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THE *GOLFDOM* REPORT



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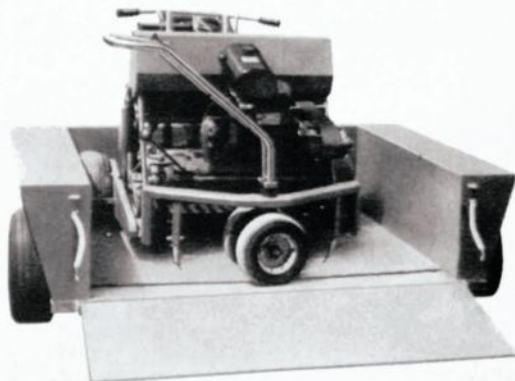
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THE Golfdom Report

Confidence in the game is high, but outside factors — supply chain disruption, inflation, labor — keeps superintendents on high alert

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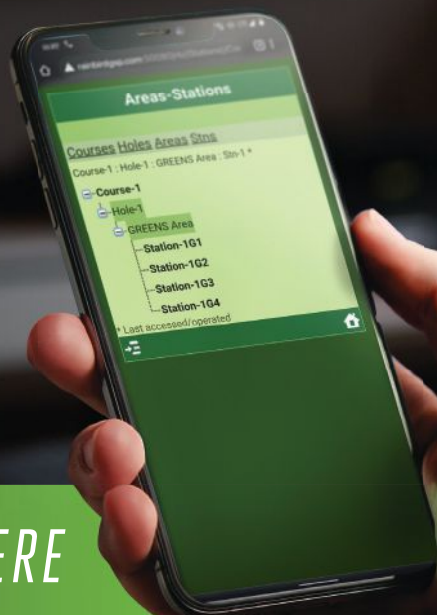
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"I told my kids, that's about the weirdest 24 hours I've had of seeing things in the sky. Now, I'm thinking the sky is only getting stranger."

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

Eyes on the sky

I want to tell you about a strange 24 hours, and hopefully by the end of my story, you don't envision me writing while wearing a tinfoil hat.

It's a Friday afternoon in mid-December and I'm walking out the front door of my house. Something catches my eye up the hill in front of me. It's two helicopters, and they're low. I holler for my daughter to get outside quick, and she gets there in time for the flyover. Two army helicopters scream by our house, lower than we've ever seen. Chinooks regularly train in the area, but this was a much different scene.

That night I'm sitting outside with my wife under the propane heater, enjoying a beautiful mild December evening. In the southern sky my eye catches something, at first glance, a comet? I step into the side yard to get away from the garage lights and I realize I'm seeing — for the first time — Starlink.

If you haven't seen Starlink, or don't know what it is, check out a video on YouTube. It's uncanny! About 25 bright lights in the sky, all in a line, slowly chugging across the darkness. If I wasn't already familiar with it, I know I would have asked myself if this was an alien invasion. (Instead, I'm asking, how quickly can Elon Musk get high-speed internet to rural Kansas, because we could sure use it.)

The next morning the whole family is starting a road trip to Joplin, Mo. We're less than 5 minutes into the drive when my daughter says, "Dad ... are those jets?" I look to the west and we have four old military planes in a diamond formation, with a helicopter following. The planes flew directly overhead, then banked

to the north and turned on the smoke. This is in the random northeast Kansas countryside! There was no football game about to kickoff anywhere that I know of.

I told my kids, that's about the weirdest 24 hours I've had of seeing things in the sky.

Now, I'm thinking the sky is only getting stranger.

We had a *Golfdom* Summit attendee miss our event because of the severe storms that slammed Hawaii, creating a state of emergency on the islands. On the flight home from the Summit, I looked online and noticed that our flight pattern was less direct than normal. Then I looked out my window and saw a gigantic storm with an incredible amount of lightning, so crazy I took a video of it.

After I turned on the TV the next morning, I learned about all those tornadoes ripping across five states, including the massive destruction in Kentucky, which sadly took the lives of dozens.

Typically, I write my columns at night, next door in the garage, with the jukebox on. I couldn't do that last night because we had wind gusts of up to 74 mph here in northeast Kansas, along with a thunderstorm ... something I don't remember seeing in December in Kansas. We also had a daytime high of 72 degrees here, another abnormality. Power was knocked out for almost four hours, putting a crimp in my tradition of nighttime writing with the jukebox singing a soundtrack. It's like, go to bed, Mother Nature ... you're drunk.

For this first issue of *Golfdom* for 2022, I spoke with superintendents about their concerns for the new year. That story appears on page 10. I was surprised that no one said anything to me about the weather. Maybe that's because superintendents are just used to dealing with whatever Mother Nature gives them. But I can't help but wonder ... how much weirder is the weather going to get in '22 and beyond?

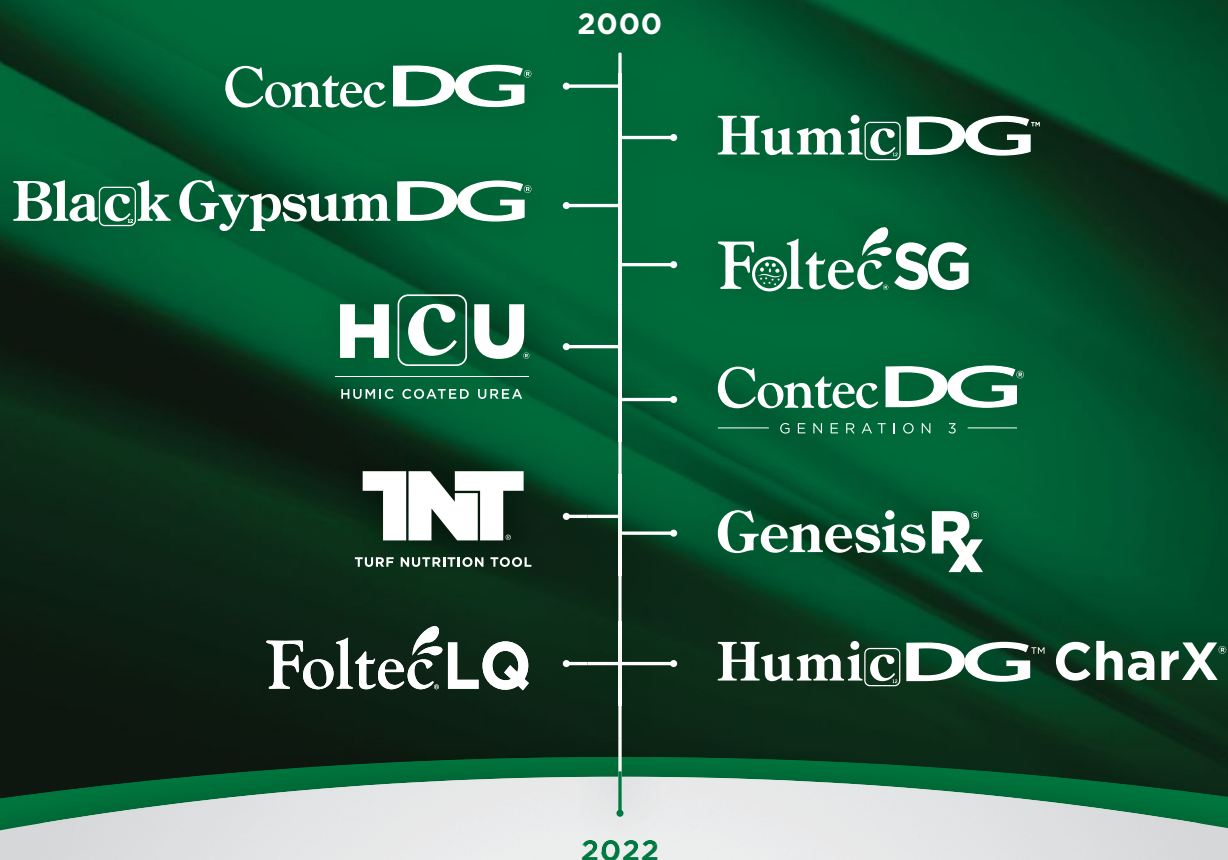
Now, excuse me while I go out and check for wind damage. While I'm out there I better check my trail camera. I've got a feeling Bigfoot is going to stroll by any day now. **G**

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Starter

NEWS, NOTES AND QUOTES



// EXTRAORDINARY GENTLEMAN



(Left to right) Matt Shaffer, Bob Farren, CGCS, Shawn Emerson, Anuvia Chief Commercial Office Hugh MacGillivray and Seth Jones.

EMERSON'S LEGENDARY MOMENT

AFTER A LONG WAIT, SHAWN EMERSON INDUCTED IN ANUVIA'S LEGENDS INITIATIVE

BY SETH JONES // Editor-in-Chief

➔ Though the news was a year old, the induction ceremony was worth the wait.

At the 2021 *Golfdom* Summit in Orlando, previous Legends inductees Matt Shaffer and Bob Farren, CGCS, took the stage to honor longtime superintendent Shawn Emerson. The three discussed the industry, shared words of wisdom and told tales from their storied careers to enrapture the *Golfdom* Summit audience.

"My dad told me this, and I'll give this advice to you all," Emerson said in a closing comment. "If you're 30, know someone that's 40. If you're 40, know someone that's 50. And if you're 50, know someone that's 60. Because you'll need that advice as you move along in your career."

Shaffer, longtime superintendent at Merion GC, Ardmore, Pa., and

host superintendent of the 2013 U.S. Open, and Farren, longtime director of grounds at Pinehurst (N.C.) Resort and host superintendent of the back-to-back men's and women's U.S. Opens in 2014 (and inaugural winner of GC-SAA's Col. John Morley Award — see sidebar) helped Emerson commemorate the honor with their own reflections on the industry.

"It was awesome, especially getting to be with Bob and Matt the entire time," Emerson said of the event and ceremony. "I'm not kidding, I had 10 to 15 people ask me about some of the things we talked about the next day. I think it resonated with people."

A full video of the ceremony will be posted online from program sponsor Anuvia Plant Nutrients. Audubon International and *Golfdom* co-sponsor the program alongside Anuvia.

// LIVE AND IN PERSON

CAROLINAS SHOW A SUCCESS IN RETURN

The Carolinas Golf Course Superintendents Association (GCSA) Conference and Trade Show returned with a crowd of nearly 1,800 people in attendance.

After a year off because of the pandemic, the comeback show was held from Nov. 15-17 in Myrtle Beach, S.C. The turnout and the breadth of industry partner support confirmed the event's status as the preeminent regional gathering for golf course maintenance professionals.

"For once, we didn't break any records, but by any numerical measure — attendance, exhibitor support, overall participation, you name it — it was still a hugely successful show," Carolinas GCSA Executive Director Tim Kreger said. "Most importantly though, we brought people together again, face to face, and they loved it. We all loved it. From start to finish, the atmosphere was incredible."

// ANOTHER YEAR, ANOTHER ACCOLADE

GCSAA NAMES INAUGURAL COL. JOHN MORLEY AWARD RECIPIENT

Robert Farren Jr., CGCS, Pinehurst (N.C.) Resort, will be recognized with the GCSAA's award that recognizes a significant contribution to the advancement of the golf course superintendent's profession.

The Col. John Morley Award, named for GCSAA's founder, was revamped in 2021 and is now presented annually to an individual who is or has been a GCSAA Class A or B superintendent member.

Other accolades Farren has received include GCSAA's President's Award for Environmental Stewardship in 2007; *Golf Digest's* Green Star Award for outstanding environmental practices in 2014; Anuvia's Legends Award in 2018 and induction into the Carolinas Golf Hall of Fame in 2018. Farren is or has been a USGA Green Section committee member, on the Bayer Green Start Academy advisory board, a member of the Musser International Turfgrass Foundation board of directors, a board member of the First Tee of Sandhills and chair of the Village of Pinehurst Historic Preservation Commission.

// SCREEN TIME

Virtually networking at #SBI21

➔ Syngenta Business Institute (SBI) returned this year with a mix of popular sessions and more opportunities for virtual attendees to network. #SBI21 kicked off with a session on managing teams and individuals, led by Sherry Moss, Ph.D., professor of organizational studies at Wake Forest University.

Amy Wallis, Ph.D., professor of practice in organizational behavior at Wake Forest University, kicked off the second day of programming by encouraging attendees to think beyond the management of employees and understand cultural and generational differences among crews. Attendees talked through scenarios in virtual breakout rooms to further the discussions on culture and leadership.

Syngenta Business Institute also brought some of the popular parts of its in-person events with roundtable

discussions and a virtual escape room event to encourage more networking.

A key component of any superintendent's job is negotiations and financial management. Sessions on the third and fourth day hit on those topics. John Sumanth, associate professor of management at Wake Forest University, led attendees through several breakout sessions aimed to help superintendents perfect their negotiation skills. Rob Nash, professor in finance at Wake Forest University, then took the skills the attendees learned from Sumanth and parlayed them into financial management best practices.

To close out the week, Julie Wayne, professor of business at Wake Forest University, led a discussion on work-life balance, something superintendents say they struggle with.

"Balance is not one size fits all," Wayne said.



// OPPORTUNITIES ABOUND

THE COUNTRY CLUB CREATES LEE ELDER INTERNSHIP

The Country Club, Brookline, Mass., in partnership with the United States Golf Association (USGA), established the Lee Elder Internship, a one-week immersive experience at the 2022 U.S. Open at The Country Club.

Named for one of golf's true trailblazers, the innovative program is designed to introduce under-represented youth to the game and its core values, while also showcasing golf's many career pathways. Over the course of a week, 25 individuals will be exposed to multiple facets of the business of golf and gain firsthand experience and insight from industry leaders. The daily curriculum will cover tournament operations, media, course maintenance and design, sales and marketing, facility operations and management and other relevant topics.

Elder was a pioneer in integrating golf and laying the groundwork for generations that followed. He was the first African American golfer to play in The Masters and the first to play on a United States Ryder Cup team. In 2019, he became the first African American to receive the USGA's Bob Jones Award.

// ALL SETTLED

BRIGGS & STRATTON, HUSQVARNA SETTLE

Husqvarna Group and Briggs & Stratton have reached a settlement in regard to the supply of engines for ride-on mowers.

Under the terms of the settlement, Briggs & Stratton will provide the majority of the engines needed ahead of the 2022 season. Additionally, the parties have agreed to maintain a modified supply relationship into the 2023 season.

Husqvarna Group previously communicated a potentially negative financial impact of a \$224 million USD loss in 2022 as a result of a lack of engine supply. In September, Husqvarna filed a lawsuit in South Carolina to compel Briggs & Stratton to deliver all engines covered by its orders. Husqvarna has withdrawn the lawsuit with this settlement.



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THE *GOLF*DOM

Confidence in the game is high, but outside factors — supply chain disruptions, inflation, labor — keeps superintendents on high alert

► **BY SETH JONES**

“At this point in my career, nothing surprises me anymore.”

That’s what one superintendent told us when we asked readers to tell us about the craziest thing 2021 brought to the fairways.

So, let’s recap: A global pandemic injects new life into the game. Then a supply chain crisis delays deliveries across all industries. Inflation rates spike, sending prices and hourly wages out of control.

Yeah, 2020 was crazy, but then 2021 told it, “hold my beer.” What’s in store for 2022?

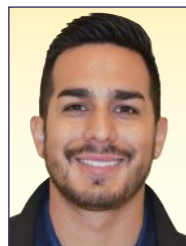
For the 2022 *Golfdom* Report, we asked readers what their expectations were for 2022, and what their biggest concerns are for the upcoming season. Other topics include labor challenges and rounds played.

This year, 233 readers took our State of the Industry Report survey. As a thank you, we donated \$500 to the Wee One Foundation. In future issues, we’ll share more results from the survey to questions like, “how do you feel about the potential for robotic mowers?” and “did you get a thank you on Thank a Superintendent Day?”

High hopes for '22

Participants in our survey were overwhelmingly optimistic for the upcoming season. Almost half of all respondents chose “very optimistic,” while 37 percent chose “slightly optimistic.” Only 5 percent of respondents chose a pessimistic option.

A whopping 77 percent also reported that rounds played were up at their facilities, while 16 said they were level. Only 7 percent of respondents said they saw a decrease.



Jason Fuertes

Chad Yotter, grounds superintendent at Mayfield CC, South Euclid, Ohio, says that golf proved it is a resilient game, and the way the

“We went from 70,000 to 80,000 rounds a year, between the two courses, to now we’ll hit 120,000 rounds. It’s crazy,” says Jason Fuertes, superintendent at Industry Hills GC at Pacific Palms Resort in Fullerton, Calif. “It was the busiest season ever at the property, and it went from January all the way to December, nonstop. I see it continuing.”

Chad Yotter, grounds superintendent at Mayfield CC, South Euclid, Ohio, says that golf proved it is a resilient game, and the way the

Continued on page 12

REPORT



The expectations of what we have of the club, of my team and myself are still at an all-time high. I don't see that changing."

Shaun Marcellus

Wanumetonomy G&CC, Middleton, R.I.

Continued from page 10

game has progressed the last two seasons emphasizes that.

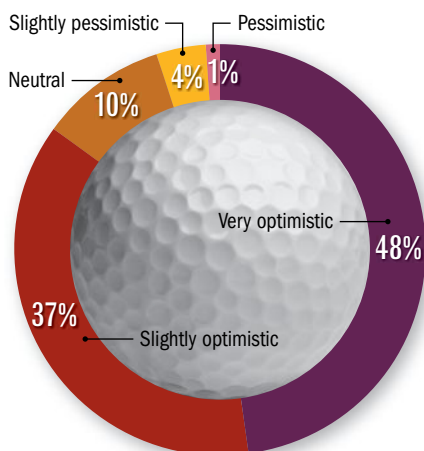
"I think (the outlook) is positive for sure. I don't see any kind of letdown coming from this year moving forward," Yotter says. "Especially with the new interest. It's great seeing new members out there. Many people just got through with their first year as members, and I expect to see them out there again next year. There was a seed planted with COVID."



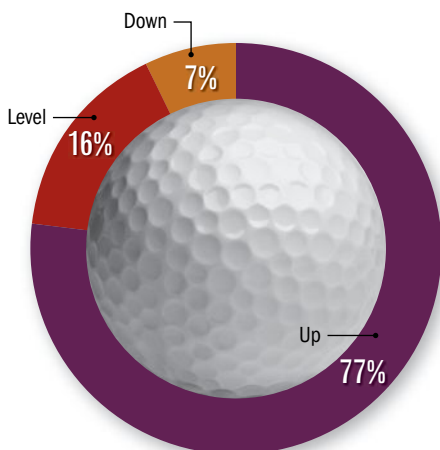
Chad Yotter

Cory Griess, superintendent at Prairie Dunes CC, Hutchinson, Kan., calls the spike in rounds played "a good problem to have," but

What are your expectations for the golf economy in 2022?



In 2021, were rounds up or down at your facility?



"We're going to have to be creative because we're not going to be able to get what we want when we want it."

Steven Ball
Ballyhack GC, Roanoke, Va.

wonders if the end is in sight.

"I could see a plateau in play. I don't want to be a pessimist, but it's probably got to slow down at some point," he says. "At least it's going great, but we're to the point of, we don't need this much play."



Cory Griess

Steven Ball, director of agronomy, Ballyhack GC, Roanoke, Va., agrees that a leveling off of the game could be forthcoming.

"We're going to continue to see it high in '22. You'll still see a lot of people working from home, and that interest in golf that was created by the pandemic; people got into it while they had extra free time, and they wanted to get outdoors," he says. "(But) I think rounds will about level out. I think we're super high right now."

For Fuertes, the increase in golfers is one thing, but another thing is the increase in the *kind* of golfers. Less experienced golfers mean more maintenance headaches for him and his team.

"We have a lot of new golfers, and they don't know what it takes to keep up the golf course, the simple stuff, the rules of golf, fixing ball marks, those things," he says. "From an agromomic standpoint, we had a lot of cart traffic. I'm sure that's an issue everywhere."

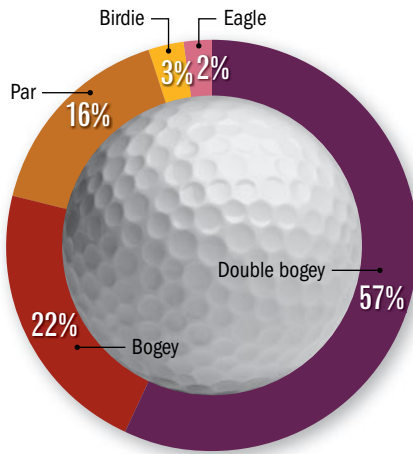
"Then again, you become accustomed to it," Fuertes adds. "You just have to be happy that they're out there and giving us the rounds that we need."

Beyond the game

While the popularity of the game and what it means to a course's bottom line was celebrated among readers, what has them worrying are those national issues occupying the evening news. Supply chain challenges, inflation and labor were common concerns. These are problems that go beyond the game.

These national storylines have superintendents on high alert. It also has them clearly

► How would you rate President Biden's year in office, if it were a golf score?



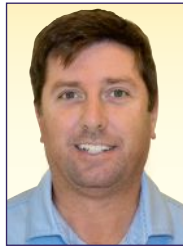
dissatisfied with the current administration. A look at the 2022 survey shows a majority of readers (79 percent) would leave President Joe Biden in the locker room over having him join their scramble.

Shaun Marcellus, superintendent at Wanumetonomy G&CC in Middletown, R.I., says the volatile economy and fluctuating prices are his biggest concerns for 2022. He says a colleague recently bought a piece of equipment for \$60,000. Two months later, he inquired about a second machine, and the price tag had gone up \$15,000.

"Labor is obviously a big part of that, but looking at equipment and inflation ... everyone's costs are going up. Everybody's raw materials in every industry, the inflation has gone up so high. How do you combat that?" he asks. "The cost of living and inflation making everything go up, at some point, is going to hit every club pretty hard."

Patrick Hensley is going into his second season at Towhee Club in Spring Hill, Tenn. Early on, he wanted to update the equipment at the club, only to learn it would be a waiting game.

"We ordered a new



Shaun Marcellus



Patrick Hensley

package in February. We didn't finish receiving everything until October," he says. "I've just ordered another smaller package from a smaller dealer, and they're telling me June or July (of 2022)."

Steve Shand, superintendent, The Cliffs at Walnut Cove, Asheville, N.C., knows exactly what Hensley is going through. He says supply chain is his No. 1 concern going into 2022, and everyone he knows has a similar feeling.

"We booked equipment in August, and we were told we'll get it next summer," Shand says. "I guess I better stock up on parts for the old stuff!"



Steve Shand

A scary situation

Those who have worked for Kyle Callahan know he can be demanding of his crew. He can be tough, but it comes down to him wanting the best conditions possible for the golf course. That means he needs the best from his employees. That's what he's used to getting, at his previous job at Victoria National in Newburgh, Ind., and at his current role as director of golf course and grounds at Thornblade Club in Greer, S.C.

Despite his tough demeanor, his protégés might be surprised to hear how Callahan feels about 2022.

"I'm scared," Callahan says. "Golf is doing excellent. Our club went from 76 on the resignation list, to we now have a waitlist. The labor market is what scares me. We're trying to figure out how to do more with less, and we've been doing that. Now, I don't know if we'll be able to meet the expectations and demands with the number of golfers. The more golfers they're adding, the more you're going to have to be accommodating, and that scares me a little bit."

Callahan says his club has raised its base hourly wage by \$4 an hour, and another \$1 increase is coming soon. He's still having trouble getting people to walk through the maintenance building's door.



Kyle Callahan

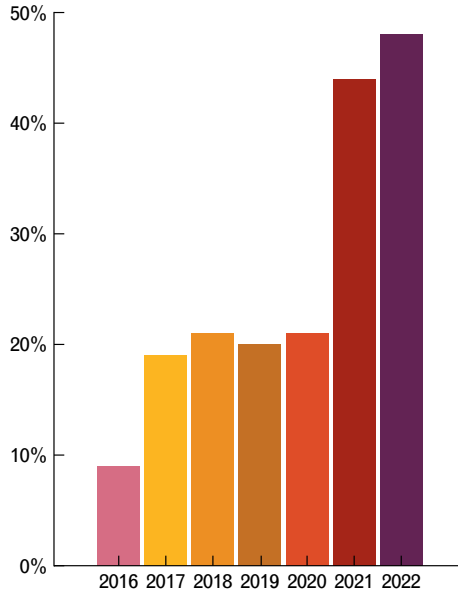
"We're going to have to adjust our agronomic practices for traffic and keep things moving. There won't be a reprieve anymore."

Steve Shand

The Cliffs at Walnut Cove,
Asheville, N.C.

Continued on page 14

■ Percentage of respondents who answered they were “very optimistic” for the upcoming golf season, over the last seven years.



Continued from page 13

Shaun Marcellus worries that McDonald’s can pay an entry-level employee \$15 an hour to flip a burger, while his employees need to be much more refined and precise in the way they do their job. However, when it comes to the beauty of a golf course compared to the view on the inside of a fast-food kitchen, there’s no contest.

“I really hope the trend of the industry is how to fix the labor element. It ends up, how do you get people engaged in golf?” Marcellus asks. “I’ve been working with (industry workforce development consultant) Tyler Bloom, and we talk about apprenticeships, and kids who don’t want to go to school. And they’re not good at school. I was kind of one of those kids. I’m hands-on; I learn that way. How do you get that group, reach them and find them? It’s developing them because the roundabout answer is you’re always going to need people.”

Whether it’s 2022 or 2032, the challenges will be there. So will superintendents.

“Labor will always be a pain. As superintendents, we’ve always had to deal with challenges. That’s what makes us tough,” Yotter says. “Labor, whatever weather you throw out ... we still get the job done.”

YOU SAID IT

We asked readers, what was the craziest thing you saw in 2021? Here are a few answers.

“The ever-increasing lack of etiquette on the golf course.”

“FOUR GOLFERS, FOUR CARTS.”

“Twelve people maintaining a 36-hole facility!”

“ONE OF THE NEIGHBORS CUT DOWN 16 OF OUR TREES!”

“A complete disregard for basic course etiquette at a level never seen before.”

“FREEZE IN FEBRUARY 2021 KILLED 110 PALM TREES. AT THE COURSE DOWN THE ROAD, IT KILLED 600 PALM TREES.”

“A hawk trying to fly away with my dog.”

“My 80-year-old dad, and course owner, working every day.”

“I don’t see any kind of a letdown coming from this year moving forward, especially with new interest.”

Chad Yotter

Mayfield CC, South Euclid, Ohio



Should I stay or should I go

BY SETH JONES

Hey, we get it. It's 2022, and it's easy to say no to things. Junior has a cough; better stay home. They might make me wear a mask when I get there; not getting on the plane.

But after a year off, and as events like the Carolinas GCSA Conference & Show and the *Golf-dom* Summit were huge hits, it's time to consider heading out west to the first in-person GCSAA Conference and Show since February 2020.

Should you stay or should you go to San Diego? As The Clash sang, "If I go there will be trouble, and if I stay it will be double." We don't know how true that is, but we hope to see you there. Here are a few things to take into consideration when making your decision.

GO!

The GCSAA Golf Championships are being played at Torrey Pines, site of Tiger's memorable 2008 U.S. Open win over Rocco Mediate and more recently, the 2021 U.S. Open won by Jon Rahm.

That's an easy "go!" Is the rest of this story going to be that easy?

Stay?

While San Diego is known as "America's finest city," the state of California might be known as America's most stringent when it comes to the pandemic. Whatever your beliefs are regarding COVID-19, this makes hosting a trade show in the state complicated.

To San Diego?
We try to help with that answer in this GCSAA Conference and Show preview

Continued on page 16

// CONFERENCE AND SHOW PREVIEW

Continued from page 15

GCSAA CEO Rhett Evans acknowledges that taking the show to California presents challenges, but says his team at GCSAA headquarters in Lawrence, Kan., is prepared to adapt.

“California, just when it comes to their mandates, comes to their regulations, they’ve been



Rhett Evans

much more strict than other states,” Evans says. “We knew that going into it. We’d already chosen the venue years before the pandemic, but we’ve had the right mindset. When you look at some

of our key activities where we bring a lot of people together in a setting that’s around networking and being together, we’ve done, I think, a really good job.

We were able to secure the Marina Terrace at the Marriott Marquis. That’s an outdoor venue facing the Bay, so the closing celebration where we’re going to be recognizing our Old Tom Morris Award winner will be outdoors, so no mask required there.”

Did Evans say masks? Yes, he did. As of press time, California enacted a mandate that for indoor events of 1,000 people or more, masks are required. That mandate expires on Jan. 15, and Evans is hopeful it is not renewed, but if it is, he adds that along with the closing celebration, the welcoming reception will be on the USS Midway — an outdoor venue — where masks would not be required.

Can't go?

And what about people who have not been vaccinated? Are they uninvited to attend the 2022

Continued on page 50



LEGENDS INITIATIVE

Started by Anuvia, and co-sponsored by Audubon International and *Golfdom*, the Legends Initiative celebrates superintendents who have gone above and beyond in their careers — not just in maintaining tremendous golf courses, but also in their contributions to the industry, creative problem solving and mentorship. *Golfdom* sat down with the newest Anuvia Legend, Tim Hiers, who will be honored at the 2022 GCSAA Conference & Show.

Widely regarded as one of the top superintendents in the nation, Hiers is a pioneer of sustainable golf course management practices. He guided Collier's Reserve CC in becoming the nation's first Audubon International Cooperative Signature Sanctuary Golf Course. In 2000, Hiers joined Old Collier GC and led the effort to grass the entire course with a new variety of Paspalum, which enabled the entire course to be irrigated with brackish water.

A superintendent since 1976, Hiers has served as an educator and mentor to hundreds. *Golfdom* visited with Hiers to discuss his career and how it feels to be joining the growing list of Legends.

Golfdom: What was your reaction when Matt (Shaffer, longtime Merion GC superintendent) called and told you that you were the new Legend?

Hiers: You're not expecting to get that phone call. I knew about (the Legends Initiative) because a lot of those guys, like Marsh Benson and David Stone, are good friends of mine. Matt was just very gracious and kind and encouraging. It was a fun phone call. You don't get many of those.

Golfdom: You're in your 45th year as a superintendent and you have a wall full of industry awards, including the USGA Green Section Award. How did you first find your way into what has now become such a decorated career?

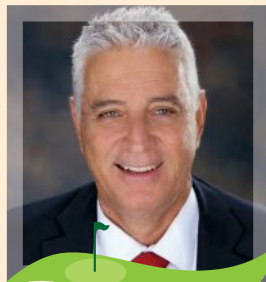
Hiers: My dad was a preacher, a teacher, an organic farmer and a fisherman, so I spent most of my life outdoors. Basically, it was natural ... and I think this is the way with a lot of superintendents, they want to be outdoors because we like the soil, the water, the air, the animals, the birds. My dream when I was younger, I wanted to be a train engineer, but then I played golf in high school, in a little community college, and then I made the transition, I wanted to go on the PGA Tour. The bottom line was, I just wasn't good enough. My golf pro Marvin Harvey said, "Now, why don't you go to school and get a degree in turf maintenance, work on the golf course? You can practice every afternoon and work your way to the Tour that way." He knew what I didn't know then: I had zero chance of making it on the PGA Tour.

Golfdom: You've won multiple environmental awards, including the 1995 GCSAA President's Environmental Leadership Award. What motivated you to become such an advocate for sustainable practices?

Hiers: It was 1978, and a guy named Ronald Arnold published an article called, "The Politics of Environmentalism." I read that article. He set me on a different path because I set up a mission to prove to the public that golf was not bad, but actually great for the environment. Ever since that time, that's what I've strived to do. To learn more than just golf, to learn what a precocial bird is, what an altricial bird is, what is meant by carrying capacity, edge habitat, the four vitals of the golf course: food, cover, water, space and the quality of that, how you measure it, interspersed. I learned not just to memorize, but learn. I learned how to be environmentally proactive.

Golfdom: You have a huge network of people who have worked for you who have gone on to do great things in the industry. How have you helped others excel?

Hiers: I was never afraid to (hire) anybody that was smarter than me; that did not intimidate me. I always told my wife, "If they can take my job, they can have it." Just in Naples alone, I've got six former employees that are at top clubs right now who are superintendents. If I've got one gift, it's the ability to pick people who want to excel in what they do ... and not mess them up. You try to teach someone as much as you know, but they've got to learn some things on their own. So, with these guys here, I try to make every day a teaching day, and ask, "Why do you think we're doing this?" I don't tell them why, I ask them what they think.



TIM HIERS, CGCS
Director of Agronomy
White Oak Conservation, Yulee, Fla.

"California, just when it comes to their mandates, comes to their regulations, they've been much more strict than other states. We knew that going into it. We'd already chosen the venue years before the pandemic, but we've had the right mindset."

— GCSAA CEO Rhett Evans

PRODUCT SHOWCASE



ANUVIA PLANT NUTRIENTS

Q+A with **John Fowler**
Vice president of sales — golf market

What makes Greener different from other fertilizers?

First is sustainability. GreenTRX™, is an enhanced-efficiency bio-based plant nutrient product, which is USDA certified 87 percent bio-based. GreenTRX reduces leaching and volatilization, which lessens the environmental risk to lakes, rivers, streams and air. GreenTRX also returns 16 percent organic matter back to the soil, which improves soil health.

Secondly, it's a new innovation in slow-release fertilizers. GreenTRX is made by using organic materials to create a novel slow-release mechanism called the Organic MaTRX™. Approximately 65 percent of N is released within the first month in the form of NH₄, which provides quick safe greening. The balance of N becomes available as the Organic MaTRX is slowly broken down in the soil, delivering nutrients over six to eight weeks, providing quick and continuous feeding for greener grass longer.



What nutrients are in GreenTRX?

GreenTRX has nitrogen, sulfur and iron. All the nutrients are in plant-available forms. The multinutrient product delivers this balanced nutrition for quick uniform deep greening that lasts. Its iron improves color and performance; sulfate sulfur improves plant health; and the ammonium N is the most efficient form of nitrogen. This form of nitrogen is less susceptible to leaching as indicated in recent studies that show a 50 percent reduction in N leaching compared to urea and a 39.9 percent reduction compared to ammonium sulfate.

When can you use GreenTRX?

GreenTRX is an all-season product with excellent turf safety. In the spring, it provides a quick response and exceptional greening when soil temperatures are low. Apply in the summer for continued greening with excellent turf safety, or it can be used in the fall as a dormant feed to prepare turf for next spring. Because it improves plant and soil health, it is an excellent tool for turf renovation and turf recovery programs.



How does this product impact golfers who love the sport?

GreenTRX makes the course look great and play great while protecting the environment. It's a sustainable approach to turf health that's easy to use and doesn't sacrifice results. Turf truly is greener, faster, longer.

Don't miss *The Legends Initiative* open conversation with our industry's Legends Initiative notables such as Bob Farren, Ted Horton, Shawn Emerson and Matt Shaffer, moderated by *Golfdom's* Seth Jones — all taking place on Wednesday, Feb. 9 at 3:30 p.m. Booth No. 4151 followed by an open bar.

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GREENTRX™

**TURF'S
GREENER
FUTURE**

PRODUCT SHOWCASE



DRYJECT

Q+A

with **John Paddock**
Owner and president

How does your service save golf course 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 golf course 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.

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**The revolutionary DryJect service is now even more flexible.
Our most recent innovation allows you to use dry sand
OR wet sand and achieve the same remarkable results.**

DryJect will no longer be limited to the use of only kiln dried sand!

Through extensive research and development, we have engineered a special hopper configuration that includes rotating agitation and staged screening with vibratory assistance to assure affective flow of anywhere from slightly damp sand to wet sand.



Wet Sand, Damp Sand,
Dry Sand, No Problem



Rain or Shine
Capabilities



Cost Savings
Opportunities Now
Available

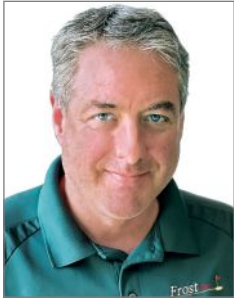


Injection that Aerates,
Topdresses, and Amends
in One Pass

In The Field!



PRODUCT SHOWCASE



FROST INC.

Q+A *with* Ken Rost CEO

What do Frost customers say about the Kubota + Ninja Sprayer?

Everyone is always impressed with the accuracy of the individual nozzle control and the repeatable accuracy of the new Smart7 GPS receivers. Productivity is key, but ease of use is more appreciated. The Kubota hydrostatic drive helps a generation of users that don't operate manual transmissions, and its all-wheel independent suspension smooths out the roughest of ground. Customers like the fact that the Kubota runs cool and quietly and has a legendary record of reliability.

What kind of information about spray jobs does the Ninja System provide?

Each spray job can be saved and wirelessly transferred to a smart phone for sharing to any other device, including PCs. From there, you can view it on Google Earth and see where the application was done with data about how many 1000 square feet, gallons applied, date and time,



etc. This information can be used as a training tool for new operators, but also as evidence of application for regulatory agencies. Frost highly recommends using GreenKeeper to store this data along with weather info, tank mixes and growth models to keep all application information organized and accessible.

How does the Kubota + Ninja GPS Sprayer save golf course superintendents time and labor?

Three ways: When GPS spray control can make the decisions about which nozzles should be on or off, that takes the decision-making burden off the operators so they can focus more on piloting the sprayer. This allows the operator to be more efficient. Second, with our dual nozzle configuration, a wider range of speeds can be achieved with no increased drift. The resulting productivity for a single operator typi-

cally allows five fairways to be sprayed in the time three were done without dual nozzles. Because of this productivity, many customers have been able to spray with one sprayer instead of multiple sprayers. This includes freeing up a sprayer operator to do other work. Lastly, our Kubota Ninja sprayer has a high range in the transmission to allow transport speeds up to 25 mph. That allows for a significant reduction in time spent between the fill station and the spray job.

How does the Kubota + Ninja Sprayer improve turf quality?

It is easy to quantify the benefit of reducing input costs up to 17 percent or increasing productivity by getting more done faster, and the Ninja GPS spray system does both. The Ninja GPS spray system also helps produce higher-quality turf that golfers see. For instance, if more accurate applications of PGRs on greens and fairways are done with GPS, collars and approaches don't go into suppression from being oversprayed. That might be the difference for your course getting a big tournament or having a potential new member joining your course over the one down the road. Besides the input savings, it is about using the best tool to get the healthiest turf.

Frost Inc.
Spray Technology Products

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Accuracy with Ninja GPS spray control.
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The **Comfort** of independent suspension
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You deserve all this for your next sprayer!



Toro Outcross + Ninja GPS

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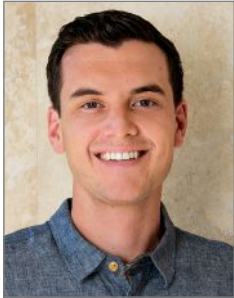
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PRODUCT SHOWCASE



HUNTER INDUSTRIES TTS-800 SERIES ROTORS

Q+A

with **Carl Eberts**

Golf Product marketing manager

How do your products save golf course superintendents time?

The 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 an all-new Total-Top-Service body, inlet valve and control mechanism to ensure ease of installation and serviceability. Furthermore, the pressure regulator and solenoid are easily serviceable without system depressurization, which saves significant time during routine maintenance.

How do your products save golf course superintendents labor?

No-dig Total-Top-Serviceability means all TTS-800 Series Golf Rotor components are easily accessible from the top without digging, making routine maintenance a breeze. Every rotor has a robust inlet valve that includes a replaceable seat seal as well as an exclusive Filter Sentry® Mechanism. Thanks to a powerful

wiper, Filter Sentry scours the filter clean during every opening and closing cycle of the valve, which dramatically reduces the frequency the inlet valve needs to be serviced. Finally, at the heart of any golf rotor is the gear drive. High-torque TTS-800 rotors have the strongest planetary gear drive in the industry to mitigate the challenges of reclaimed water and debris infiltration.

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

Superintendents have a difficult job when it comes to irrigation management. Playability directly impacts revenue, so effective irrigation is critical at all times. TTS-800 Series Golf Rotors provide high 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 around the world, Hunter systems achieve significant savings in water use. Now that's a profitable investment!

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

Hunter Industries has been on the leading edge of golf irrigation innovation for more than four decades. We build performance, reliability and serviceability into every product we manufacture. Now, we are proud to advance our legacy of golf irrigation firsts with ultraserviceable TTS-800 Series Golf Rotors — innovative and technologically advanced gear-driven rotors on the market.

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IRRIGATION AND PLAYABILITY GO HAND-IN-HAND.

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Superintendents face countless tasks each day both on and off the course. Best-in-class Hunter Golf products deliver top performance to keep irrigation running reliably and efficiently in the background where it belongs. Choose a future-ready approach to golf irrigation designed to improve your life on the course and beyond.



Contact us today to learn how to simplify watering and ensure healthy, playable turf.

<https://hunter.info/lifeisbetter>



PRODUCT SHOWCASE



JOHN DEERE GOLF

Q+A

with **Dave Anderson**

Product manager, John Deere Golf

What does John Deere offer to help golf course superintendents?

The John Deere OnLink™ Golf Course Management Solution is truly operations at your fingertips. It provides easy-to-use labor, job and fleet management, improves communication across staff and departments and offers reporting tools that allow for data-driven decisions. Ultimately, it improves operational efficiency reducing cost of operation and equipment cost of ownership.

How does OnLink help superintendents manage labor?

The user can view, add, change and assign jobs for anyone on their team quickly and easily from a desktop, laptop or mobile device. All changes and updates are displayed on an automatically refreshing workboard, making it easy for the whole team to stay updated. Additional visual indicators based on customizable thresholds enable one to make crucial decisions on crew management before overtime costs are accrued.



OnLink now integrates with our newly introduced telematics kits for select models. Mapping and usage statistics from select models allow the user to quickly find equipment across the course, review staff progress and adjust as needed to ensure the work is completed efficiently. Location history also allows the user to review each machine's complete workday to identify possible areas of concern within their operations and adjust job assignments, machine routing, mowing patterns and more to increase efficiency, saving time and money.

How does OnLink help superintendents manage equipment?

Equipment performance, uptime and low cost of ownership are critical to golf course operations. Integrated fleet management tools provide

visibility to upcoming services to ensure that preventive maintenance is performed according to factory recommendations, maximizing equipment uptime and availability. Equipment availability status can also be changed and is integrated into the labor management tools of the system, allowing the shop personnel to easily communicate equipment status to other users.

How does OnLink help superintendents sleep at night?

There so are many things superintendents must balance on a day-to-day basis. OnLink's web-based system allows the user to access information from a desktop or mobile device at any time, and from anywhere, an internet connection is available, all in one place. Adjustments to daily workboards, monitoring of equipment — all can be done from anywhere and at any time.

Weather, water and playability information entered into the system is integrated into the dashboard and reports, allowing the user to make data-driven decisions on maintenance practices and correlations to turf health, saving money and time, while providing the best playing conditions possible.



JOHN DEERE GOLF



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Planning for weather conditions

Accurate budget forecasts
plus or minus half a penny

Balancing irrigation costs with equipment
and labor costs

Workboard updates and task re-re-re-assignments

Maintenance schedule and equipment
assignment mayhem

If it's on your mind, it's OnLink.

The John Deere OnLink Golf Course Management Solution can help you see your course more clearly than ever before. Maintenance schedules. Team assignments. Workboard updates. Cost projections. These all can now be viewed and managed in one place.

What's on your mind? Link it with John Deere OnLink Golf Course Management Solutions today at JohnDeere.com/Golf.



JOHN DEERE
GOLF

PRODUCT SHOWCASE



Mi-T-M

Q+A

with **Aaron Auger**

Water Treatment Division manager

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

Installing high-quality equipment on your golf course means you'll have less downtime for maintenance. The quality of Mi-T-M Biological Recycle Systems is second to none. We manufacture tanks for our systems in our fabrication department using only high-quality components. The control boxes are wired on-site to strict standards, allowing us total quality control over all aspects of the finished product. Our first biological system was installed on a golf course in 1999 and is still in use today, recycling millions of gallons of water over the years.

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

Daily washing of equipment helps to keep it in its best working condition. When maintenance is



required, it's much easier for staff to perform those tasks on equipment that is well maintained and clean.

How do your products save golf courses materials or fuel?

Once again, clean equipment will run at peak performance. You will get the best results out of your entire fleet by keeping it in good working condition. Not allowing debris to accumulate is a big part of ensuring it's performing at its best.

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

Water is a necessary commodity on a golf course and can be a huge expense, so recycling water where you can makes a lot of sense. By reclaiming

and recycling water through a Mi-T-M Biological Reclaim System for daily washing, money isn't going down the drain with the wash water. A typical Biological System can reclaim up to 2,300 gallons of water per day.

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

Saving money on water consumption is a huge factor on any golf course, and a reclaim system can pay for itself in a few years by reducing water usage. However, when you factor in the risk of discharging contaminated water into the ground or waterways, your business could incur costly fines and negative publicity. Water conservation is a big issue in many parts of the country so make sure your business has a positive impact on our environment.



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Mighty. Damn. Good.



At Mi-T-M, we pride ourselves on building mighty, damn good equipment. It's what sets us apart from our competition. Our custom water treatment systems are built to tackle the toughest water treatment challenges. When you purchase equipment with the Mi-T-M name on it, you are buying dependable equipment that is designed, built, and tested by good people. Mighty. Damn. Good.



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PRODUCT SHOWCASE



NUFARM

Q+A

with **Dave Biegacki**

Portfolio manager — Turf & Ornamental

How do your products save golf course superintendents time?

Nufarm offers a leading line of herbicides to simplify maintenance of natural areas. At Nufarm, we suggest a two-application program to keep weeds out and native grass stands pure. Consider applying Sure Power in the fall. Sure Power selective herbicide has the power to quickly strike down more than 250 broadleaf weeds, including ground ivy and wild violet. Save time with one fall application that will keep natural landscapes weed free throughout the entire winter season.

How do your products save golf course superintendents labor?

By default, maintaining a natural area requires fewer labor resources — such as mowing and chemical application — than playable surfaces. However, natural areas still need some attention to prevent weed takeover. A spring application of Millennium Ultra 2, will quickly “melt” tough weeds, even thistle, without leaving unsightly dead, brown plants behind. This premium selective herbicide saves turf managers from applying multiple applications or



hand-weed labor. If saving labor isn't enough, Millennium offers an additional unique benefit — it is gentler on milkweed and usually allows reflower bounce back after initial growth suppression. Milkweed provides a habitat for Monarch butterflies, making it a great choice for designated pollinator zones.

How do your products save golf course superintendents material?

Save on chemical inputs by using the longest-lasting residual product. SureGuard SC can keep nonturf course areas weed free for eight months or more, meaning there is less product to buy and apply. Plus, SureGuard SC works in more than ornamental landscape settings. For warm-season courses, keep SureGuard SC on the shelf for

dormant bermudagrass applications. It provides excellent control to winter weeds, including *Poa*, and binds tightly to the soil so there is less concern regarding runoff to overseeded rye.

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

With a simple application program, natural areas can directly benefit your bottom line, but they can work to generate revenue as well. Courses may publicize the benefits of environmental sustainability and enhanced beauty, both of which result in more booked rounds — and more revenue — for your course.



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Grow a better tomorrow

PRODUCT SHOWCASE



PONDHAWK BY LINNE INDUSTRIES

Q+A *with* **Shaun Donahue** Superintendent, Tidewater GC

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

PondHawk saves time by being easy and quick to install. There are no power wires to trench and no breaker boxes to configure. Once the units are operational, there is almost no maintenance required. Installation takes a few hours and can be completed in-house without the need for contractors or permitting.

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

Depending on the severity of your pond condition, after the PondHawk units are installed, the need for labor resources to remove unsightly algae blooms will be drastically reduced and ultimately eliminated. Anyone who has ever been assigned the job to skim algae scum from the edges of ponds wishes they were doing something different.

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

Materials and fuel resources are saved because the self-contained units are solar powered. There is



no need to purchase power wires, transformers and breaker boxes or to bring power to the pond. If you treat your aquatic resources in-house, the need for those products should be eliminated as well.

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

Saving money on specific line items in our budget frees up for use elsewhere. Eliminating professional services to treat aquatic features, coupled with saving on electric for a traditional pond aeration system, will create the opportunity to reallocate those dollars.

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

After the PondHawk units are operational for a period of time, your ponds will be healthier, cleaner and more attractive. The aeration process is more efficient than a floating fountain or bubbler. I really can't believe how good our ponds look where we are using the PondHawk aeration system and how easy that part of my responsibility has become. If you are facing a dredging project in the near future to reclaim volume in your pond, these units are an economical and efficient alternative to that very costly process. The efficiency of the diffusion that PondHawk uses to maintain pond health is incredible, and the aeration PondHawk creates will drastically reduce your aquatic management resources.



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Think you need tons of manpower to keep your pond clean?

Think again.

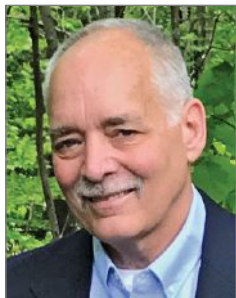
It's not manpower you need to keep your pond clean—it's solar power! PondHawk®, our unique subsurface aeration system, harnesses the power of the sun to keep water healthy. Install a PondHawk®, and go tend to your course. PondHawk® will be your most productive employee, quietly keeping your pond healthy and clean—no electricity required.



Learn more at PondHawk.com or call
888-755-1950 for a personalized quote.


PondHawk
by LINNE INDUSTRIES

PRODUCT SHOWCASE



PRIME SOURCE

Q+A with **Steve Jedrzejek**
Product and business
development manager

What makes new Sublime™ broad-spectrum herbicide different than other products on the market?

In working with superintendents to help streamline labor and time management, our product development team recognized the advantages of combining three powerful active ingredients to create a unique herbicide: Sublime™ for use on fairways, aprons, tees and roughs.

Sublime delivers an unprecedented spectrum of control, in a large number of broadleaf weeds and woody plants, even extremely troublesome species like English daisy, oxalis, wild violet, plantains, thistles, spurge and Virginia buttonweed. In addition to annual grasses like crabgrass and goosegrass, it controls perennial grasses such as creeping bentgrass, nimblewill and bermudagrass.

What makes it so unique is that Sublime is a non-2,4-D formulation, featuring three active ingredients with two different modes of action, includ-

ing inhibition of photosynthetic activity. Its multifaceted control platform takes out target weeds at first application, every time, which drastically reduces respraying — and will provide residual activity for up to 28 days on a wide variety of turfgrass weeds.

Is Sublime herbicide safe to use on all turfgrass species?

Sublime is safe for use on most cool-season species, including Kentucky bluegrass, tall fescue, fine fescue, perennial ryegrass, buffalograss, zoysiagrass and dormant bermudagrass.

The unique combination of active ingredients is carefully balanced for turf safety. While HPPD's have been associated with bleaching, the synergistic components of Sublime blend to suppress bleaching potential on targeted weeds and turfgrasses.

Has Sublime been tested versus other herbicides, and how does its level of control compare to those products?

Over the past three years, trials have been conducted by universities including Purdue, North Carolina State, Virginia Tech, Tennessee and Rutgers.

In trials on control of wild violet in tall fescue and Dutch Clover in cool-season turfgrass by Virginia

Tech, Sublime provided the highest level of control in comparison with competitive products. Sublime was also noted for quick efficacy and no bleaching. You can see those trials and more on Sublime on our website: PrimeSource-Albaugh.com

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

Superintendents need to know how and where turf protection inputs pay off. The unique qualities of Sublime herbicide are going to help improve results in your weed control program and playability of your course. Turf not only plays better when it's free from weeds, but it also looks better, too.

With its expansive spectrum of control, Sublime gives you the control you want and need, and in most cases, in a single application. It's designed to help you save labor, time and money while reducing use of fuel, water and product inputs. The team at Prime Source thrive on helping keep your course beautiful and playable, and that helps increase rounds, attract more players and boost return on investment.

**As of time of writing, Sublime is pending US EPA registration*



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A new selective post-emergent with a unique combination of three powerful non-phenoxy actives that provides a significantly broader spectrum of control on broadleaf and grassy weeds — no other herbicide comes close. Learn more at primesource-albaugh.com.



THE SOURCE
MATTERS

PRODUCT SHOWCASE



PROGRESSIVE TURF EQUIPMENT

Q+A with **Rob Janmaat**
General manager

How do your products save golf course superintendents time?

Since 1990, Progressive Turf Equipment has built different mowers for different types of customers. Whether it's the five-deck Pro-Flex, a Tri-Deck or a Contour Roller mower, Progressive has mowers for any application from 10 feet to 36 feet wide. On top of that, Progressive also has a fairway roller called the Pro-Roll that comes in 10-foot and 15-foot widths.

With the different mower widths available, it allows superintendents to match the proper mower to their course to get the maximum mowing done in the shortest amount of time. Other innovative options that are Progressive-exclusive include: Pro Lift-N-Turn, 100-hour greasing interval PTO shafts, Adaptive Swivel Hitch, HEX drive roller end and bearings — all time-saving elements to help reduce superintendents' mowing costs and prevent downtime.

How do your products save golf course superintendents labor?

Lower operating cost. Running a mower costs money, but it must be done. Progressive's approach is to offer both increased utilization and



higher production to combat cost. They choose Progressive mowers for their quality, dependability and workmanship that goes into every mower. Many facilities are moving to pull-behind rotary mowers; not only are they a lower cost purchase option than self-contained units, but ongoing maintenance costs are lower and simpler. Because of the simplicity and construction of a Progressive pull-behind mower, the useful life is much longer than other mowers; thus, it is easier on the capital budget year after year.

How do your products save golf courses materials or fuel?

With all Progressive mowers/rollers being pulled with a turf tractor, it gives the superintendents the freedom of using the tractor for other uses around

the course when the mowing is done. The tractor is not dedicated to mowing unlike the self-contained mowers on the market. The increased utilization saves them money.

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

With the introduction of the new TDR-X and along with the Pro-Flex 120, Progressive offers two styles of contour mowers, so superintendents can select the best mower for their course and spend their money wisely.

PROGRESSIVE
TURF EQUIPMENT INC.
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FOR GOLF, WE KNOW **CONTOURS**



Pro-Flex 120B Contour Mower



Pro-Roll 15 Contour Roller

THE NEW TDR-X CONTOUR ROLLER MOWER



- ✓ 10'6" wide cut
- ✓ 3 Floating decks
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- ✓ Choice of blades styles



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PRODUCT SHOWCASE



QUALI-PRO

Q+A

with **Allan Fulcher**

Vice president, Turf/Quali-Pro Division

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

With a broad portfolio, 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.

QUALI-PRO



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, and 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 that 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 on your pesticide needs. Quali-Pro is continuously working to develop new solutions that save you time, money and increase your bottom line. Check out our portfolio today.

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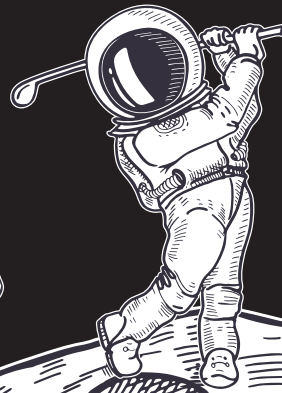


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Explore. Discover. **Earn \$50.**

Quali-Pro Academy (QPA) is an incentivized product training program exclusively for Golf Superintendents & participating distributor reps covering key Quali-Pro products in a self-guided learning experience that takes only about 45 minutes. Starting early January 2022.



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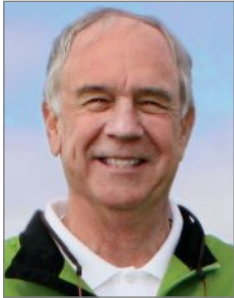
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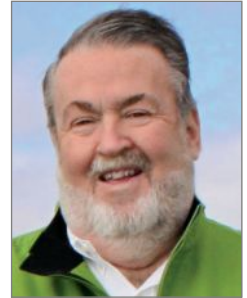
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PRODUCT SHOWCASE



Don Smith
CEO

SMITHCO Q+A



Bill Kenney
VP

How do your products save golf course superintendents time?

Smithco products are designed after consultations with superintendents to solve the issues they struggle with every day. This collaboration has resulted in machines that perform more efficiently and often offer features new to the market. The Star Command line of sprayers is a good example of this.

How do your products save golf course superintendents labor?

Efficiency is the key. Features from Smithco and TeeJet Technologies can reduce the time and the cost to perform needed maintenance. For example, the highly accurate application of turf protectants and nutrients save time, fuel and chemicals.

How do your products save golf courses materials or fuel?

Again, efficiency. Using DynaJet from TeeJet Technology with the ability to preset a specific droplet size for the product being applied, efficacy is enhanced, and speed range is



increased from a narrow 4-5 mph to a more efficient 2 mph up to 10 mph, cutting application times in half in many instances. Smithco also is a leader in electric power, ideal for early morning maintenance, notably our Sand Star bunker rakes and 70-inch Tournament Greens Roller. Both utilize lithium battery options, enhancing performance and reducing fuel and maintenance costs, while providing minimal noise disruption for surrounding homes or other sensitive areas.

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

By minimizing costs while providing superior playing surfaces. Whether it's golf, sports turf or other formal grass areas, providing quality playing surfaces can greatly increase customer

interest, which will increase property value.

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

Faster speeds at increased efficacy allow for more play through for golf and other playing areas. The Smithco Star Command 3.0 System is a great example of this attention to superintendents' needs. The Smithco Spray Star platform offers 110-gallon, 175-gallon, 200-gallon, 318-gallon and 520-gallon machines, all designed from the ground up. Smithco Super Booms also range from 15-, 18.5-, 20- and 24-foot widths. You will find a tank capacity and boom width for your discrete areas. This all adds up to a significant advantage.

Smithco

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PRODUCT SHOWCASE



STANDARD GOLF

Q+A with **Matt Pauli**
Director of marketing

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

Standard Golf recently entered a new product vertical with our GreenActivator. This liquid-based fertilizer has Humic and Fulvic Acids with NPK. As a plant-ready liquid, GreenActivator can be combined with other liquid applications while spraying the course. Superintendents that have been using GreenActivator have been able to reduce the use of synthetic fertilizers, which has decreased thatch.

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

As a naturally derived product, GreenActivator does not require a licensed spray tech to apply the product. Additionally, GreenActivator will enhance plant health, which speeds divot recovery time and improves the drought tolerance of the grass decreasing the amount of water needed.

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

GreenActivator can do both for a

course. The Humic and Fulvic Acid combined with a proprietary blend of NPK (14-4-2) can help reduce the need to use synthetic fertilizers and fungicides while reducing the need for Nitrogen. Additionally, the Humic and Fulvic is a great carrier of herbicide and will quickly absorb into the plant's cell to deliver the herbicide and allow it to work more efficiently and effectively lowering the amount of herbicide needed while the plant's health improves. GreenActivator improves plant health, giving the grass an increase in lignin, which allows superintendents to mow at quicker speeds, saving time and fuel, and also at a lower grass height without additional clippings.

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

Our custom flags are not only a great way to promote your course or brand but can be an additional revenue source for the course via retail sales of replica on-course flags or to

generate additional revenue for hole sponsors during charity events.

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

First impressions and golf course conditions are very important to bring back the golfer. With our assortment of range products, tee signage, custom flags and now GreenActivator, Standard Golf is able to help a course look great at every place a golfer will notice.



READY WHEN YOU ARE!

ARE YOU READY FOR 2022? WE'RE READY TO SEE YOU AT **BOOTH #4724** AT THE GCSAA CONFERENCE AND TRADE SHOW, WE'RE READY TO EXPAND OUR EXPERTISE AND PROVIDE MORE THAN JUST GOLF COURSE ACCESSORIES, AND MOST IMPORTANTLY WE'RE READY TO SHIP YOUR ORDERS AS SOON AS YOU'RE READY TO PLACE THEM.

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OR EVENT MARKER



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SHAKE WELL BEFORE USE

Product Weight: 10.8 lbs. per gallon
Store above 40°F Fahrenheit

Guaranteed Analysis:

Nitrogen (N)14%
Phosphate (P2O5).....4%
Potash (K2O)2%

Principle Ingredients:

Urea Ammonium Nitrate, Caustic Potash, Water,
Humic & Fulvic Acid/Carbon Solution derived from Leonardite.

Soil Amending Ingredients:

Humic & Fulvic Acid
Total Other Ingredients.....98.02%

PRODUCT SHOWCASE



SYNGENTA

Q+A *with* **Stephanie Schwenke** Turf market manager

What does “Bringing the Best Together” mean?

Our name Syngenta means “**bringing people together**,” but our mission goes beyond that. We are committed to bringing together the best products, solutions and technology to support our customers. Our team has missed their friendships and the great people in this industry, so this year, we’re celebrating our name and being back together. We look forward to reconnecting in our booth and at our events throughout the week.

What can superintendents expect in Syngenta Booth No. 3222 at the show?

To share the excitement of being together, we encourage industry professionals to upload a photo

to the **Bringing the Best Together Photo Mosaic**

at [GreenCastOnline.com/GCSAAShow](https://www.GreenCastOnline.com/GCSAAShow)

or at a photo kiosk in our booth. By uploading a photo showing why they are excited about the show, participants will be entered

for a chance to **win one of five Solo Stove® Yukon fire pits**.

What are some of the innovative products and

technologies that Syngenta will be showcasing in its booth?

We’re excited to discuss how our digital tools and innovative products, including the recently launched **Ascernity®** and **Posterity®** brand fungicides, integrate into an agronomic program, delivering superintendents optimal turf conditions. Our advanced GreenCast® tools like our **GreenCast Turf App** and **agronomic alerts** improve application timing to get the most out of each product application. We’ll also showcase our **Multipaks**, which combine leading products for savings of up to 10%.

What other events will Syngenta be involved with at the show?

Syngenta is proud to support several events, including the **welcome reception** on the USS Midway aircraft carrier, our **Bringing People Together happy hour** during the Trade Show Tee Off on Tuesday evening, the **Ladies Leading Turf panel/networking reception**, the **Environmental Leaders in Golf awards** and the **Certification Luncheon**. Additionally, Syngenta is hosting the sixth annual **Health in Action 5K** with opportunities to run virtually, in person or both. Register at [GCSAAConference.com/5K](https://www.GCSAAConference.com/5K).

How can attendees participate in Syngenta show events from home?

While we want to connect with customers and industry partners in person, we know some will be joining virtually. Superintendents can share their photos from home in the **Bringing the Best Together Photo Mosaic** at [GreenCastOnline.com/GCSAAShow](https://www.GreenCastOnline.com/GCSAAShow) for a chance to win while also learning about our products and tools. Superintendents can also virtually participate in the 5K from Feb. 12-28.

Participants can stay connected with Syngenta on social media by using **#BringTheBestTogether** in their **#GCSAAConference** tweets.

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GCSAA CONFERENCE & SHOW BOOTH 3222

BRINGING THE BEST TOGETHER

For over 20 years, Syngenta has been committed to bringing together the best products, programs and technology to solve the challenges you face.

Even our name, **Syngenta**, means **bringing people together**. And we're excited to bring people together at the **2022 GCSAA Conference and Trade Show**.

Beginning Jan. 24, submit a photo for our Bringing the Best Together Photo Mosaic to help celebrate the industry, friends and colleagues.



Scan this QR code or visit booth #3222 to participate and you'll get a chance to win one of five Solo Stove® Yukon fire pits.



See more show activities at GreenCastOnline.com/GCSAAShow



@SyngentaTurf #BringTheBestTogether

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PRODUCT SHOWCASE



TARGET SPECIALTY PRODUCTS

Q+A

with **Steve Loveday**

Turf Fuel product development manager

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

At Turf Fuel, we recently coined the phrase “No Surprises.” We launched our products 10 years ago, and since that time, the most common feedback we’ve received is “Wow, your products performed just like you said they would.” We save superintendents time by removing the guesswork out of what to expect from a Turf Fuel application, and we’ve developed Solution Sheets that help turf managers quickly identify which product combinations will be most successful for a specific turf challenge.

What is the process that Turf Fuel uses to ensure the products always work as advertised?

Since 2011, our mantra was “More is Possible.” We put a tremendous amount of effort into product performance evaluation and the pursuit of meaningful technologies to make a difference to the health of the plant and the value of the soil. We’ve been fortunate to develop a strong network of superintendent cooperators, willing to trial new product and technology concepts and provide valuable

feedback. Additionally, we are represented by a highly talented group of sales representatives who provide great insight into customer needs and product merit. Finally, we’ve relied heavily upon our university research network to provide validation to cooperator and preliminary research findings. This “belt and suspenders” approach to product benefit validation has created a portfolio of products that leave no surprises.

How is your new Mic Drop product different from other micronutrient products on the market?

There are lots of good micronutrient products on the market today, and on the surface, they may seem similar. Mic Drop is constructed with the best micronutrient raw materials available and is differentiated with our brand new REACTION™ technology. REACTION drives nutrients deep into plant tissues for a super quick color response and increases nutrient mobility once inside the plant. The result is better color that’s built to last. Better color means more chlorophyll, and more



chlorophyll means more photosynthesis. REACTION is a combination of carbon blended with a proprietary sugar complex. Above ground, REACTION helps to build chlorophyll. Below ground, REACTION creates soil value by bolstering the population of beneficial microorganisms. Mic Drop

with its REACTION technology had a chance to shine this past summer at UMass in university trials with Michelle DaCosta, Ph.D., and has been a huge hit in Canada since its release on Aug. 1, 2021.

How could Mic Drop be incorporated into a turf management program?

Mic Drop can be used as a standalone for amazing color or used as part of one of our Turf Fuel Solutions that can be found at turf-fuel.com/resources/turf-fuel-solutions/ as a part of a full plant health improvement strategy.



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Q+A

with **Scott Kinhead**
Executive vice president

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“That’s a myth that we’ve been trying to bust that you have to be vaccinated to attend. That is simply not true.”

— GCSAA CEO Rhett Evans

Continued from page 17

GCSAA Conference & Show?

“That’s a myth that we’ve been trying to bust that you have to be vaccinated to attend. That is simply not true,” Evans says. “You can be unvaccinated and attend; you simply need to acquire the right testing in advance. Your proof of a negative test will get you in.”

Evans adds that GCSAA will keep all COVID-19 related updates regarding rules for the show up to date at gcsaaconference.com/safety-faqs.

Last year’s show — the final one known as the Golf Industry Show — was virtual. Evans says that he thinks the industry needs a thriving in-person show to keep improving the game.

“It doesn’t matter all the technologies that exist; it has not eradicated that need of our basic biology, that people need people. That is what I’m looking forward to. I haven’t seen some members and some partners for over two years, and to be able to be together and to see how they’re doing means a lot,” Evans says. “I think it is extremely important that those of us that work in this business rally around each other to make it work and come together so that we can all be stronger.”

GO!

Yes, there are hoops to jump through to get to San Diego, but that just might be the way of life. Here is a list of other events we’re looking forward to at the Conference & Show:

- Bob Farren, CGCS at Pinehurst Resort, will be honored with the inaugural Col. John Morley Award. The award is now only for Class A or Class B GCSAA superintendents. A longtime friend of *Golfdom*, we can’t miss “Turf’s Most Interesting Man” being



Bob Farren

honored with this award. *Stay thirsty, my friends.*

- Tim Hiers, CGCS, White Oak Conservation, Yulee, Fla., will be honored as the newest inductee to Anuvia’s Legends Initiative. Hiers, one of the industry’s



Tim Hiers



Country Music Hall of Famer Vince Gill will receive GCSAA’s Old Tom Morris Award during the Closing Celebration of the 2022 GCSAA Conference and Trade Show in San Diego, Feb. 10.

most successful spokespersons on the environmental benefits of the golf course, will be speaking about his decorated career at the Anuvia booth. (See sidebar, page 17, for a preview.)



John Shaw

John Shaw, CGCS, Valley Brook CC, Canonsburg, Pa., will be honored with the 2021 Herb Graffis Businessperson of the Year Award, and Rick Mooney, vice president of maintenance and development, Shore Lodge | Whitetail Club, McCall, Idaho, will be honored with the 2020 Herb Graffis Businessperson of the Year Award (since we couldn’t hand it to him in 2020.)

- Vince Gill is being honored with the Old Tom Morris Award, and to that we say, “don’t let our love (for San Diego) start slippin’ away!”

Whether you stay or go, follow along with us at *Golfdom* on social media, online at Golfdom.com and in the March issue for a full recap of the show.

And if you do go, we’ll see you at The Field Irish Pub. ☺



Super Science

// BONING UP ON BERMUDAGRASS

BERMUDAGRASS SPRING GREENUP

By Mike Kenna


The National Turfgrass Evaluation Program (NTEP) started a new seeded and vegetative bermudagrass trial in 2019. One of the northernmost and coldest locations, Wichita, Kan., is the Kansas State University experiment station.

The research team maintains the seeded and vegetative bermudagrass cultivars as golf course rough or athletic fields. The researchers established the 6-by-6-foot plots on July 9 and 10, 2019, and the test included 13 seeded and 22 vegetative bermudagrass entries.

A lightweight cover protected seeded plots until germination was complete. During the remainder of the year, fertilization was applied with urea (46-0-0) on Aug. 7 at 1.0 pound N per 1000 ft² and Aug. 21 at 0.5 pound N per 1000 ft². Once established, weekly mowing was at 2.25 to 2.75 inches throughout the growing season. Irrigation was applied at 1.0 inches per event as necessary to prevent dormancy. In March 2020, the research team used a preemergent herbicide and 1.0 pound N per 1000 ft² from urea in May.

The research team collected percent cover data on July, August and September 2019 (rated visually, 0 to 100 percent), and on May 5, 2020, spring greenup was rated visually (1 = brown, 6 = acceptable color and 9 = optimum green color).

The initial cover rating found that seeded types DLF-460/3048 and JSC 2013-55 and vegetative types MSB-1017 and MSB-1042 had the highest percent cover. In August, seeded varieties DLF-460/3048, JSC 2013-55, PST-R6TM, Sun Queen (PST-R6MM) and vegetative types MSB-1017 and MSB-1042 had the highest percent cover. By the end of the 2019 growing season, seeded varieties Sun Queen, DLF-460/3048, PST-R6TM and vegetative types MSB-1017, MSB-1048 and OKC1666 had the highest percent cover.

Spring 2020 greenup revealed vegetative Latitude 36 and seeded OKS2015-7 and OKS2015-1 broke dormancy the earliest and had the highest greenup rating. Across colder test locations (Arkansas, Indiana, Kansas, Kentucky, Mississippi, New Mexico, Oklahoma and Virginia), the overall spring greenup mean included Tahoma 31, OKS2015-3, Latitude 36, Tiftuf, FB 1628, OKS2015-7, Astro, JSC 2013-85, JSC 2013-105, MSB-1026, JSC 2013-125 and OKC1666 in the top statistical group (>6.0 on a scale of 1 = brown and 9 = completely green). 

Parsons, Linda; Griffin, Jason J.; and Shelton, Michael J. (2020) "2019 National Turfgrass Evaluation Program Bermudagrass Test: Establishment Data," Kansas Agricultural Experiment Station Research Reports: Vol. 6: Iss. 7. <https://doi.org/10.4148/2378-5977.7950>

Reference

Complete 2019 National Bermudagrass Test results and more information on NTEP are online at https://ntep.org/reports/bg19/bg19_21-2/bg19_21-2.htm



Bermudagrass winter damage at Lakeside Memorial Golf Course in spring 2021.

NEWS UPDATES

ALBAUGH TRANSITIONS NORTH AMERICAN LEADERSHIP

After 30 years of service to Albaugh, Spencer Vance will extend his involvement as a member of Albaugh's board of managers. Douglas "Dak" Kaye, currently Albaugh's group chief commercial officer, will be Albaugh's next regional president for North America.

"After 30 years with Albaugh, it is the right time for me to focus my talents in these critical areas," Vance said. "I'm as excited to continue to bring the high quality and compelling value of Albaugh 'Your Alternative' to customers in the U.S. and Canada."

In addition to his responsibilities as manager, Vance will continue his involvement in the new role of director of customer engagement for North America. In this capacity, Vance will continue his efforts to ensure customers have full knowledge of Albaugh's portfolio and capabilities, cultivate both existing and new customer relationships in all market segments and craft high-quality solutions to the evergrowing needs of customers.

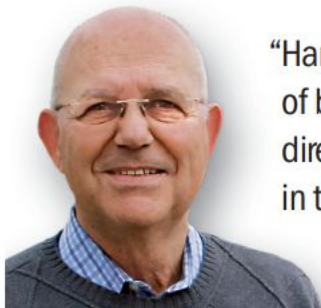
Kaye began his career in crop protection in 2009 and came to Albaugh in 2011 as its chief financial officer for the European region. Kaye became the president of the European region for Albaugh in 2012 and was appointed to the position of group chief commercial officer in 2019.

DEVELOPING BERMUDAGRASSES WITH A BETTER FREEZE TOLERANCE IS A PRIORITY OF BERMUDAGRASS BREEDING PROGRAMS."

Lakshmy Gopinath, Ph.D., et al.
(see story on page 53)



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



“Harlan and Huffine’s world collection of bermudagrass created a new direction of bermudagrass breeding in the Transition Zone.”

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

Reflecting on Oklahoma's bermudagrass connection

In November, at the 75th Annual Turfgrass Conference, I presented a turfgrass research and extension history at Oklahoma State University to celebrate the past 75 years. There are several interesting facts that I learned while preparing my talk.

In 1946, a traveling group of industry professionals held the first Oklahoma Turfgrass Conference. Fred Grau, Ph.D., director of the USGA Green Section, and O.J. Noer, Ph.D., and William Daniels, Ph.D., traveled to Oklahoma.

Also, in 1946, Wayne Huffine, Ph.D., received his BS degree and MS degree in 1947 from Oklahoma Agriculture & Mechanical College. He was appointed assistant professor in the Agronomy Department. Regents renamed Oklahoma Agriculture & Mechanical College, or OAMC, to Oklahoma State University (OSU) in 1957.

In 1950, Huffine took a leave of absence to obtain a Ph.D. from Purdue University under William Daniel, Ph.D. In 1953, Huffine returned to OAMC and was a constant figure in the turfgrass program until his retirement in 1981.

In the 1960s, Jack Harlan, Ph.D., and Wayne Huffine, Ph.D., traveled worldwide and collected more than 700 bermudagrass genotypes. The USGA Green Section Research and Education Fund supported the evaluation of these selections for turf purposes.

In 1968, Charles Taliaferro, Ph.D., started as an assistant professor at

OSU. Taliaferro received his BS degree in agronomy from OSU in 1962 and his Ph.D. from Texas A&M University in 1966. After graduation, Taliaferro worked for Glen Burton, Ph.D., in Tifton, Ga., as a USDA research geneticist. With Taliaferro's assistance, Huffine started to select bermudagrass genotypes for seed production of turfgrass varieties. For my MS degree, I worked with bermudagrass genotypes that eventually produced Guymon seeded bermudagrass.

When Huffine retired, the university moved the turfgrass program from the Agronomy Department to the Horticulture and Landscape Architecture Department. In 1982, Doug Brede, Ph.D., was hired in the research and teaching position, and in 1983, Robert Green, Ph.D., became the turfgrass and nursery production extension specialist.

Green left in 1984, and I became the state turfgrass extension specialist in 1985. In 1986, Taliaferro and Brede received a USGA grant to develop cold-hardy, seeded bermudagrass varieties. The USGA support helped to give the turfgrass breeding program an extra push. However, in the fall of 1986,

Brede left OSU for a breeding position with Jacklin Seed Co.

Jeff Anderson, Ph.D., came to OSU in 1987 and started controlled growth chamber experiments on low-temperature tolerance of bermudagrass. The USGA increased funding in 1989 to include vegetative bermudagrass, and the Oklahoma Advancement for Science and Technology provided matching funds.

By 1990, the bermudagrass breeding program was well on its way to developing new hybrids between African bermudagrass and common bermudagrass. There was also an increased effort to find better bermudagrass tolerance to spring dead spot.

Dennis Martin, Ph.D., arrived in 1990 and played a crucial role in evaluating Taliaferro's promising experimental bermudagrasses for the golf course and sports fields. Nathan Walker, Ph.D., provided expertise on spring dead spot biology and screening.

The list of successful OSU bermudagrasses include seeded varieties Riviera and Yukon and vegetative cultivars Midlawn, Midfield, Patriot, Latitude 36 and Northbridge.

After Taliaferro retired in 2006, Yanqi Wu, Ph.D., has coordinated the bermudagrass breeding program. Tahoma 31 is the latest bermudagrass released by the OSU program. Additional shade research is underway by Charles Fontanier, Ph.D., who arrived at OSU in 2010.

Grau's traveling group of professionals to the first Oklahoma Turfgrass Conference and Huffine's decision to pursue a turfgrass career kicked off Oklahoma's turfgrass science and management program. Harlan and Huffine's world collection of bermudagrass and subsequent funding by the USGA created a new direction of bermudagrass breeding for the Transition Zone. The USGA provided valuable vision and support. 📍

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

// **WITHSTANDING THE COLD**

New freeze-tolerant bermudagrass

By Lakshmy Gopinath, Ph.D., Justin Quetone Moss, Ph.D., and Yanqi Wu, Ph.D.

Winterkill is used to define turfgrass loss during the winter. Winterkill or winter survivability depends on various factors, including crown hydration, desiccation, direct low temperatures, ice sheets and snow mold disease (5).

Replacing damaged turfgrass lost to winterkill is labor intensive and expensive. Intensively managed areas such as golf courses are predisposed to winterkill due to aggressive fertilization programs, low mowing heights and vehicular and foot traffic (9, 14).

Bermudagrass (*Cynodon* spp.) is the most commonly used warm-season turfgrass on golf courses in the Transition Zone of the U.S. Bermudagrass has excellent tolerance to heat and drought but low tolerance to freezing temperature (5). Developing bermudagrasses with better freeze tolerance is a priority of bermudagrass breeding programs.

Previous research at Oklahoma State University (OK State) and North Carolina State University (NC State) reported significant variation in freeze tolerance for bermudagrass cultivars (1, 2, 6). Many of these experiments determining the freeze tolerance of bermudagrass used controlled environmental chambers to estimate the temperature to kill 50 percent of the population (LT50). The research results demonstrate that genetic improvement is possible in bermudagrass breeding programs.

The LT50 values obtained in the controlled environment experiments showed a significant negative correlation to spring greenup and a positive

correlation to winterkill estimated in the field (6, 12). Although field evaluations are typical for breeders to assess winter survivability of genotypes in large nurseries, environmental conditions in field experiments are unpredictable and difficult to replicate (2, 16).

Controlled environment experiments can quickly identify genotypic differences in freezing tolerance based on exposure to direct freezing temperatures. Therefore, the objective of this experiment was to determine the LT50



Research provided and funded by USGA.

values of two experimental interspecific hybrid bermudagrass genotypes and two commercially available cultivars

Continued on page 54

PHOTO 1



Bermudagrass entries were established in a growth chamber at 32/28-degree F day/night temperatures for 13 weeks.

PHOTO BY: LAKSHMY GOPINATH, PH.D.

PHOTO 2



Conetainers were placed into a freeze chamber with 10 randomly placed thermocouple sensors inserted 1 inch into the potting medium. Ice chips are in all of the conetainers to prevent supercooling and induce freezing.

Continued from page 53

by exposing these to 11 target freezing temperatures (25 to 7 degrees F) under controlled environment conditions.

PLANT MATERIALS AND GROWING CONDITIONS

The entries in this experiment consisted of two experimental genotypes, OKC1873 and OKC1406, developed by the bermudagrass breeding program at OK State, and two industry standards, Tifway (freeze-sensitive) and Tahoma 31 (freeze-tolerant).

The experiment was replicated in time, with staggered planting to allow uniform establishment periods (4). We clonally propagated all of the entries in potting mix within conetainers (8.25-inch depth and 1.5-inch diameter). The propagation material used in each conetainer was a single sprig consisting of a root, crown and shoot material.

We established the bermudagrass entries in a PGC Flex growth chamber at the OK State Controlled Environment Research Laboratory, Stillwater, Okla., (Photo 1). The growth chamber was

maintained at 32/28 degrees F day/night temperatures for 13 weeks with a photoperiod of 14 hours and photosynthetically active radiation (PAR) of 900 $\mu\text{mol m}^{-2}\text{s}^{-1}$.

The conetainers were adequately fertilized weekly with a general-purpose 20-10-20 N-P-K fertilizer (J.R Peters) and trimmed to maintain a 1-inch height. During the establishment phase, the conetainers were treated every 14 days with Talstar (bifenthrin) as a precautionary measure.

At the end of 13 weeks, the temperatures were lowered to 75/68 degrees F day/night for a week to preacclimate the conetainers before cold acclimation. We then subjected conetainers to cold acclimation by lowering the temperature to 46/36 degrees F day/night for four weeks with a photoperiod of 10 hours and a PAR of 400 $\mu\text{mol m}^{-2}\text{s}^{-1}$.

FREEZE TREATMENT

After cold acclimation, we placed the conetainers into a freeze chamber (Conviron E8). Ten thermocouple sensors were inserted 1.0 inch into

the potting medium at the center of randomly selected conetainers to monitor the soil temperature. We put small ice chips in all of the conetainers to prevent supercooling and induce freezing (Photo 2).

The freeze chamber was programmed to stay at 27 degrees F for 18 hours for the dissipation of latent heat and then cool linearly at the rate of 1.8 degrees F per hour. The 11 target temperatures (1.8-degree F intervals, 25 to 7 degrees F) covered a range anticipated to span the limits from complete survival to complete mortality.

We removed four conetainers of each entry (16 conetainers in total) immediately at each target temperature. These conetainers were then placed in a plant growth chamber set at 39 degrees F overnight to induce thawing.

The temperature was then increased to 75/68 degrees F for a week and afterward to 90/82 degrees F to encourage recovery (Photo 3). The regrowth based on shoot emergence was visually evaluated after five weeks using binary values (1 = alive, 0 = dead).

EXPERIMENTAL DESIGN AND STATISTICAL ANALYSIS

We determined the LT50 values for each entry using a logistic regression procedure (13, 15). This statistical procedure generated a table of predicted percent survival at each temperature, and the temperatures corresponding to 50 percent survival are the estimates of LT50 for each entry.

We repeated the freeze test three times to produce three estimated LT50 values for each entry. The LT50 of each replication was treated as a response variable and tested for statistical significance. The entry means were separated using Fisher's protected LSD when F tests were significant at $P \leq 0.05$.

RESULTS AND DISCUSSION

There were significant differences among the entries in the LT50 values. Tifway had the highest LT50 or low

freeze tolerance (Table 1), similar to the range of 18 to 17.6 degrees F previously reported for this cultivar at OK State (2, 3, 4). However, the LT50 value was 22.3 degrees F obtained by NC State (6), and the discrepancy may be due to the differences in acclimation temperatures and recovery periods between the two experiments. The samples in their experiment had a shorter establishment period, and they acclimated the samples at a higher temperature.

The lower acclimation temperatures in our experiment could have induced a greater level of acclimation. Also, in the NC State experiment, multiyear (2011–2015) field testing results indicated that Tifway had the highest winter survival among four commercial standards (Patriot, TifSport, QuickStand and Tifway) in 2013, 2014 and 2015 (6). This conflicts with other national reports, which showed that Tifway had high winterkill percentages in Indiana and Kentucky (10). The inconsistency in the winter survival of Tifway could be due to the differences in environmental conditions and genotype X environment interactions during the acclimation period and the winter.

The low LT50 value of Tahoma 31 is consistent with field observations,

Research Takeaways

- Controlled environment evaluation of freeze tolerance provides valuable information for breeders to gauge the genetic gain in breeding winter-hardy bermudagrasses.
- Tahoma 31 was the top-performing cultivar in this study.
- OKC1406 had an LT50 value significantly lower than Tifway and similar to Tahoma 31, indicating superior freeze tolerance.

exhibiting the least winterkill percentage of 4 percent and 25 percent in Indiana and Kentucky, respectively, with superior post-dormancy regrowth (10). Tahoma 31 quickly recovered and reached 75 percent green coverage within 22 days after chilling stress removal (7), indicating high recovery potential after freezing temperatures. The LT50 values of Tahoma 31 in this experiment were similar to results obtained in previous experiments at OK State (8).

Tahoma 31 had a turfgrass quality rating above six in five out of seven locations in the preliminary data of the National Turfgrass Evaluation Program's warm-season putting trial (11), indicating its ability to tolerate a height of cut above 0.125 inch. With the

TABLE 1

Entry	LT ₅₀
	°F*
Tifway	19.4a**
OKC1873	19.0a
OKC1406	16.2b
Tahoma 31	15.6b
LSD _{0.05}	0.9
CV, %	3.3

* Lethal temperature to kill 50 percent of population (LT50).

** Mean separation in the column by Fisher's protected LSD test at P ≤ 0.05.

Mean lethal temperatures resulting in 50 percent survival (LT50) of four bermudagrass genotypes when exposed to temperatures ranging from 7 to 25 degrees F under controlled environmental conditions.

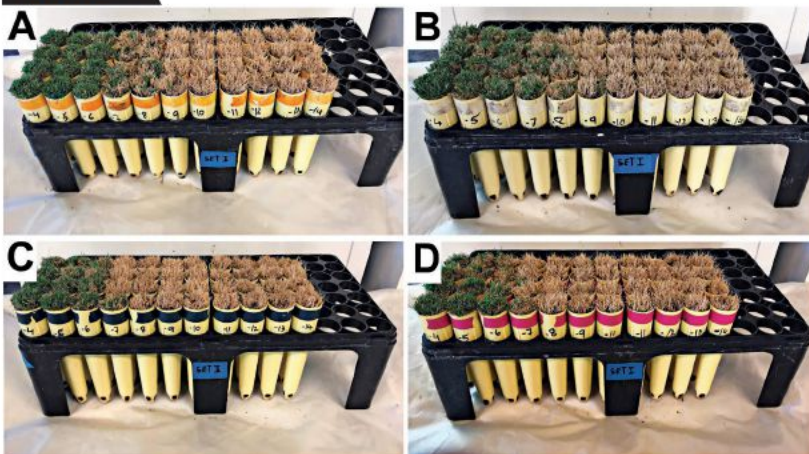
low LT50 reported in this experiment and the ability to handle a 0.125-inch height of cut, Tahoma 31 could serve as an ideal cultivar for fairways and lower maintenance putting greens in the U.S. Transition Zone.

The LT50 of OKC1873 was not significantly different from Tifway, suggesting its range of use should be similar to Tifway (Table 1). OKC1406 was in the same statistical group as Tahoma 31. The result is consistent with a previous report in which OKC1406 was ranked sixth among 53 experimental genotypes for winter survival tested in Kansas (17). OKC1406 had a higher winter survival percentage (88.3 percent) than industry standards Tifway (0 percent), Latitude 36 (20 percent), NorthBridge (25 percent), Patriot (30 percent) and TifTuf (23 percent).

The higher winter survival percentage of OKC1406 than some of the current industry standards and the LT50 value similar to Tahoma 31 in this experiment indicate its high freeze tolerance. However, multilocation and multiyear testing of the experimental genotypes is required to evaluate turfgrass quality, mowing tolerance and pest and disease resistance.

Continued on page 56

PHOTO 3



The temperature was then increased to 75/68 degrees F for a week and afterward to 90/82 degrees F to encourage recovery. The regrowth based on shoot emergence was visually evaluated after five weeks using binary values (1 = alive, 0 = dead). A = Tahoma 31, B = OKC 1406, C = Tifway and D = OKC 1873.

Continued from page 55

CONCLUSION

The controlled environment investigation revealed that OKC1406 was as freeze tolerant as Tahoma 31, whereas OKC1873 had a freeze tolerance similar to Tifway. These evaluations provide valuable information for plant breeders to decide whether the experimental bermudagrass genotypes tested should be subjected to further evaluation. Using freeze-tolerant bermudagrass genotypes will help golf courses decrease costs associated with reestablishing turfgrass lost to winter injury. **G**

Acknowledgments

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Lakshmy Gopinath, Ph.D., Justin Quetone Moss, Ph.D., and Yanqi Wu, Ph.D., are turfgrass researchers at Oklahoma State University. Please get in touch with Lakshmy Gopinath (lakshmy.gopinath@okstate.edu) for additional information about this research.

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*Bellyband

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Golfdom.

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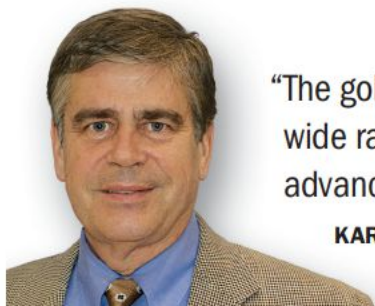
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"The golf course world offers a wide range of employment and advancement opportunities."

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

Embracing a changing workforce

Looking back at 2021, golf and golf course maintenance were impacted by several events. COVID reminded us that times are still not normal. Yet, the efforts of superintendents to keep golf courses open, safe and flourishing through the year was extraordinary. Climate change continued to impact golf courses across the country. With flooding, water restrictions and extreme heat, 2021 was a stressful year.

Besides agronomically focused issues, one issue this past year that monopolized the golf course world centered around the workforce. How to attract and retain qualified employees was the primary topic on the minds of superintendents. Including crew member and assistant superintendent positions, discussions focused on finding people to fill the positions.

Leila Janah, a young CEO and entrepreneur with several startup companies, was quoted as saying, "Work is at the core of human dignity." Yet, a common theme around hiring people is no one wants to work. People do want to work, but increasingly, they want a sense of worth, accomplishment and inclusion in what they are doing.

The golf course world offers a wide range of employment and advancement opportunities. However, a large portion of the workforce does not know of the opportunities, let alone what golf course management is. I teach a golf course maintenance class online at

The Ohio State University. The course is popular, attracting a number of students who take the class as an elective.

The students range in majors from accounting, chemistry or mathematics to business, history or fashion design ... and everything else in between. They vary in race, age, ethnicity, gender and national origin. Some are student-athletes. Some have been blind. Many of the students enrolled at the beginning of the class do not play or even know golf, let alone what golf course management is. We need to continually find ways to tell our story.

The most impactful golf course management event or story in 2021 was the Women's United States Open at The Olympic Club in San Francisco. Troy Flanagan, director of golf maintenance at Olympic, compiled a tournament maintenance crew from the existing employees and volunteers that was 50 percent women. The images that arose from that tournament week were powerful. It was a glimpse at what the future

of golf maintenance could look like.

For those who witnessed the tournament or read national articles on the maintenance crew, it was more than just "women." They were a diverse group ranging in their career stage from students to superintendents. In education, the volunteers included high school students and a college professor. Physically, they varied in height, weight, age, national origin, as well as marital and socioeconomic status. Most likely, they varied in their political views, too.

The golf industry needs to continue to attract a more diverse workforce to remain healthy and growing. Whether as a golf maintenance facility or the industry as a whole, we need to invest and commit to diversity, equity and inclusion as part of the hiring process and daily work routine. These three words have specific meaning and associated actions, and they are key to attracting diverse quality individuals to the industry.

Diversity is expressed in numerous forms. The women who were employed or volunteered at Olympic were recognizable as one, reflecting gender diversity. Diversity also includes race, ethnicity, sexual orientation, socioeconomic status, language, culture, age, educational background, marital status and people of varying abilities.

Equity is a commitment to equal opportunity for all our employees, regardless of the diverse backgrounds of our employees and a commitment to respond to bias, harassment and discrimination.

Inclusion is committing to ensuring that the place of work is a place where differences are welcomed, and different perspectives are respected. In other words, each one feels a sense of belonging and inclusion. ☺

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

The Shop

// MUST-HAVE NEW PRODUCTS



1



3

2



1 | Ego Power+ Backpack Link

The **EGO** Power+ Backpack Link system adds more run time and less weight to Ego tools. The Backpack Link is a universal system, allowing users to put the weight of any Ego battery on their back rather than on the tool or in their hand. Workers can carry the biggest battery Ego makes on their backs, so the blower, string trimmer or hedge trimmer stays light in hand. The Link has a well-made harness with a chest and belly strap for all-day comfort.

EgoPowerPlus.com

2 | Timber Wolf Waterless Hand Cleaner

TIMBER WOLF's Waterless Hand Cleaner offers three functional capabilities in one bottle: It cleans and moisturizes the skin; repels mosquitoes; and prevents and relieves the symptoms of poison ivy, oak and sumac. The company uses ingredients that formulate a skin-friendly, pH-balanced, biodegradable multifunctional green product. It's currently being tested at three major championship golf course maintenance facilities in the U.S.

TimberWolfHandCleaner.com

3 | Ryan Renovaire Tow-Behind Aerator

The **RYAN** Renovaire Tow-Behind Aerator follows the contour of undulating fairways and roughs, providing excellent coring precision. With 6 feet of aerating width and an operating speed of four mph, the Renovaire is capable of completing 3 acres in a single hour. Operators can choose between coring spoons or slicing knives, with weight trays that offer control and power to aerate as deep as 4 inches, even in the most heavily compacted soil.

RyanTurf.com



4

CHECK OUT MORE NEW EQUIPMENT ONLINE

To stay up to date on all the latest products and services, visit golfdom.com/category/products



5



6

4 | Turf Evaluation Kit

The Turf Evaluation Kit from **BERNHARD & CO.** includes a macroscope and prism gauge, packaged together in a hardwearing and waterproof protective case, allowing for safe and convenient storage and transportation. The macroscope allows for an ultradetailed inspection of turf to determine the quality of cut and analyze mower blade performance. The prism gauge allows turf managers to guarantee consistency by viewing the actual height of grass cut after being mown, using the easy-to-read scale.

Bernhard.co.uk

5 | Husqvarna 550iBTX

The **HUSQVARNA** 550iBTX is a powerful and ergonomic battery-powered backpack blower with a blowing power of 550 cfm. Designed for commercial use, its low vibration and noise levels — 61 dBA at 50 feet — allow operators to work in public settings and noise-restricted areas. The lithium-ion-powered brushless motor system means there are fewer parts to service, less downtime and lower operational costs, according to the company. The 550iBTX comes with an IPX4 water resistance rating.

Husqvarna.com

6 | Steiner Core Aerator

STEINER's Core Aerator attachment with 0.75-inch core tine assemblies can core up to 3.5 inches deep, even on the most challenging contours. With the option to add additional weight for better ground penetration in difficult soil conditions, the Core Aerator's precise, quality coring is proven to reduce compaction and improve overall turf health.

SteinerTurf.com

The 19th Hole

Chad Thomson

SUPERINTENDENT // Beaver Creek (Colo.) GC



After 18 holes, what can I get you? I'll take a stout or a porter.

Tell me about Beaver Creek GC. It was designed by Robert Trent Jones Jr., opened in 1982. It's a short course, fairly tight. We're semiprivate, open from early May through early October. We typically get 12,000 rounds a year. This past summer, we got 16,000 rounds.

Tell me about your family. I have two young daughters, ages three-and-a-half and four-and-a-half. I've been married since 2012. We go rock climbing a lot.

How did you get into rock climbing? I originally got into it because I had a friend take me repelling. Then, I had a friend tell me about climbing. I fell in love with it, and I'm still doing it 25 years later.

Did you get your wife into climbing? No, we met climbing. She moved here for a teaching job. Her first weekend in Rifle, she was looking for climbing partners, and everyone said she should get ahold of me. We met, and that was that.

What do you recommend visitors do if they're not skiers? The views from the top of Vail Mountain are spectacular.

BROUGHT TO YOU BY



// BEST ADVICE

"A LOT OF TIMES, WE'RE SO FOCUSED ON THE TURF AND LOOKING DOWN. ALL YOU SEE ARE THE IMPERFECTIONS, BUT IF YOU LIFT YOUR HEAD AND LOOK AT THE VIEW THAT WE HAVE HERE, YOU GET A DIFFERENT PERSPECTIVE."

You can take a gondola ride to the top of the mountain in the summertime.

Why do bears attack the flag sticks here? I'm told it has something to do with the salt on the stick from people touching it. We go out first thing in the morning, and the pin is either laying on the ground or snapped in half. The cup will be pulled out, and the turf is lifted up.

How did you end up here at Beaver Creek? This is my 25th season here. When I left Pennsylvania, I wanted to operate Sno-Cats on Vail Mountain in winter and get a job on a golf course in the summer. I moved out here and got a job operating a Sno-Cat. That spring, I asked my supervisor if there was a job with a trail crew. He said no, but 'I'll call Shane down at the golf course.' I came here, in-

terviewed, got the job and worked my way up. In 2005, I went to Rutgers University for the two-year certificate program. I took over as superintendent in 2009.

How has the course changed over 25 years? The trees have gotten huge and are causing extensive damage. The roots are popping up through cart path, and trees were planted too close to greens. There are about 100 trees I'd like to remove over the next five to 10 years.

Do you still have the urge to drive the Sno-Cat? Every day. You're driving around a quarter-million-dollar piece of machinery, cruising around a ski resort in the middle of the night, going up hills and down steep hills. It's pretty fun.

As interviewed by Seth Jones, Nov. 11, 2021.

TUCKER SNO-CAT (SNO-CAT); PHOTO OF CHAD BY: GOLFDOM STAFF; GETTY IMAGES / ISTOCK-GETTY IMAGES PLUS / FREESKYLINE (BEER); DIGITALVISION VECTORS / SZOTOK (CLIMBER)



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