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# Golfdom

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## A NEW SHINE ON NINE

The shortened round of golf has risen in popularity, leading superintendents to prepare for what's next

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IRRIGATION SHUTDOWNS

FITZGERALD MAKES A MOVE

Q&A: JOE TRAUGER,  
NATIONAL CLUB ASSOCIATION





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The shortened round of golf has risen in popularity leading superintendents to prepare for what's next

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## EDITORIAL

**EDITORIAL DIRECTOR, EDITOR-IN-CHIEF & ASSOCIATE PUBLISHER** Seth Jones

785-542-2627 / sjones@northcoastmedia.net

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

**ASSOCIATE EDITOR** Rob DiFranco  
216-675-6001 / rdi franco@northcoastmedia.net

**ASSOCIATE EDITOR** Brian Love  
216-675-6000 / blove@northcoastmedia.net

**DIGITAL MEDIA SPECIALIST** Sydney Fischer  
216-675-6002 / sfischer@northcoastmedia.net

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

## CONTRIBUTING EDITORS

Karl Danneberger (*Science*), Alan FitzGerald,  
Mike Kenna (*Research*), Jim Moore

## BUSINESS

### CLEVELAND HEADQUARTERS

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

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

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

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

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

**SALES & DIGITAL AD COORDINATOR** Courtney Jaskiewicz  
216-675-6003 / cjaskiewicz@northcoastmedia.net

**SR. EVENT MANAGER** Allison Blong  
216-363-7936 / ablong@northcoastmedia.net

**SR. MGR., PRODUCTION SERVICES** Terri Johnstone-Mueller  
216-978-9622 / tjohnstone@northcoastmedia.net

**SR. AUDIENCE DEVELOPMENT MANAGER**  
Antoinette Sanchez-Perkins

216-706-3750 / asanchez-perkins@northcoastmedia.net

**AUDIENCE MARKETING MANAGER** Hillary Blaser  
216-440-0411 / hblaser@northcoastmedia.net

## MARKETING/MAGAZINE SERVICES

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

**LIST RENTAL** Brahm Schenkman  
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**REPRINTS & PERMISSIONS** Wright's Reprints  
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## CORPORATE

**PRESIDENT & CEO** Kevin Stoltman

**VP OF FINANCE & OPERATIONS** Steve Galperin

**VP OF CONTENT** Marty Whitford

**VP OF MARKETING** Michelle Mitchell

**VP OF GRAPHIC DESIGN & PRODUCTION** Pete Seltzer

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"There are too many superintendents I need to thank than I can rattle off here in one column. So how about I just say thanks to the superintendents who have helped me out over the last six days?"

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

## Give me a minute to thank my people

**T**he best concert I've ever seen — I'll go on the record on this one — was the Beastie Boys at Kemper Arena in Kansas City in 1998. A Tribe Called Quest, on their farewell tour, opened the show. My friends and I saw three performers at the peak of their game.

The B-Boys were touring on their *Hello Nasty* album. On that disc, they had a song called *Dedication*. They play a simple beat while thanking a bunch of cities. It's a throw-away track, not something they would ever release. But I bet it meant a lot to those name-dropped.

That brings me to Thank a Superintendent Day. Maybe I should take a tip from the Beastie Boys and give a few shout-outs. In the words of the great Adam Yauch, aka MCA, who died far too young at age 47, "I want to take this minute to introduce you to my people!"

For almost 25 years, I've been working with superintendents. Overwhelmingly, superintendents opened their doors to me, taking time away

from their jobs to talk to me about what they do to show me what it looks like. They've invited me to their courses, their local pubs and even their homes. I've met their crews, their members and their families.

There are too many superintendents I need to thank than I can rattle off here in one column. So, how about I just say thanks to the superintendents who have helped me out over the last six days?

Shout-outs to: Jim Moore; Kasey Kauff; Troy Flanagan; Tim Powers; Thomas Bastis and Matt Dachowski.

To give some detail, on Sept. 12 — Thank a Superintendent Day — I was in Dallas attending a conference. Editor Christina Herrick told me she invited columnist Jim

Moore out for coffee. Moore, the former USGA director of education, doesn't live far from Dallas (at least as far as Texas goes.)

I surprised Jim when I crashed their coffee meeting. Jim was happy to see Christina and me, and it was great to catch up. We exchanged ideas for future issues and talked about the superintendent lifestyle — both of Jim's sons have gone on to become superintendents as well.

The next day, Kauff, director of grounds at Trinity Forest GC in Dallas, hosted me and my colleagues at his fine golf course. Kauff, whom I've known since he was a superintendent at Atlanta Athletic Club back in 2011, drove out to meet us mid-round. Within minutes, he had our whole

group laughing, something Kauff is known for.

A few days later, I found myself in San Francisco, the guest of Flanagan and the Olympic Club. Troy told me how happy he was I accepted his invitation to the course's media day, where the club unveiled the results of a wonderful Gil Hanse restoration. I told him how honored I was to get the invitation.

More superintendents I ran into at Olympic: Bastis, competitions agronomist for the PGA Tour, who had just wrapped up his work at the Fortinet Championship at Silverado Resort in Napa; and Powers, CGCS at Poplar Creek GC in Burlingame, Calif. I last saw Powers at the most recent GCSAA Conference and Trade Show, where his kind words motivated me to revive an old department I haven't written in a long time.

And lastly, Dachowski, who invited me to tour Lake Merced Golf Club the next day. The course, like Olympic, recently underwent a Gil Hanse renovation. Dachowski, a new dad of 6-month-old twins, gave me a guided tour of all 18 holes, and the renovation was indeed fantastic.

I'm writing this from the Oakland airport, about to head home after a busy week. I think I could write a shout-out column every month and never thank every superintendent who has helped me and this magazine.

So, to all of you out there: thank you. **G**

Email Jones at: [sjones@northcoastmedia.net](mailto:sjones@northcoastmedia.net).



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# Starter

NEWS, NOTES AND QUOTES



## // HOKIES FOREVER



Mike Goatley shows the 2023 Field Day crowd the 2019 National Turfgrass Evaluation Program bermudagrass variety trial.

## VIRGINIA TECH TURFGRASS CELEBRATES 50 YEARS

BY ROB DIFRANCO // Associate Editor



The turfgrass program at Virginia Tech celebrated its 50th year at its Turf Day on August 29.

As part of the 50th anniversary celebration, Virginia Tech honored three of its earliest faculty: Dick Schmidt, Ph.D., Jack Hall, Ph.D., and David Chalmers, Ph.D.

Mike Goatley, Ph.D., Extension turfgrass specialist says the program anticipated 125 attendees but saw 165 make the trip to Blacksburg for the reception and field day.

According to Goatley, turfgrass research at Virginia Tech began in the mid-1950s, with the Virginia Tech Turfgrass Research Center officially opening in the '60s.

Goatley and Schmidt recently penned a comprehensive history of the university's turfgrass program.

"Two people come to mind that got this program started," Goatley says.

"John Shoulders, a forage agronomist, tasked with turfgrass Extension research and Roy Blaser, Ph.D. Blaser was an internationally renowned agronomist who made his mark in the turf industry."

Shoulder and Blaser were both key players in the construction of a nine-hole course at Virginia Tech designed for student research of bentgrass on tees and greens.

Shoulders eventually became Tech's first Virginia turfgrass Extension specialist. With 50 years of research, Goatley says the program has plenty to be proud of, including helping area superintendents understand that bermudagrass is a good choice for the region.

"Our evaluations (of bermudagrass) have shown how these grasses fit in this area and might be lower input and provide better playing conditions for courses for a longer period of time than many cool-season varieties," he says.

## // NAME GAME

### PRIME SOURCE IS NOW ALBAUGH SPECIALTY PRODUCTS

Prime Source, a division of Albaugh, is now Albaugh Specialty Products. The name change accompanies a full rebranding initiative, including a new logo.

"The rebranding of our specialty business is the right next step in our growth plan for this segment," said Russ Mitchell, segment director for Albaugh Specialty Products. "While the Prime Source name has served us well, transitioning to Albaugh Specialty Products will allow us to have consistent name recognition across all of the markets we serve."

Albaugh acquired the assets of Prime Source in December 2020, expanding the company's presence in the turf and ornamental markets.

"All customers can be assured that they will continue to receive the same high-quality formulations, access to new, unique chemistries and outstanding levels of service and customer support that they have been accustomed to," Mitchell continued.

## // NEW HEIGHTS

### LARRY POWELL SCHOLARSHIP RAISES \$50K

A year after launching, the endowment for the Golf Course Superintendents Association of America's (GCSAA) Larry Powell Scholarship has raised \$50,000.

Named in honor of Larry Powell, a 49-year GCSAA member and golf course superintendent at Clearview Golf Course in Canton, Ohio, the scholarship recognizes students in underserved populations seeking a golf course and turfgrass management career.

Powell's father, Bill, opened Clearview GC in 1948. The integrated course was the first and only course designed, constructed and owned by an African American. Bill and Larry were the first African-American father-son members in GCSAA history.

The GCSAA awarded the first Larry Powell Scholarship to Travis Campbell, a two-year GCSAA member, who is now assistant superintendent at Old Barnwell Golf Club in Aiken, S.C.





## //DECADES IN THE MAKING

# Pinehurst No. 10 to open in 2024

➔ Pinehurst Resort announced the opening date for its No. 10 course — a Tom Doak design. Set to open on April 3, 2024, No. 10 is the first original golf course the club has unveiled in nearly 30 years.

Construction of the course began in January 2023 with construction set to be complete just a few months before Pinehurst hosts the U.S. Open for the fourth time on its No. 2 course.

The landscape underlying Doak's newest design features all that is natural to golf in the North Carolina

Sandhills, including native wiregrass, extensive sandscape, towering longleaf pines and rolling hills.

"No. 10 starts out fairly gentle, then it starts going into the old quarry works where it gets downright crazy for a little bit, then the course gets up on the hill and there's a beautiful, sweeping view," Doak said. "All of the holes coming in are challenging, even when you move down into the gentler terrain. It's a dramatic golf course; more than I originally thought."

## //VIVA ESPAÑA

# GIL HANSE AND PEBBLE BEACH TEAM UP FOR SPANISH BAY REDESIGN

Pebble Beach recently announced a partnership with Gil Hanse and Jim Wagner of Hanse Golf Course Design, to redesign The Links at Spanish Bay.

"The Links at Spanish Bay possesses nearly every raw element you'd want in a golf course, from expansive ocean views to rolling, sandy terrain," said Hanse.



Gil Hanse

"With these natural attributes already in place, our team will have a significant head start on delivering a final product that will be in the top echelon of 'must play' courses."

Hanse's previous designs include Ohoopee Match Club in Cobbtown, Ga., Pinehurst No. 4 and Streamsong Black in Bowling Green, Fla., along with restorations of The Country Club in Brookline, Mass., Los Angeles Country Club (North) and Oakmont (Pa.) Country Club.

## Ask Thad

BY THAD THOMPSON

Superintendent  
Terry Hills GC, Batavia, N.Y.



## What's your take on the NFL Players Association demanding natural grass leaguewide?

Well, this debate is back in the news. When we see a four-time MVP and future hall-of-fame quarterback go out for the season with an Achilles tear in an apparent noncontact injury, the argument will rage on. Do you hate the artificial surface because of the injuries, it's appearance or because you grow grass for a living? For me, it's all of the above. As a superintendent, you'll never convince me that a synthetic surface is better than a properly maintained natural grass field. I hate the plasticky, shiny appearance of the field and the crumb rubber stuck to the athletes' faces. Injuries are, of course, a huge factor.

NFLPA President JC Tretter (a local Batavia boy) wrote an open letter to the NFL last year stating, "Artificial turf is significantly harder on the body than grass." Tretter referenced an independent study that found players have a 28 percent higher rate of noncontact lower extremity injuries when playing on artificial turf. Of those noncontact injuries, players have a 32 percent higher rate of noncontact knee injuries on artificial turf and a staggering 69 percent higher rate of noncontact foot or ankle injuries on artificial turf compared to grass.

We have the science, technology and knowledge to grow a natural field in any climate, so there are no excuses at the highest levels of sports and teams have made huge investments in players. Protect your assets.

It's disturbing seeing young athletes in high school with major lower body injuries due to artificial turf. Synthetic fields are becoming all too common at the lower levels of sport. As an industry are we doing all that we can with the knowledge we possess? Are we volunteering at a local high school to help improve a field or simply offering advice if questioned about our profession? Maybe if we help nip it in the bud at the local level, we could help educate school boards, coaches, parents and athletes and let them be the ones to become our advocates.

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

## X #TurfTweetoftheMonth

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### Joshua Kelly

@Joshua\_E\_Kelley

Director of Grounds,

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When your kid thinks he gets a day off from school for a hurricane and can play video games all day. [#Hurricaneldalia](#) [#GolfCourseSuperintendent](#)

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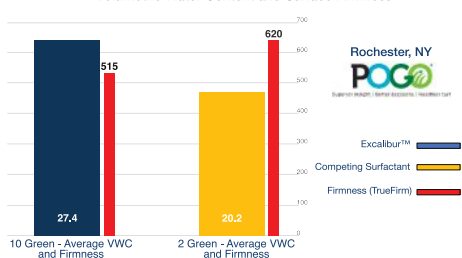
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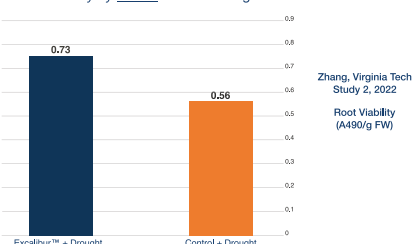


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"I'm lucky to inherit a great team here, with assistants who did a great job in the interim and helped me get settled. However, it was unsettling on my first morning when, for the first time, I had no clue what I was doing!"

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

## Same face, new place

**Y**ou may have noticed that my email address has changed to Rehoboth Beach Country Club. While Musings from the Beach has a good ring to it — and gives connotations of a relaxing life — Musings From The Ledge has become synonymous with me.

The decision to leave was not easy. I spent almost half my life at LedgeRock and had everything running smoothly. Believe it or not, that was part of the problem. The turf was living happily, and I had reached all my goals for the club. I had become somewhat bored.

Not to the point where I was complacent. But the break from routine during a fairway bunker renovation highlighted the need for something more. So, I thought, what could I do next? How could I reinvent Alan without upsetting the apple cart?

When approached about the position at Rehoboth Beach CC, I figured, what do I have to lose by taking a look?

I immediately fell in love with the people, the club, the course and the plans for the future. I was sold, and then I just had to land the job. If I got it, I would face the not-so-small task of tearing my life



Assistant Superintendents Kevin Titus (left) and Tony Rubbico (right) were a major help in my transition to Rehoboth Beach CC.

in Pennsylvania apart.

My wife and I always loved the Delmarva beaches, so that bit was easy. What was harder was leaving our forever house — which I had just finished renovating.

### Saying goodbye

After I landed the job, I had to let LedgeRock know. I've mentioned in a previous column (see the May 2021 issue of *Golfdom*) that the assistant superintendent is your copilot, and they should be ready to take over when needed.

At the Rock, Cody Frederick was ready and made the transition seamless.

I'm lucky to inherit a great team here, with assistants who did a great job in the interim and helped me get settled. However, it was unsettling on my first morning when, for the first time, I had no clue what I was doing!

While updating my LinkedIn profile, a friend posted an article headlined, "Sometimes the road less traveled is less traveled for a reason." Considering the huge change I was

currently going through, it caught my attention.

Is it less traveled because it is impossible? Or is it so challenging that most don't want to step out of their comfort zone and face it?

### Take a hike


Think of your career as taking a hike up a mountain. You're committed to finding a trail to get to the top but don't know exactly how it will get you there. Others might take a different path to get there, but that doesn't matter.

What happens when you get to the top? Do you head back down to climb again, or do your eyes wander over to the next mountain?

I've always set challenges for myself and often took the path less traveled. I like to think it made me who I am, and what LedgeRock is, and Rehoboth will become.

No matter how many milestones I've reached, I've always found a reason to climb back down and give it another go. Now, having made the move to the next mountain, I'm invigorated.

Not that I wasn't before. But now, seeing it from a different perspective, even the simplest things excite me again! Facing and overcoming challenges makes you better. I was told in high school English that I would never be a good writer and now I write for *Golfdom*! What do you have to lose by taking a look?

And yes, living by the beach is awesome!  Alan Fitzgerald (superintendent@rehobothbeachcc.com) is superintendent at Rehoboth Beach (Del.) Country Club.



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# The nine-hole revolution

Bobby Jones Golf Links Golf Course, Alpharetta, Ga.

The shortened round of golf has risen in popularity leading superintendents to prepare for what's next

BY BRIAN LOVE

**F**or most of the world, 2020 was an anxious time. As businesses shut down, people sought out for something to do. What did they find? For many, it was the game of golf on nine-hole courses.

At the same time the golf industry saw a boom thanks to its socially safe label, nine-hole short courses rose in popularity. That trend has continued past the lockdowns, shutdowns and the world's return to normalcy.

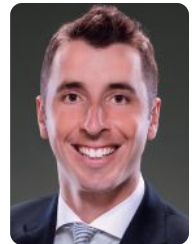
Josh Deal, regional operations manager, and Kyle Macdonald, director of agronomy, at Bobby Jones Links Golf Course in Alpharetta, Ga., have seen this more than anyone.

"We're going to do over 40,000 rounds this year," Deal says. "Even though (we) offer 18 holes, nine holes are climbing up the

ladder to become the preferred way to play."

Bobby Jones GC features a reversible nine-hole facility. That means players can still play 18 holes, by booking two nine-hole rounds. The two courses, the Azalea and Magnolia, feature multiple hole locations with designs inspired by St. Andrews.

Deal predicts that 85 percent of rounds played in 2023 will come from players booking nine-hole sessions.



Josh Deal

## Look at the numbers

So, why is the shortened version of a traditional 18-hole round suddenly so popular? Macdonald believes the reason is simple. Time is money.

Due to the reduced runtime of a nine-hole round, golfers can sneak in a round or two without worrying about being away from family, friends or other responsibilities for too long. Deal agrees by describing the nine-hole course with the old phrase: "short but sweet."

*Continued on page 16*

PHOTO BY: DAVE SANSON



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## // NO SHAME IN THIS GAME



*Continued from page 14*

"It can be a big ask to go and play 18 holes, especially when you have young kids or a spouse to turn to," Deal says. "After a long week, I could be heading to the golf course. Depending on what you do, you could be absent longer than the workday. Playing a nine-hole game is appealing and popular among people of a certain age or family bracket."

Bobby Jones GC has a reputation for its nine-hole projects. Outside of the pandemic, the past ten years have seen a real focus on the benefits of a shortened round at the course.

The Azalea and Magnolia nine-hole courses at Bobby Jones GC can be played back to back for an 18-hole experience.

### Reduced maintenance

What do nine-hole courses mean for maintenance crews who, in some cases, now have their workloads cut in half? Macdonald says



**Kyle Macdonald**

that the maintenance needs for a nine-hole course vary, requiring different demands than your traditional 18-hole affair.

He says a nine-hole course minimizes traffic from a maintenance perspective, due to the shorter round length. Since Bobby Jones GC is a reversible nine-hole facility, maintenance is only necessary on half of the course at a time.

"We can get on and off the golf course faster and not be in the player's hair," Macdonald says. "We're not inconveniencing the golfer or the customer during our normal maintenance activities because it is only nine holes. With all of that, there are also some savings to your maintenance budget by only needing to work on half of the course."

When it comes to maintenance practices, one example is Trevor Schaap, superintendent at Northwood Golf Club in Monte Rio, Calif.

The maintenance crew consists of himself, three full-time employees and three part-time retirees. They will work around 10-20 hours per week with the services consisting of mowing the greens, sanding the divots and cleaning up the garbage.

"Everyone has their own little jobs and all the employees that I have bring different skill sets," Schaap says. "Some of my employees are golfers. Some aren't. But they can have a lot of matching experience. A non-golfer can know how to run power equipment while a golfer can know how to set up the course."



**Trevor Schaap**

### The future of golf

Due to the reduced maintenance load and the post-pandemic rise in popularity, both Deal and Macdonald believe there is a bright future for the nine-hole round.

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An Alistair MacKenzie and Jack Neville design, Northwood GC ranks as one of the top nine-hole courses in the world.

“The presence of new golf-like models, such as Topgolf, can increase game exposure,” Deal says. “Obviously, since it takes less time, it can be more inviting to the non-core golfer. Nine-hole games can help you spend time with friends, get vitamin D and exercise.”

Schaap looks at the supply and demand nature of golf. He explains that the industry will always look to cater to and provide players and members with the ideal experience of their cherished game.

“I do see a future in the world of nine-hole golf courses,” Schaap says. “If you are in Southern California, you can easily fill the

many golf courses available. The trend depends on people’s time, how they spend their day and what they’re doing.”

Macdonald says that Bobby Jones GC is unique because of its ability to cater to traditional golfers and beginner players who want to figure things out before hitting the 18-hole course.

“We have been able to capture both audiences,” he says. “We get both the traditional golfer, along with the weekend guys that play once a month. You can pop in after work or tee-ball practice. It can be a more palatable experience.”

With the expansion he has seen at his course, Josh Richter,

*Continued on page 18*

PHOTO BY: CHUCK LEINHARD

## Superintendents describe it as reliable, proven, trusted, consistent and dependable

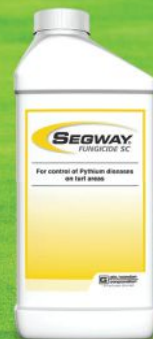


Paul Dotti

“If you’re seeing any kind of foliar Pythium if the weather is conducive, it can spread pretty fast and you can lose a lot of turf,” Dotti says. “We had our issues, but we feel like now, with Segway, we really have a go-to product that’s going to allow us to sleep at night.”

**Paul Dotti**

Superintendent of Arcola Country Club, Paramus, NJ



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Continued from page 17

director of golf operations for Boyne Golf, a resort operator with three locations across Michigan, , sees the shortened round as having a bright future of introducing more people to golf.

“At the shortened course, you keep people around and they are enjoying themselves,” he says. “They want to be social and have fun. ‘Fun’ is a word that we use around the golf division all the time at our resort. Simply have fun.”

## The short-course boom

Along with the growth in popularity has come expansion to help bring the shortened game to more players. Boyne will hop on the train, with its first nine-hole course set to open in 2024 at its “The Highlands” location in Harbor Springs, Mich.

The Roy Hearn-designed short course will feature just two heights of cut for its greens and fairways.

According to a report from the National Golf Foundation in 2021, 48 percent of rounds played in 2022 were just nine holes.

“It was during the past five-ish years that you started to see more of the game being offered,” Richter says. “Whether you are a newer golfer or just giving it a go for the first time, you’re going to see a range of distances. It could play as short as 600-ish yards

or play as long as a thousand.”

## Do others agree?

At Northwood Golf Club, Schaap oversees one of the country’s top nine-hole courses. In 2020, *Golf.com* ranked it amongst the top 50 in the entire world.

Though he doesn’t have an exact number of people listed, he estimates that 60 percent of the rounds played at his course are nine-hole rounds.

“Since COVID began, the industry has exploded,” Schaap says. “It’s been a revitalization of the entire industry. I think people realized that if you are a beginner golfer and are not interested in chucking a ball around for five houses, nine holes is a great place to start.”

Like Deal and Macdonald, Schaap explains that younger people with responsibilities, like a full-time job and families, have more difficulty playing a traditional 18-hole round than someone in retirement with grown children.

“People my age are starting to get into the working industry can’t just edge out four to five hours a day to spend on the golf course,” he says. “A nine-hole game is perfect for the time you get to enjoy yourself and still be able to finish your responsibilities.”

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# A private discussion

Joe Trauger, president and CEO of the National Club Association, discusses the future of the private club industry, labor demands and the need to be inclusive

BY SETH JONES



A seasoned veteran on Capitol Hill, Joe Trauger, president and CEO of the National Club Association, helps keep a finger on the pulse of D.C. for private clubs nationwide.

**Golfdom:** Joe, we're excited to get you in the magazine. First off, can you tell us about yourself?

**Joe Trauger:** I'm the president and CEO of the National Club Association (NCA), which represents private clubs. That would include country, golf, city, yacht, athletic and hunt clubs. I spent three years as NCA's vice president of government relations, representing and advocating for the private club community on Capitol Hill. Previously, I spent about 10 years working on Capitol Hill for a Senator and a few Congressmen. I've been in my current role for a little over a year, and I've really enjoyed the opportunity to lead the organization.

**Golfdom:** Generally speaking, how would you say 2023 has treated your members?

**Trauger:** In a word, I would say solid. The feedback we're getting is that clubs continue to see very strong memberships and very strong engagement. If you look industry-wide, a lot of clubs are full with waiting lists. I think it's safe to say we're in unprecedented times in terms of memberships and waitlists. It really was a positive upside of the pandemic — people realized they were looking for more local engagement, to be a part of a community, to go someplace to meet with friends.

**Golfdom:** How do you foresee things moving forward in 2024?

**Trauger:** It depends on how things play out with the economy. We keep an eye

on the hospitality and leisure sectors of the economy. We check in regularly with the chief economist at the U.S. Chamber of Commerce to get a feel for what's happening. Interest rates, housing costs, inflation, all of those things get wrapped up in how the economy performs. Right now, the economists feel pretty sure about where we are in terms of avoiding a potential recession — which everyone has been talking about for the last two years. That risk is diminished, although it can never be zero.

**Golfdom:** In a recent conversation with a recruiter, I was told to expect a lot of movement among high-level superintendents this winter, as demand is at an all-time high. Does this sound like anything you've heard?

**Trauger:** At least in the local D.C. market, there has been some movement. I

*Continued on page 20*



Trauger recently took the NCA team to visit Mount Vernon CC in Alexandria, Va., to see the good work of Superintendent Chris Sandels and his team.

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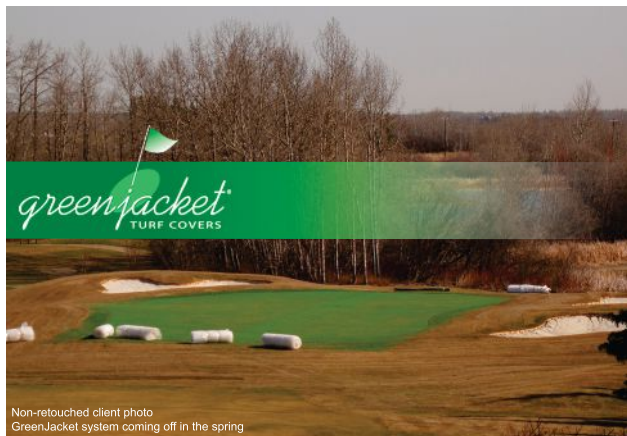
have a good relationship with the superintendent at Mount Vernon CC (in Alexandria, Va.), and we talk fairly regularly. In that context, we talk about the difficulty of finding an assistant. We've seen some fall-off of individuals enrolled in universities being educated in turf management. I think we're seeing that not only in the role of grounds and superintendents but management as a whole. As a result of the pandemic, I think people looked at how work interplays with their personal time and the things they like to do. One of the difficult things the industry wrestles with is hours. There are fewer people willing to get up at 3 a.m. and go to work at 4 a.m. You have to think of creative ways to address that. I think that goes not only for superintendents, but club managers and head professionals.

**Golfdom:** How about the long-term health of your association? Where do you see it going in 5 years, 10 years? How will the average American feel about being a member of a club?

**Trauger:** I think we're seeing expansion in the private club market with new clubs opening, whether it's city clubs, country clubs, yacht or other clubs. We've gone through cycles where, during the Tiger era in the late '90s and early aughts, we had this terrific expansion and a high interest in golf and private club membership. Then, we had a retraction during the Great Recession. In the conversations I've had, folks are more engaged in the new projects and new clubs that are built and clubs have shifted to a focus on the whole family, not just Dad on the course. There's a sense that it's much more durable. It's not housing-focused. It's focused on the club and bringing the member value. You have new generations coming through, like millennials, that are really starting to pick up interest in private clubs. I think any membership director will tell you the biggest population of inquiries they get now is among the millennial crowd. And you have a group of Gen Z who have grown up in the club environment and they're very accustomed to the lifestyle.

**Golfdom:** I bet you have all sorts of studies on millennials and Gen Z and what it will take to make them stay interested as your next generations of clients.

**Trauger:** One of the things we've done as an association — I'm thankful for my board's guidance on it — is look at diversity and inclusion. I think one of the things that is really important to millennials is a sense of inclusion. The private club community has a reputation of being exclusive or exclusionary. So, we try to point out that you can have exclusiveness and still be inclusive. We're trying to explain the mindset that we're being inclusive in an exclusive environment. It sounds contradictory, but as you think through it, it makes sense. 



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# Super Science

## // WHAT TIME IS IT?

# IT'S ALWAYS WATER SAVINGS TIME

By Mike Kenna, Ph.D.

**A**mong the USGA Green Section Collections is a comprehensive resource that addresses water management on golf courses. With a range of articles, guides and multimedia materials, this collection equips golf course professionals with valuable insights and strategies to optimize water use, conserve resources, and enhance the course's overall quality.

Irrigation systems are a focal point of the collection, emphasizing the significance of preventive maintenance. The article, *Developing a Preventive Maintenance Checklist for Golf Course Irrigation Systems* stresses that proper upkeep reduces labor and material costs and contributes to water and energy savings while improving the quality of the playing surface. A similar article, *When Is It Time To Replace An Irrigation System?* underscores the importance of cost considerations in the decision-making process regarding system replacement.

The collection explores water management, offering guidance on identifying precise soil moisture status, emphasizing the need to irrigate for playability and turf health rather than just aesthetic appearance. *Water, Water Everywhere!* highlights the costly consequences of tangible and intangible overwatering and underscores the importance of responsible water usage in the 21st century.

Turf reduction is another critical aspect discussed in the collection. *Less Turf + Less Water = Less Cost* demonstrates how preparing a turf assessment plan can lead to cost savings while maintaining course quality. A turf reduction template provides practical guidelines for achieving these goals.

Understanding water sources is crucial for sustainable golf course management. *Golf Course Irrigation—Where Does It Come From?* explores the varied irrigation water sources. In contrast, *A Step-By-Step Guide For Using Recycled Water* outlines the costs and maintenance practices required to utilize this valuable resource effectively.

The collection also delves into research milestones of the USGA Davis Program, highlighting the organization's commitment to advancing scientific knowledge in golf course management. These resources provide accessible insights into water conservation techniques.

In summary, this USGA Green Section Collection provides golf course superintendents with a wealth of information and practical tools to manage water resources effectively, reduce costs and ensure the long-term sustainability of their courses while upholding playability and turf health. For more information, and to see all the resources mentioned visit [bit.ly/USGACollection](http://bit.ly/USGACollection).



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

## NEWS UPDATES

### SYNGENTA INSECTICIDE NOW LABELED FOR GOLF

Syngenta's Acelepryn Xtra insecticide is now available for use on golf courses. The product features two modes of action and the active ingredients chlorantraniliprole and thiamethoxam.

According to the company, the Acelepryn Xtra offers more control and a wider application window than the original Acelepryn, season-long control of grubs, billbugs, turf caterpillars and ants and enhanced chinch bug control.

"Acelepryn Xtra has an even wider application window and controls more pests than Acelepryn, reducing the number of applications needed. This makes Acelepryn Xtra a convenient, smart choice for effective agronomic programs," said Matt Giese, M.S., technical services manager for turf at Syngenta.

### QUALI-PRO ANNOUNCES NEW PREEMERGENT HERBICIDE

Quali-Pro released Prodoxaben, a solution for edge-to-edge preemergent weed control. The product is a selective combination preemergent herbicide. It features a dual-action formula, combining actives Prodiamine and Isoxaben.

According to the company, Prodoxaben tackles over 150 weed species at germination, including dandelions, clover, henbit, Poa, crabgrass and barnyard grass.

Prodoxaben is available now in a granule formulation and will be available later this fall in an innovative liquid formulation. The two formulations offer turfgrass managers the flexibility to apply the product in the form most convenient for them.

Superintendents can apply the product ranging from 100 to 200 lbs. per acre annually, to ensure optimal results without exceeding the maximum recommended annual rate of 357 lbs. per acre.



## //INJURED RESERVE

# Late-fall wetting agent application and ultradwarf bermudagrass winter survival

By Eric DeBoer, Ph.D., Doug Karcher, Ph.D., John McCalla and Mike Richardson Ph.D.

**W**inter injury to ultradwarf bermudagrass putting greens can stem from two primary factors: desiccation of plant tissue and exposure to low temperatures. Unlike the effects of low temperatures, tissue desiccation during winter can happen independent of temperature conditions and might be aggravated by soil hydrophobicity.

The sandy root zone mixture of a putting green constructed to United States Golf Association (USGA) specifications (13) can make soil hydrophobicity a problem. As hydrophobicity pertains to golf course putting greens, areas that become water-repellent are most commonly found near the upper region of the root zone.

The repellency is most likely a result of individual sand particles becoming coated with an organic compound that displays hydrophobic characteristics. (4,10). Hydrophobic root zones can result in the formation of localized dry spot (LDS), a term used to define “irregularly shaped areas of desiccated, brown turf resulting from soil that has become resistant to wetting from both irrigation and rainfall” (2).

Repellency is a major issue during summer months when evapotranspiration demand is high and when uniform moisture distribution throughout the root zone is necessary for the playability and aesthetic properties of the putting surface.

Wetting agents have gained popularity as a dependable method for alleviating damage attributed to LDS. Wetting agents are chemical surfactants that effectively reduce water surface tension and allow it to penetrate the surface of hydrophobic soil (6). However, the underlying cause

**TABLE 1**

### Wetting agent treatments made late-fall each year.

Product	Company	Treatment	Rate (gals. per acre)
Revolution	Aquatrols Paulsboro, N.J.	REV1	2.0
		REV2	4.0
Cascade Plus	Precision Laboratories Waukegan, Ill.	CP1	2.75
		CP2	5.0
Tricure	Mitchell Products Millville, N.J.	TRI1	2.0
		TRI2	4.0
Control	—	Untreated	—

of the hydrophobicity may still exist in the root zone.

The beneficial effects of wetting agents may be short-lived and commonly applied to putting greens several times throughout the spring and summer months. Golf course superintendents usually cease wetting agent applications to ultradwarf bermudagrass putting greens as the turf enters dormancy in the late fall.

The underlying cause of soil hydrophobicity could result in turfgrass desiccation caused by soil water repellency, even though symptoms of LDS may not be evident because of the dormant state of the turf.

Although wetting agents reduce soil water repellency on sand-based putting greens (5, 8), research is currently lacking regarding the effect of a late-season wetting agent application on dormant ultradwarf bermudagrass putting green turf to combat winter turfgrass desiccation.

This research aimed to examine the effect of late-fall application of three commercially available wetting agents and treatment rates on winter injury to ultradwarf bermudagrass, winter soil hydrophobicity and soil moisture content and uniformity.

## SITE MANAGEMENT AND TREATMENTS

We conducted a three-year field experiment on a putting green with a sand-based root zone established with mature TifEagle ultradwarf bermudagrass at the University of Arkansas Agricultural Research and Extension Center in Fayetteville, Ark.

We mowed six days per week at a 0.125-inch height of cut (HOC) during the growing season. We groomed the greens three days per week at a 0.110-inch bench setting. Approximately one month before winter dormancy, we raised the HOC to 0.140 inches.

We applied nitrogen every two weeks (0.05 lbs. N per 1000 sq. ft.) from May to September, alternating between 18-9-18 and 46-0-0 spray-grade urea applications. According to annual soil testing recommendations, we applied phosphorous, potassium and micro-nutrients (3).

We withheld irrigation during winter but did irrigate in the growing season to replace 100 percent of reference evapotranspiration. Our team applied sand topdressing applications at a 0.05-inch depth at two-week intervals during the growing season. We also performed core aeration



annually with 0.5-inch tines and a 2-by-2-inch spacing.

Our team applied the plant growth regulator trinexapac-ethyl (Primo, Syngenta, Basel, CH) monthly at 0.05 gallons per acre during the growing season. During the winter, we placed a black permeable polypropylene protective cover (Xton Inc.) on the green when forecasted temperatures dropped below 25 degrees F. We removed the cover for favorable weather, similar to a golf course, to allow for play on warmer winter days.

The three wetting agents used for this study included Revolution, Cascade Plus and Tricure. We applied each wetting agent at either the label or two times the label rate to determine if there was any benefit from more prolonged residual efficacy with higher application rates (Table 1).

We made wetting agent applications with a three-nozzle, CO<sub>2</sub>-pressurized plot sprayer with flat fan nozzles (8005VS; TeeJet), delivering 75 gallons per acre of spray volume. Our team applied wetting agent applications on Dec. 14, 2015, Dec. 8, 2016 and Dec. 7, 2017, followed by 0.25 inches of irrigation to the entire experiment to

move products into the root zone. We withheld irrigation after that until the end of the trial each year.

### DATA COLLECTION AND EXPERIMENTAL DESIGN

We evaluated volumetric water content (VWC) monthly by taking nine random measurements per plot during the initial trial winter and 12 random measurements per plot twice monthly during the final two winters with a Field Scout TDR 300 Soil Moisture Meter equipped with 1 ½ inch-long rods.

Our team evaluated green turfgrass coverage by digital image analysis (12) during the spring green-up period of each season. We took one picture per plot weekly from February to May during the spring of 2016. In the spring of 2017 and 2018, we took three photos per plot weekly from February to May to account for the larger plot dimensions in these years.

We evaluated root zone water repellency twice each trial season with a water drop penetration time (WDPT) test on soil samples collected two weeks after the wetting agent application and again on samples collected on March 22, 2016, March 27, 2017 and March

26, 2018.

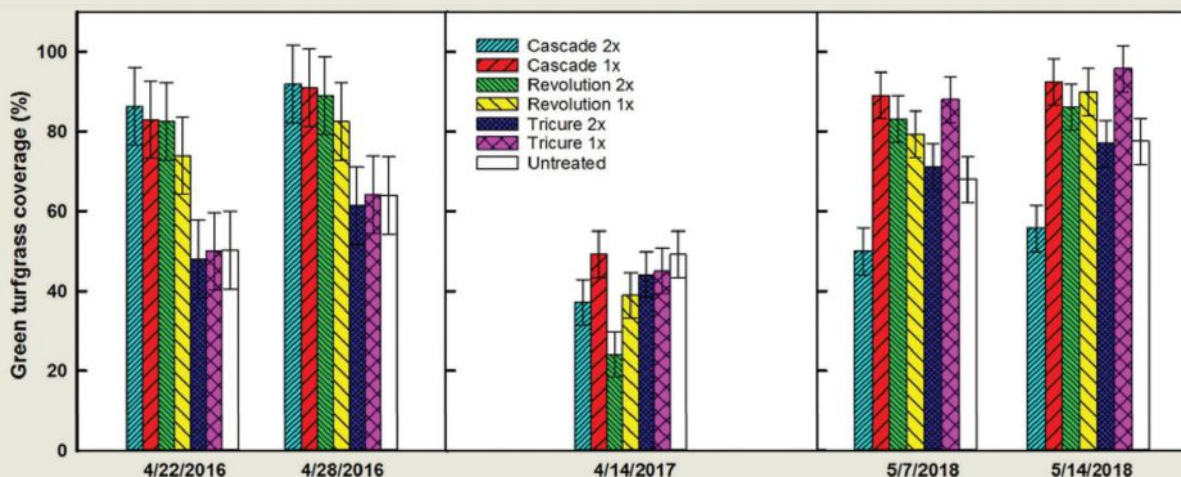
We collected samples consisting of five intact soil cores, 3 inches long and 1 inch in diameter from each plot, air-dried them for two weeks and tested them for water repellency via the WDPT test (7, 9). We performed the WDPT test by placing a droplet of deionized water on the cores at depths of 1, 2, 3, 4 and 5 centimeter (measured from the top of the soil core) and recording the time in seconds for the droplet to penetrate the surface of the soil core. We recorded any water droplets remaining after 10 minutes as 600 seconds.

We analyzed all data separately each year because of inconsistencies in the evaluation dates and intervals among the three trial periods. Our team analyzed data for the percentage of green cover and soil volumetric water content through repeated measures ANOVA as an augmented factorial (11) randomized complete block design. We added sampling depth as an additional factor in the WDPT data analysis. We also separated treatment means for significant effects via Fisher's protected LSD ( $\alpha = .05$ ).

Continued on page 24

**FIGURE 1**

**Effect of late-fall wetting agent applications on the green turfgrass coverage of an ultradwarf bermudagrass putting green in Fayetteville, Ark., from 2016–2018.**



**FIGURE 2**

**Delayed spring green-up of ultradwarf bermudagrass in untreated control plots in Fayetteville, Ark., on April 2016.**



**TABLE 2**

**Total precipitation from January to May 2016-2018.**

Year	Precipitation					
	Jan.	Feb.	Mar.	Apr.	May	Total
	inches					
2016	0.9	0.6	4.0	3.4	4.2	13.2
2017	2.8	1.1	5.1	15.6	6.1	30.7
2018	1.4	7.9	4.5	1.9	4.4	20.2

Continued from page 23

## COMPARING WETTING AGENT EFFECTS ON GREEN TURFGRASS COVERAGE

In each year, a late-fall wetting agent showed the occasional ability to increase green turfgrass coverage (Figure 1 and Figure 2). In 2016 and 2018, multiple treatments increased green turfgrass coverage compared to untreated control on multiple dates. No product or rate consistently increased or decreased green turfgrass coverage yearly, reinforcing the highly variable nature of LDS formation and the effects of wetting agents on green turfgrass coverage the following spring.

On April 14, 2017, no treatment increased green turfgrass coverage compared with the untreated control (Figure 2). The lack of any effect in 2017 may be due to a dramatic increase in precipitation, most notably in April 2017 (Table 2).

## COMPARING WETTING AGENT EFFECTS ON SOIL VOLUMETRIC WATER CONTENT

We observed no treatment effect for soil volumetric water content in any year (data not shown). Although comparisons across years were not possible, the mean soil volumetric water content pooled across treatments for April 2016 was 13 percent compared with 20

**TABLE 3**

**Effect of a late-fall wetting agent application on water drop penetration times for two sampling dates in 2017.**

Treatment	January	April
	— seconds —	
Cascade 2x <sup>a</sup>	6 <sup>cb</sup>	14 <sup>b</sup>
Cascade 1xb	16 <sup>b</sup>	17 <sup>ab</sup>
Revolution 2x	9 <sup>b</sup>	16 <sup>ab</sup>
Revolution 1x	14 <sup>b</sup>	23 <sup>ab</sup>
Tricure 2x	6 <sup>b</sup>	24 <sup>ab</sup>
Tricure 1x	13 <sup>b</sup>	15 <sup>b</sup>
Untreated	49 <sup>a</sup>	27 <sup>a</sup>

<sup>1</sup> 1x, applied at the product label rate.

<sup>2</sup> 2x, applied at 2x the product label rate.

<sup>c</sup> Within dates and across sampling depths, means followed by the same letter are not significantly different according to LSD ( $P < .05$ ).

percent in April 2017. This may help explain the lack of a wetting agent effect on green turfgrass coverage in 2017.

Additionally, it may be possible that the inherent variability in daily soil volumetric water content, specifically at the 1.5-centimeter sampling depth, resulted in a lack of differences among the treatments.

## COMPARING WETTING AGENT EFFECTS ON WDPT TESTS

In general, we only observed water repellency in the top 2 centimeters of the soil profile. In January 2016, at the 1-centimeter soil depth, each treatment, excluding TRI1x and TRI2x, had reduced WDPT compared with the untreated control (Figure 3A). At the 2-centimeter soil depth in January 2016, only REV2x and CP2x had lower WDPT than the untreated control.

In April 2016, at the 1-centimeter soil depth, CP1x, REV2x, and REV1x had lower WDPT than the untreated control (Figure 3B). No treatment differed from the untreated control in April 2016 at the 2-centimeter soil depth. At the 3-, 4-, and 5-centimeter soil depths in 2016, no differences among treatments or between the treatments and

PHOTO BY: MIKE RICHARDSON, PH.D.



the untreated control indicated any practical differences, as the untreated control exhibited minimal water repellency at these depths.

In January 2017, all treatments reduced WDPT compared with the untreated control but were not different from each other (Table 3). Only TRI1× and CP2× had lower WDPT than the untreated control in April 2017, but these treatments were not different from other wetting agent treatments.

Similar to 2017, in January 2018, the treatments did not differ, but all treatments reduced WDPT compared with the untreated control (Table 4). In April 2018, there were no differences among treatments or between the treatments and the untreated control.

When considering depth, in 2018, all treatments reduced WDPT compared with the untreated control at the 1-centimeter soil depth, and all treatments, excluding REV1× and TRI1×, reduced the 2-centimeter soil depth WDPT compared with the untreated control (Table 4).

Though comparisons among years are not possible, some differences between WDPT in 2016 and 2017 are worthy of discussion. We noted increased WDPTs at the 1-centimeter soil depth and for the untreated controls at the 1-centimeter soil depth between 2016 and 2017.

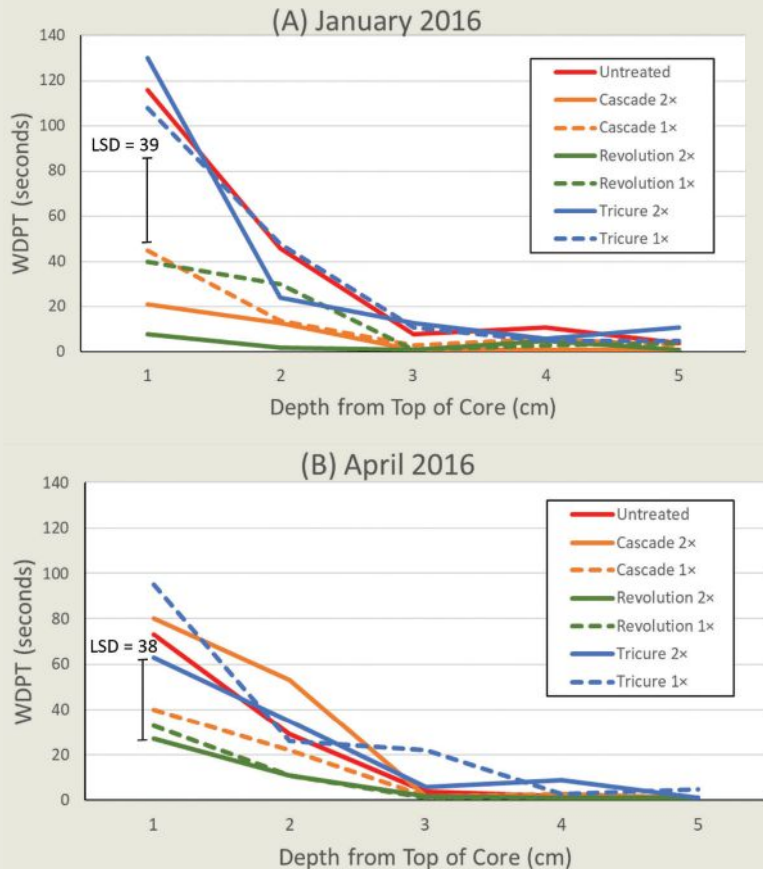
In April 2016 and 2017, the 1-centimeter soil depth pooled across treatments had WDPTs of 62 and 36 s, respectively. The untreated controls at the 1-centimeter soil depth had a WDPT of 94 s compared with 67 s in 2017.

The reduction in hydrophobicity at the 1-centimeter soil depth in 2017 could partially explain the lack of a wetting agent effect on green turfgrass coverage in 2017. Throughout the trial, there appeared to be minimal residual wetting agent effects in the spring following a late-fall application or by increasing the application rate of a late-fall treatment.

Continued on page 26

**FIGURE 3**

**Effect of sampling date, soil depth, and late-fall wetting agent application on water drop penetration time tests for two sampling dates in (A) January 2016 and (B) April 2016.**



**TABLE 4**

**Effect of a late-season wetting agent application on water drop penetration time tests as affected by depth and sampling date in 2018.**

Treatment	Depth <sup>c</sup>					Jan.	Apr.
	1 cm	2 cm	3 cm	4 cm	5 cm		
	seconds						
Cascade 2× <sup>a</sup>	14 <sup>bc</sup>	4 <sup>c</sup>	4 <sup>c</sup>	3 <sup>c</sup>	2 <sup>c</sup>	4 <sup>b</sup>	7 <sup>a</sup>
Cascade 1× <sup>b</sup>	12 <sup>bc</sup>	3 <sup>c</sup>	2 <sup>c</sup>	3 <sup>c</sup>	2 <sup>c</sup>	4 <sup>b</sup>	5 <sup>a</sup>
Revolution 2×	15 <sup>bc</sup>	4 <sup>c</sup>	4 <sup>c</sup>	9 <sup>bc</sup>	7 <sup>c</sup>	10 <sup>b</sup>	6 <sup>a</sup>
Revolution 1×	22 <sup>b</sup>	11 <sup>bc</sup>	4 <sup>c</sup>	3 <sup>c</sup>	2 <sup>c</sup>	8 <sup>b</sup>	9 <sup>a</sup>
Tricure 2×	14 <sup>bc</sup>	5 <sup>c</sup>	4 <sup>c</sup>	6 <sup>c</sup>	7 <sup>c</sup>	9 <sup>b</sup>	6 <sup>a</sup>
Tricure 1×	12 <sup>bc</sup>	8 <sup>bc</sup>	6 <sup>c</sup>	4 <sup>c</sup>	3 <sup>c</sup>	8 <sup>b</sup>	5 <sup>a</sup>
Untreated	56 <sup>a</sup>	21 <sup>b</sup>	14 <sup>bc</sup>	11 <sup>bc</sup>	8 <sup>c</sup>	34 <sup>a</sup>	10 <sup>a</sup>

<sup>a</sup> 1×, applied at the product label rate.

<sup>b</sup> 2×, applied at 2× the product label rate.

<sup>c</sup> Within dates and across sampling depths, means followed by the same letter are not significantly different according to LSD ( $P < .05$ ).

Continued from page 25

Although not always statistically significant, WDPTs were lower in April than in January, suggesting that the changes in soil properties resulting from four months of cooler temperatures and 13 to 31 inches of rainfall (Table 2) may allow for some natural decline in root zone water repellency.

No treatment consistently reduced WDPT in both January and April of each year. In 2016, CP1x, REV1x, and REV2x appeared to have a residual effect at the 1-centimeter soil depth, as WDPTs were reduced compared with the untreated control in April. Revolution has also shown a residual effect the following spring after fall application on a creeping bentgrass putting green in Minnesota (1).

## RECOMMENDATIONS FOR WETTING AGENT APPLICATION

This research demonstrates that late-fall application of a wetting agent can provide added protection to ultra-dwarf bermudagrasses from winter injury associated with desiccation. The benefits of late-fall wetting agent application appear to be more pronounced in years with drier winter conditions, suggesting that protection might be even more valuable for a nonirrigated golf course than for a golf course that can irrigate during the winter months.

Research involving targeted soil moisture conditions during the winter is necessary to make a definitive statement.

Although wetting agent treatments increased green turfgrass coverage compared with the untreated control on multiple dates, it remains uncertain what may be directly responsible for this effect. One possible cause for increased green turfgrass coverage is the reduced hydrophobicity of the surface soil layer.

There was no evidence that soil volumetric water content in the upper 1.5 inches contributed to enhanced green coverage.

Despite this, the authors speculate

## Research Takeaways

- A late-fall wetting agent application may reduce winter injury on bermudagrass putting greens.
- Wetting agents generally reduced hydrophobicity in the top 2 centimeters of the sand root zone.
- Soil volumetric water content did not differ between treatments on any sampling date throughout the trial.

that greater sampling frequency and/or depth may have altered the results. Although wetting agents did not affect soil volumetric water content, wetting agents did reduce WDPT in the top 2 centimeters of the soil profile, and, in one season, that benefit persisted in the top 1 centimeter of the soil profile.

Throughout the trial, the 2x application rate never increased green turf coverage compared with the 1x rate of the same product, suggesting that for a one-time late-fall application, the 1x rate would be sufficient as an insurance policy if dry weather persisted throughout the winter months.

Further research in this area looking into the effects of repeated wetting agent applications to a dormant ultra-dwarf bermudagrass putting green throughout the winter months may assist golf course superintendents in decision-making for minimizing winter injury of bermudagrass putting greens. In addition, it would be beneficial to understand the effects of irrigation or rainfall frequency on the efficacy of wetting agents during the dormant season. ©

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*Authors: Eric DeBoer, Ph.D., Louisiana State University, John McCalla, Mike Richardson, Ph.D., University of Arkansas, and Doug*

*Karcher, Ph.D., Ohio State University. Contact Eric DeBoer for more information at edeboe1@lsu.edu.*

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**Proper winterization procedure** is crucial to keep golf course irrigation systems running smoothly year round.

## How to avoid improper irrigation shutdowns

To prevent such shutdowns, superintendents should create systematic checklists with their purveyors

*By Chris Lewis*

Unfortunately, improper irrigation shutdowns can lead to devastating issues that will compound over time, including a higher frequency of breakdowns in all system components—from irrigation heads and pipes to pump stations and satellites.

As director of agronomy at the Country Club of Detroit, Ross Miller, CGCS, has witnessed these negative impacts firsthand.

“Improper irrigation shutdowns can cause a domino effect of issues, from exponentially higher than average costs for repair and maintenance of all facets, to subsequently higher labor and materials costs,” he says. “These issues then lead to challenges in the field, with regards to optimizing courses’ playability to the highest standards possible, while also overcoming budgeting ramifications.”

To avoid improper irrigation shutdowns in the first place, Miller advises superintendents to create systematic checklists in conjunction with all purveyors, such as their



**Ross Miller**

respective irrigation system providers and pump manufacturers. They have superintendents’ best interests in mind, along with vast knowledge of their equipment.

“This checklist should include compressor pressure during blowouts (40 PSI) and a process for draining and winterizing their pump station,” he adds. “It should also include the process for winterizing irrigation satellites so that pests won’t inhabit the irrigation system during the winter, leading to issues for the next season.”

Looking to the future, Miller believes improper irrigation shutdowns will decrease as more resources are available online and through vendors as they strive to educate their stakeholders.

“Furthermore, as each superintendent focuses on the consequences of improper irrigation shutdowns and fully understands each of them, they’ll continue to improve their shutdown processes,” he stresses. “And, in doing so, they’ll be able to optimize their irrigation system and extend its lifespan, ensuring they can maintain their operation’s largest infrastructure asset on a long-term basis.”



## Hunter Industries

### CARL EBERTS

Category Manager, Golf



As we approach the colder seasons, superintendents need to stay proactive, with regards to managing their irrigation systems and courses. If action is not taken to properly shut down irrigation, they'll risk severe damage to their entire system. The main pipe, valves, swing joints and rotors are susceptible to damage if excess water remains in the system and freezes. In addition, compressed air during the winterization process can damage other parts of the system, such as water meters, flow sensors and backflow devices. To avoid this, superintendents should ensure the air connection is downstream, in relation to these sensitive components. I recommend hiring a licensed contractor to perform the blowout process, due to the risks involved. Once pressure is completely expelled from the system, superintendents must also ensure that entry points for debris are never left open throughout the winter.

## Rain Bird

### CHRIS DUNLOP

Golf Specification Manager,  
Western U.S.



As winter approaches, it's essential for superintendents to safeguard their irrigation systems. For winterization success, they must have a well-defined plan that focuses on compressor selection, preliminary actions, final preparation and methodical movement. Each superintendent's compressor should be around 30 to 40 percent of their pump station's capacity and equipped with a pressure regulator set between 40 and 65 PSI. Superintendents must close their pump discharges, open their drain/vacuum valves and attach quick coupler keys several days before winterization occurs. They should also identify efficient compressor tap locations. On the day of winterization, superintendents should close air relief valves while leaving drain valves open for water ejection. They should connect compressors with steel connections and long hoses to dissipate heat. Superintendents must activate elevated stations farthest from their compressors prior to progressing through their pipe networks toward their compressors and finish at low points. Finally, close all drain valves and open all air relief valves, as control systems should remain operational.

## Arborjet | Ecologel

### MATT CAMPBELL

Southeast Regional Technical  
Manager



The best solution to any irrigation malfunction of any kind is being proactive. In most cases, while working with irrigation systems, the most successful approach lies with agronomy programs. Superintendents must create a moisture-managing buffer for stressful times. They should also understand their nitrogen curves' residual effects on plants during unexpected irrigation shutdowns. In addition, they must implement a daily moisture curve program — as soil moisture constantly changes throughout the day — to relieve excess nitrogen volatility, which may harm plants. Agronomic programs like these not only feature moisture-managing solutions, but also allow superintendents to overcome any potential plant health care risks that arise during unintentional irrigation shutdowns. By utilizing products like Hydretain, water will be readily available to plants throughout the inconsistencies of the moisture curve, thereby providing a buffer that lessens the risk of plant damage, which would have otherwise occurred during unexpected irrigation shutdowns.

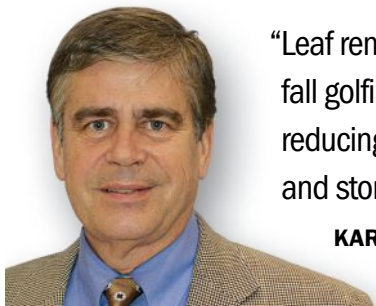
## Ewing Outdoor Supply

### BRIAN HURLEY

National Golf Sales Manager



A properly functioning irrigation system ensures that golf course turf remains healthy, as the appropriate amount of water is consistently applied. However, if improper shutdowns occur, turf can become vulnerable to poor coverage and playing conditions. Given the cost of irrigation systems, superintendents must strive to maintain them for as long as possible. After all, proper functioning is critical to each irrigation system's longevity. Most golf irrigation and pumping systems have plenty of advanced offerings that superintendents can utilize to avoid an improper shutdown. Aside from technology, by implementing proper flow management, water usage and control, superintendents can ensure their irrigation systems work in concert with their particular goals and schedules, as well as their team members' schedules. In turn, golfers will have the best possible playing conditions whenever they golf on their courses.



“Leaf removal is associated with improving fall golfing conditions as they shade the turf, reducing its photosynthetic ability to capture and store energy going into the winter.”

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

## The ‘why’ behind routine fall cleanup practices

**F**all is a critical time for the management of cool-season turfgrasses, as it is when the majority of turf recovery from prolonged summer stress occurs. Management practices initiated and continued through the fall influence turf recovery, winter stress preconditioning and enhance turf health entering the new year.

Fall is when we agronomically build back the golf course and prepare it for the trials and tribulations of next year.

Below, I list routine fall practices that you may often do without much thought to the significance they have on turf going into the winter.

### MOWING

It’s important to mow through the fall until growth has ceased. For cool-season turfgrasses, it’s important to mow within the optimum height range. In some cases, the height is raised with the idea of improving the cold hardiness of the turf.

For cool-season grasses, raising the height, or ceasing mowing before turfgrass growth may have little effect on cold tolerance. The higher height and excessive leaf tissue may instead enhance the occurrence and severity of *Microdochium* patch.

Raising the height of annual bluegrass putting greens helps reduce the severity of potential freeze smothering.

### CORING

The ideal time for fall coring is when turfgrass growth is active to promote quick recovery. Normally, this is late summer through Labor Day. Due to several circumstances, coring may be pushed later into the fall, where coring hole recovery becomes an issue.

At these times a clean, sharp tine punch on greens helps the core hole recover quicker. Think of the effects of cutting turf with a dull blade vs. a sharp blade. A dull blade results in a tearing or fraying action that requires the plant to spend more energy and time than a sharp cut does.

### SHADE AND WEAR

Tree shade is detrimental to turfgrass health. Leaf removal is associated with improving fall golfing conditions as they shade the turf, reducing its photosynthetic ability to capture and store energy going into the winter. Tree leaves left on the turf also result in wet conditions, favorable for disease development. The combined practices

of continuing to mow through the fall and leaf removal will help reduce the severity of *Microdochium* patch and enhance fungicide control applications.

Shaded turf, especially annual bluegrass, often has less cold tolerance going into winter. Shade removal not only enhances turfgrass growth in the summer but also improves winter turf health.

As vegetative turf growth slows and ceases in the fall, the potential for wear injury from golfers, golf cars and equipment increases. Anticipate areas that receive extensive traffic and develop procedures to divert golfers and golf cars that spread the wear more evenly over the turf and reduce the likelihood of damage to the turfgrass crown.

The creation of temporary greens is an important practice for protecting putting surfaces from late fall through late winter. The benefits of temporary greens are often reflected in the spring on the overall quality and lack of wear damage on the permanent greens.

### IRRIGATION AND DRAINAGE

If desiccation is an issue, water sufficiently (not excessively) the likely areas before the arrival of winter. The availability of soil moisture helps reduce desiccation severity.

Removing surface water or reducing soil saturation through drainage, is one of the primary ways to improve turfgrass health. Whether reducing the likelihood of freeze injury or saturated soil conditions during the summer, drainage is the primary method to achieve those goals. Although it is sometimes an afterthought, fall is the time to install drainage on your course.

Fall is associated with bright colors, shorter days and cooler temperatures. It’s also when football dominates the sports landscape. On the course, it’s time to get important work done. **G**

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





“This knowledge gap is particularly significant in water-scarce regions, where newer warm-season grass cultivars can help decrease water usage compared to their older counterparts.”

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

## The importance of location for warm-season grasses

**S**cientists have made substantial strides in enhancing the characteristics of warm-season turfgrasses, including drought resistance, winter color, cold tolerance and texture.

Nonetheless, while there have been advancements in drought tolerance, there remains a lack of comprehensive understanding regarding the irrigation requirements of recently developed cultivars of bermudagrass, zoysiagrass and buffalograss.

This knowledge gap is particularly significant in water-scarce regions, where newer warm-season grass cultivars can help decrease water usage compared to their older counterparts.

The USGA and National Turfgrass Evaluation Program (NTEP) collaborated on a warm-season grass water-use trial at eight U.S. locations from 2019 to 2022 to tackle this issue. This trial had two distinct approaches: one determined water requirements for maintaining quality, while the other assessed grass performance under reduced irrigation ET replacement levels.

The study involved 11 bermudagrass, four zoysiagrass and two buffalograss cultivars, maintained at a standard fairway height of 0.5 inches. The results provide valuable insights for turf managers seeking information on the water needs of specific warm-season turfgrass cultivars across

diverse climates and locations.

In the first approach, researchers summarized the daily water needs for each cultivar in the trial to maintain acceptable turf quality, averaged across the four study locations in inches per day.

The commercially available bermudagrass cultivars — TifTuf and Tahoma 31 — consistently outperformed others, demanding the least irrigation for acceptable turf quality at 0.02 inches per day. Tifway was close behind at 0.03 inches and the experimental FB-1628 did well. Monaco and Rio seed varieties averaged 0.04 inches daily across the four locations.

Within zoysiagrass cultivars, the experimental FAES 1306 displayed the lowest water requirement (0.04 inches per day), while the older Meyer had the highest (0.07 inches). Buffalograss cultivars Cody and Prestige generally fell within an intermediate range between the two species.

Bermudagrass cultivars Premier-PRO and Dog Tuff exhibited the highest water requirements at 0.08 inches daily. In Florida, five bermudagrass cultivars and one zoysiagrass cultivar did not require irrigation, possibly at-

tributed to local environmental factors and soil characteristics. While in Mississippi, zoysiagrass needed more than double the irrigation compared to most bermudagrass and buffalograss.

In the second approach, researchers conducted trials at four locations with different ET-based irrigation levels in separate sections. Each section received one of three levels, with three replications per ET level. Over four years, the chronic drought treatments were 30, 45 and 60 percent ET replacement, with frequencies adjusted based on location and rain events.

The trial locations assessed turfgrass quality for each cultivar under the three different irrigation levels, grading it on a scale ranging from 1 (poor) to 9 (perfect). Turfgrass performance varied significantly by location, emphasizing the importance of region-specific trials. TifTuf bermudagrass stood out as the top-performing cultivar, maintaining an average quality of 6.5 under the 30 percent ET. Tifway and Tahoma followed closely at 6.0 and 5.8 quality, respectively.

Buffalograss and zoysiagrass did not meet quality standards under the 30 percent ET regime across locations (excluding Florida). In New Mexico, TifTuf, Tahoma and Tifway performed well, while Texas favored Prestige and Cody. Despite a dry season, Florida exhibited acceptable quality for bermudagrass and zoysiagrass for all levels.

### TAKEAWAYS

This study highlights significant variations in water requirements among warm-season grasses, influenced by genetics, species, cultivar and location factors. When considering a renovation, conducting trials with various species and cultivars can help determine the best performance for your site and maintenance program. **G**

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

# No need to hunt at the Summit

Shawn Emerson, 2021 recipient of the Legends Award, talks about the unique format of the *Golfdom Summit*

BY BRIAN LOVE

Since its launch in 2011, the *Golfdom Summit* has been a place of introduction and connection for industry leaders and vendors, all while celebrating the maintenance side of golf.

A recurring attendee of the last few Summits is long-time superintendent Shawn Emerson, now a consultant at Ethos Club and Leisure. A second-generation superintendent who spent much of his career at Desert Mountain Club in Arizona, he now resides in Mooresville, N.C. Emerson says the *Golfdom Summit* is one of the best industry events he's ever attended, because the event allows for relationships to be built.

## Growing your network

Emerson is a member of the Legends Initiative, which honors superintendents for all they have accomplished in their careers. Other inductees include Bob Farren, CGCS, longtime superintendent at Pinehurst (N.C.) Resort; Tim Hiers, CGCS, White Oak Conservation, Yulee, Fla.; and Matt Shaffer, superintendent emeritus, Merion GC, Ardmore, Pa.

Emerson says the *Golfdom Summit* helped expand his



Networking opportunities, both with vendors and superintendents, are a favorite part of the *Golfdom Summit* among attendees.

ever-growing network.

"I was allowed to meet so many vendors and manufacturers along with superintendents that I could share my thoughts with," Emerson says. "I thought it was so neat because it exposes you to different views."

Though he isn't a superintendent these days, Emerson enjoys recommending vendors to his network of superintendents and trying to help them form new business relationships.

"I'm sure that I have recommended half of the vendors to different clubs or for people to call and set up business with," Emerson says.

## Trying new products

Emerson says the unique format of the Summit helps

attendees network, get into more detail about questions and learn how new products work. The meeting combines boardroom presentations with 1-on-1 meetings for all superintendents and vendors.

"Instead of reading about certain products or trying to hunt down a representative, you are actually in front of the people you want to talk to when you're at the Summit," Emerson says. "Sometimes, we get caught in the speed of our regions or become creatures of habit through meeting the same people and using the same things."

Companies he has recommended through the Summit include Turfco, Frost Inc., Husqvarna, Pogo TurfPro and Kafka Granite.

For Emerson, the Summit

is an opportunity to look at national-level products. With the vendors and superintendents present at the event, he can attempt to solve problems by recommending what he feels are the best products.

"I have a connection where I can put the people together," Emerson says. "I always say that superintendents need to be open to trying different things to improve themselves and their course. It's about looking to the future. A line that I use is, 'Some superintendents have 12 years of experience and some can have the same experience 12 times.'"

## Moving forward

Because of his membership in the Legends Initiative, Emerson gets to come back to the Summit each year.

"Though the vendors may be the same, it never feels stale because of the different superintendents who add a lot to the program," Emerson says. "You walk around the room and get to talk to your fellow peers to see how they handle situations."

The 2023 *Golfdom Summit* takes place Dec. 6 to 8 at Reunion Resort in Orlando. To apply to attend, visit [GolfdomSummit.com](https://GolfdomSummit.com). ©



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# The Shop

// MUST-HAVE NEW PRODUCTS



1



2



3

## 1 Trilo T1

Designed to transform a utility cart into a vacuum sweeper, the Trilo T1 vacuum from **STEC** is designed to be placed into the bed of the utility cart and can be removed at any time. The Trilop features a 13-foot suction hose that collects grass clippings, litter or leaves into its one-cubic-yard hopper. The self-contained unit requires no power from the vehicle it's mounted on. The slope design allows for compacted debris to funnel directly into the hopper and slide out when unloaded, allowing for easy maintenance and cleanout.

[STEEquipment.com](http://STEEquipment.com)

## 2 Turfcide 400

Turfcide 400 from **AMGUARD** offers golf course superintendents increased control of pink, grey and speckled snow mold. With the active ingredient PCNB, Turfcide 400 is a multi-site contact fungicide labeled for use on greens, tees and fairways. The product is also effective against anthracnose, brown patch, dollar spot and leaf spot according to the company.

[AmGuardTech.com](http://AmGuardTech.com)

## 3 Spray Caddie Golf Cup Cover

The Spray Caddie Golf Cup Cover keeps the golf cup clean during topdressing and liquid spray applications. **SPRAY CADDIE** shields staff and golfers from touching chemicals and other liquid spray applications that could discolor the inside of the cup. It prevents the accumulation of sand in the golf hole during topdressing on golf greens. The cover is suitable for standard golf greens and multi-hole practice facilities. It works for any sand or liquid spray application such as a colorant, fertilizer, herbicide, PGRs and more.

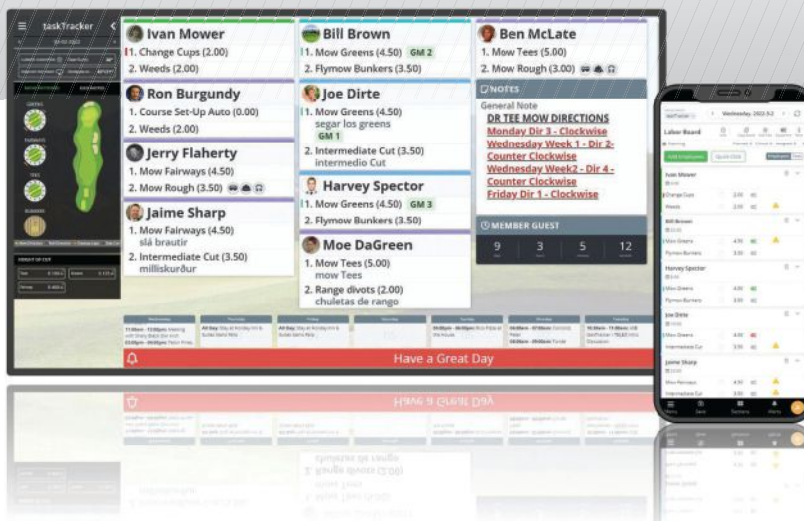
[SprayCaddie.com](http://SprayCaddie.com)



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4



5



### 4 | A4 glove

With a high-density polyethylene knit shell, the A4 glove from **BRASS KNUCKLE** provides ANSI cut-level protection without bulk and a strength-to-weight ratio of 8 to 15 times higher than steel. The gloves also feature SmartCut, adding improved grip, moisture protection and a high degree of dexterity. A water-based polyurethane coating as a palm and finger base coat helps reduce the penetration of liquids, including light oil and secures grip with a foam nitrile topcoat, for working with oils and fuels.

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

### 5 | taskTracker

The taskTracker software from **ADVANCED SCOREBOARDS** allows golf course superintendents to store all their relevant data in one spot. According to the company, taskTracker is designed to answer the tough questions about where money is being spent without adding more work. The software also allows users to send out mass communications to staff and the ability to translate a job description into an employee's native language.

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

### 6 | Acelepryn Xtra

Now available for use on golf courses, Acelepryn Xtra from **SYNGENTA** features two modes of action with the active ingredients chlorantraniliprole and thiamethoxam. The product offers superintendents season-long control of grubs, billbugs and turf caterpillars, curative grub control and more. Acelepryn Xtra improves upon the original with a wider application window according to the company.

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

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



## Brad Wunderlich

**CGCS, DIRECTOR OF GROUNDS AND AGRONOMY** // Edgewood Lake Tahoe GC, Stateline, Nev.



**Brad, drinks are on me, what are you having?** A Corona.



**Tell me about the course.** Edgewood is a George Fazio course built in 1968. There is a lot of history at this course, the land was originally purchased to raise cattle on in 1895 by the Park family, who still own the property. It's the only golf course on the shore of Lake Tahoe. We've hosted the American Century Championship for 31 years, as well as the 1985 U.S. Senior Open. Countless celebrities and players such as Tiger Woods and Phil Mickelson have visited over the years.

**Do you have a family, and what do you all do for fun?** My wife and I have been married five years. We have a daughter, Charli — she's three. We have a boat, so when I'm not working, we try and spend as much time as we can on the lake.

**How did you end up at Colorado State?** I started working on a golf course while in high school in St. Louis. I wanted to get away from the Midwest, and I loved the mountains in Colorado, so I started looking at schools. I just fell in love with the campus as soon as I was there. They had a turf program, so that helped.

BROUGHT TO YOU BY



### // BEST ADVICE

**"THE FIRST SUPERINTENDENT I WORKED FOR WAS OLD SCHOOL. HE DIDN'T GO TO TURF SCHOOL, HE JUST WORKED HARD AND WORKED HIS WAY UP. THAT ALWAYS STOOD OUT TO ME. I TRY TO BE REALLY INVOLVED WITH MY CREW AND SHOW THEM THAT I'M NOT ABOVE THE WORK THAT THEY'RE DOING."**



**Do you have any traditions with the crew?** Most of the crew is seasonal, so we have an end-of-the-season barbecue every year. We play games, like a water balloon toss or an egg toss. There's always someone rolling around on the ground in laughter because someone took an egg right in the face. It's a good opportunity to get away from everything and let loose for an afternoon.

**Do you have a favorite moment in sports?** Game 5 of the 2005 NLCS ... St. Louis versus Houston. The Cardinals were down to their last out, and the fans were going crazy. They thought they had won. Then, Albert Pujols hits a three-run bomb all the way to the railroad tracks. All of a sudden, you could hear a pin drop. In the interview after the game, Pujols said he looked into the dugout and

was mad they were already celebrating.

**Do you have a most memorable day at work?** One that really stands out was during the celebrity tournament. Justin Timberlake was going to fly to Orlando to perform a concert, so he went off here real early to get his round in, fly out and get back for the next round. We had to get everything ready for him ahead of time, so we're rushing. And he's rushing, playing as fast as he can. We had a demo fairway unit we were using. Halfway through the 10th fairway, it just shut off. The rules official, the marshal, they're yelling at us, 'Hey, Timberlake is on the way, get that mower out of the way!' We basically hooked a cable up to it and dragged it off as the balls were landing.

As interviewed by Seth Jones, July 13, 2023.

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