Seth Jones, Jan. 2, 2024.

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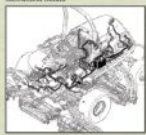


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