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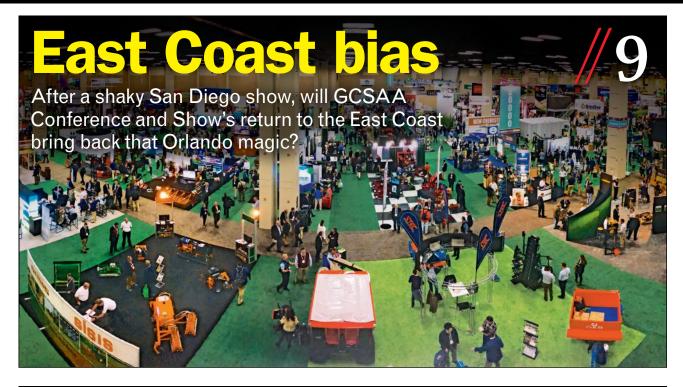
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**GOLFDOM** (ISSN 1526-4270) is published monthly except for a combined November-December issue. *Golfdom* is published by North Coast Media LLC, IMG Center, 1360 East 9th Street, 10th Floor, Cleveland, OH 44114. **Subscrip**tion rates: For US. Canada and Mexico, 1 year 58.95 print and digital; two years \$88.95 print and digital. All other countries, 1 year print and digital aftoy 95.25 years \$169.95. For air-expedited service, include an additional \$75 per order annually. Single copies (prepaid only) \$10 plus postage and handling, For current single copy or back issues, call 847-513-6030. Periodicals postage paid at Cleveland OH 44101-9603 and additional mailing offices.

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"We were lucky to know both men and the family here at *Golfdom* tips our cap to Anderson, Kenney and their families."

SETH JONES, Editor-in-Chief & Associate Publisher

# **Goodbye 2022, hello 2023**

am writing today from south Texas, in the middle of winter, but it's approaching the mid-80s here. A lot has gone on since the last issue of *Golfdom* went to press; more than we could cram into our Starter (news) section. I'm going to do my best to round out the rest of the news here, in my first column of 2023, sitting on the back patio next to my father-in-law's hot tub with a cold beer at my side ...

 Two industry giants passed away in late 2022: Bill Anderson and Bill Kenney. Anderson was the longtime superintendent at Carmel CC, Charlotte, N.C., working there for 40 years until he became the consulting agronomist for the Carolinas Golf Association. He was present at any Carolinas GCSA event one could attend and was beloved by superintendents throughout the area. Kenney was the vice president of Smithco for 40 years. He was a world traveler for the company, and when back home in McKinney, Texas, he and his wife would bring joy to kids as Santa and Mrs. Claus. We were lucky to know both men and the family here at Golfdom tips our cap to Anderson, Kenney and their families. Thank you for your many contributions

to this industry, as well as your friendship.

• Winter Storm Elliott is certainly worthy of a mention. The 2022 holiday season came with a severe blast of cold weather, high winds and, in some areas, massive amounts of snow and flooding. Sadly, this storm took the lives of more than 50 people. For the golf maintenance world, this brought all kinds of challenges as we saw them shared on social media — chasing down greens covers that were blown away, greens that looked like skating rinks, massive snow drifts and the like. As always, superintendents and their crews will persevere.

• The annual **Syngenta Business Institute** made its return as an in-person event for the first time since 2019.
About two dozen superin-

tendents from around the country visited the historic Graylyn Conference Center in Winston-Salem, N.C., for the event. Joining the meeting was our own Group Publisher, Bill Roddy. As someone who "geeks out" on business and financial management, Roddy reports that the event did not disappoint. Taught by professors from Wake Forest University's MBA program, the event steps away from grass growing and instead focuses on business acumen. "Every session was outstanding," Bill told me. "The sessions on managing individuals and teams and on decision making really stood out ... as dynamics have changed so drastically since the onset of the pandemic."

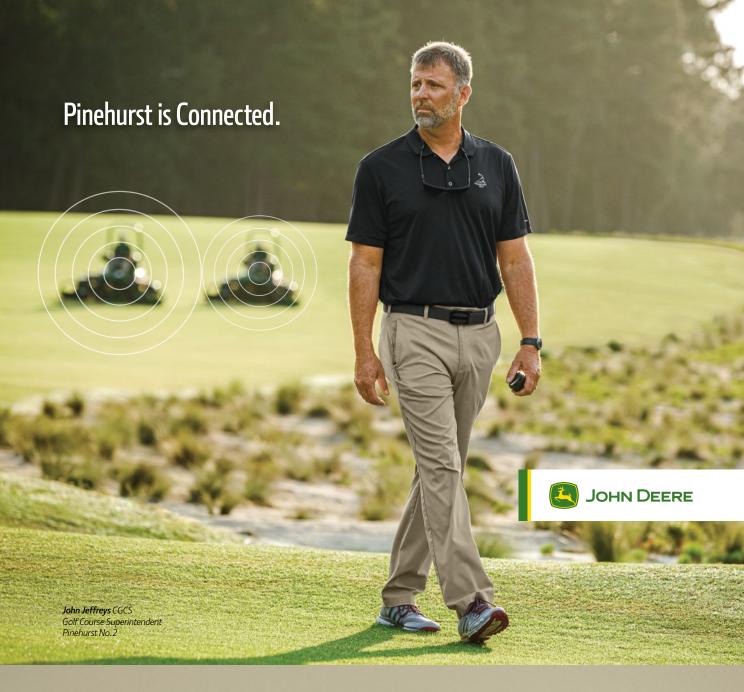
Stephanie Schwenke, Syngenta's turf market manager,

added, "very little industry education is available for managing teams, improving negotiations and thinking about work/life balance ... for these reasons, Syngenta is proud to provide superintendents with the opportunity to be successful leaders while mentoring the next generation."

• I'd like to point out my 19th Hole Q&A in this issue is with longtime New Jersey superintendent Doug Vogel. (The story of his crappiest day at the course made me laugh out loud.) A self-proclaimed Golfdom historian, Doug is passionate about golf maintenance and its history; he's also a regular reader of our nearly 100 years of online magazine archives. Doug recently published a book, available on Amazon. If you're a baseball fan and interested in golf history, I'd recommend his book, Babe Ruth and the Scottish Game. Doug handed me a signed copy at the recent Golfdom Summit, and I've been enjoying the short stories detailing the Great Bambino's love affair with our great game.

• This month's cover story focuses on the GCSAA Conference and Show's eagerly-anticipated return to Orlando. If you're attending the show, I hope you'll come see us at Booth No. 561, right across from Toro. If I'm not at the booth, you'll surely see me roaming the various industry events — grab me and say hello. If we haven't met yet, let's fix that. ©

Email Jones at: sjones@northcoastmedia.net.



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//MENTORING THE NEXT GENERATION

# GREEN START ACADEMY RETURNS TO PINEHURST

BY SETH JONES // Editor-in-Chief

The annual Green Start
Academy, now in its 17th
year — co-hosted by John
Deere, Rain Bird and Envu Professional Golf Management — made its
return to Pinehurst Resort for the second year in a row. The event hosted 50
assistant superintendents.

Lectures included, "What I wish I knew when I was an assistant superintendent," "Basics of building a budget," and "How to build a successful team." Nine top superintendents from around the country traveled to Pinehurst to support the program and deliver the presentations, including Lukus Harvey, Atlanta Athletic Club; Todd Bohn, Desert Mountain Club, Scottsdale, Ariz.; and Robert Hertzing, Lakeside GC, Burbank, Calif., among others.

"Make sure you have monthly communication with your board, your committees, your members. Put information in your newsletters. We do a weekly report for every course," Bohn told the group. "I do turf talks with my pro every two weeks. And don't just show all the good, be up-front, or they'll see right through it."

Kolton Dickinson, assistant superintendent at Prairie Dunes CC, Hutchinson, Kan., told *Golfdom* he's attended many conferences, but Green Start was different.

"There's nothing like the Green Start Academy. To be completely disconnected from the agronomy aspect was huge," Dickinson says. "Being able to hear insider information about taking the next step in your career, being able to hear from people in the industry who have taken the next step, as well as talking to people at the same stage as me and putting your heads together about what makes someone special."



#### //ALWAYS REMEMBER YOUR FIRST

#### GREENKEEPER UNIVERSITY CELEBRATES INAUGURAL CLASS

GreenKeeper University (GKU) recently celebrated and recognized its first graduating class. GKU said its inaugural class captured the diverse array of turf professionals in the industry.

GKU said graduates proved how the CEO of a golf management firm, an experienced superintendent, a new superintendent and an aspiring turfgrass professional could complete the program and better their careers.

The first five graduates of the program include:

Scott Denil — superintendent at Pine Meadow GC, Mundelein, III.

Patrick Sauder — CEO at Renovita Wilen GmbH, Wil SG, St. Gallen, Switzerland

Joseph St. Lawrence — superintendent at Farmington CC, Milton, N.H.

Andrew Porubiansky — superintendent at Piedmont Driving Club, Carrollton, Ga.

Jake Dunn — superintendent at Forest Hills GC, Onalaska, Wis.

"The knowledge I gained from GKU has been invaluable to my growth here at my facility," said Denil. "The support from all the instructors at GKU exceeded all expectations. Relationships and assistance didn't end when the classes were over. The projects/assignments were geared so you could apply it to your location."

#### //JOINING FORCES

## THREE OHIO ASSOCIATIONS MERGE

The Central Ohio GCSA, Northwest Ohio GCSA and the Miami Valley GCSA have joined forces to form the Ohio GCSA.

"The individuals who run these other chapters are talented people," said Rodney Robbins, president of the Central Ohio GCSA. "They're smart, and they're driven. So, the fact that we're bringing that talent together will make us stronger. We're bringing in the best talent from Toledo, Dayton and Columbus and working together toward the same goal."

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#### //A DESIRE TO SERVE

# Georgia GCSA names Griffith superintendent of the year

The Georgia Golf Course Superintendents Association (GCSA) named Scott Griffith, CGCS, from the University of Georgia Golf Course Athens (UGA), its superintendent of the year. The association honored Griffith

before a crowd of more than 250 people at its annual awards banquet at The King & Prince Beach and Golf Resort in St. Simons Island.



**Scott Griffith** 

"If you look at the names of the people who have won that award in the past, it's a pretty strong group of individuals," Griffith told Golfdom. "(Winning this award) is a testament to the work that I've put in through the years."

Griffith, in his 16th year at the UGA Golf Course, has been at the forefront of Georgia GCSA activities for more than a decade as a treasurer, vice president and president. He also hosts an annual tournament which generates \$200,000 for the association's scholarships.

Griffith is also a nominee to serve on the Golf Course Superintendents Association of America's board of directors. He tells *Golfdom* that after a year away from the Georgia GCSA — following his service as immediate past president — he caught the itch to get back into serving the golf industry.

"I was at a past presidents meeting and the topic came up," he said." I was told, 'Scott, sometimes you've got to do it when the timing is right."

#### //WELL-DESERVED RECOGNITION

#### GCSAA NAMES NEWTON 2023 MORLEY AWARD WINNER

The Golf Course Superintendent's Association of America (GCSAA) named John



John Newton

Veenker Memorial GC at Iowa State University, the 2023 Col. John Morley Award winner. The Morley Award

Newton, CGCS, retired,

former superintendent of

The Morley Award honors a current or former GCSAA Class

A or B superintendent member who has made a significant contribution to the advancement of the golf course superintendent's profession.

"Throughout his career and beyond, John has exemplified the characteristics that the Morley Award represents," GCSAA CEO Rhett Evans said. "His passion for the turfgrass management profession, successful track record of mentoring the next generation of superintendents and consistent delivery of outstanding golf course conditions perfectly aligns with the spirit and criteria of this pinnacle GCSAA award."

Newton will formally receive the award on Feb. 8 as part of the Sunrise Ceremony of the 2023 GCSAA Conference and Trade Show in Orlando.

#### //APPLY NOW

# APPLICATIONS NOW OPEN FOR U.S. OPEN INTERNSHIP

The USGA recently opened applications for the USGA Pathways Internship program at the 123rd U.S. Open Championship at The Los Angeles Country Club. USGA said this program is part of the organization's ongoing effort to introduce individuals from underrepresented communities to careers in golf.

Launched as the Lee Elder Internship by The Country Club at the 2022 U.S. Open, the USGA said it will continue to lead the educational experience.

The annual 10-day program will immerse 20 college and graduate students in the operations of the U.S. Open. Those interested can apply through Feb. 10.

The curriculum for the program includes a series of instructional sessions paired with job shadowing and on-site training that covers all aspects of the championship. The program also provides networking with leaders from the industry and more.

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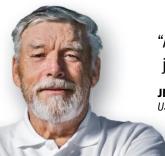
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"A close-up of a healthy root system shows just how amazing turfgrass plants really are."

**JIM MOORE,** retired director of education and outreach, USGA Green Section

# Why a scanner can be a helpful tool

have never met a good turf manager who wasn't willing to occasionally get down on their stomach and get as close a look as possible at the plant that pays the rent. Even after more than 50 years of working with golf course turf, I'm still amazed at the complexity and intricacy of the world beneath our feet.

While there are plenty of great tools to help you get that close look, there is one that is extremely effective but often overlooked — the flatbed scanner.

We tend to think of scanners serving only to convert a 2D image into a digital image. However, scanners are also very good at scanning 3D items with amazing resolution and clarity. Unlike a microscope, where you change lenses to increase magnification, with a scanner, you change the resolution of the scanned image. Subjects to scan include turfgrass leaves, insects and sand particles.

#### **Easy ID**

Scanning turfgrass leaves, crowns and roots prove

invaluable for disease identification. You can easily share the scanned image with a pathologist to help you make a good treatment decision. The picture will also reveal how sharp or dull your mowers might be.

Scanning insects is much the same. A close-up of the bug in question can help you be certain you are using the







A plug removed with a cup cutter provides a great sample for scanning (left). Laying the plug grass side down will provide a perfect close-up of the turf (center). Look at the detail in this 1,200 DPI scan of the plug. This scan shows *Pythium*-damaged leaves, the need for a sharper mower and less than ideal coverage of a fungicide application (right).

correct chemistry or if treatment is necessary. Scanning sand might, at first, seem a bit strange. However, by laying a ruler next to the sand on the scanner bed, you can easily determine if the sand at your course is of the proper size and angularity.

There is no end to the 3D items you can scan. Some reveal the beauty you would otherwise never see. For example, a close-up of a healthy root system shows just how amazing turfgrass plants really are.

Fortunately, you don't have to spend a fortune on a flatbed scanner. For less than \$200, you can pick up a very good scanner capable of doing everything you need. Don't let the resolution numbers confuse you. You will seldom — if ever — need to scan anything at more than 1,200 DPI (dots per inch), a resolution even the cheapest scanners can produce. Scanners almost always come with all the scanning software you will need.

Once you hook up your scanner, simply place your subject face down on the glass. It helps to place a blank sheet of paper over the item to give a good background to the scanned image. Different colors of paper can produce really dramatic images. **G** 

Jim Moore is the retired director of education and outreach for the USGA Green Section. While with USGA, Moore made more than 1,000 consulting visits to golf courses in the U.S., Mexico and Germany. Now retired, he lives on the family farm in McGregor, Texas. He can be reached at jfcmoore@gmail.com.

PHOTOS BY: JIM MOOF



# **East Coast bias**

**BY SETH JONES** 

any outside factors hindered the success of last year's GCSAA Conference and Trade Show, largely based on California's strict

COVID-19 rules for large meetings. Now that the show returns to Florida next month — Orlando is historically the association's most heavily attended location — Golf Course Superintendents Association of America (GCSAA) CEO Rhett Evans is hopeful to see record attendance for the first 'normal' show since the pandemic.

Along with this Q&A with Evans, we asked conference exhibitors if they had a product that could make an attendee stop in their tracks. We present these "showstopper" products — and where they can be found — on page 13.

**Golfdom:** Rhett, thank you for taking the time. Looking at the schedule this year, Tuesday looks really different from years past, with 'interactive learning tours.' Tell us about the new things happening at GCSAA Conference and Show this year.

**Evans:** Monday and Tuesday, before the trade show starts, we've created seven interactive

from a COVID standpoint."

facility tours that will run in the morning and the afternoon. It will allow the attendees to have more of a hands-on learning experience. This is ultimately coupled with the trade show, looking at the products on the floor, on Wednesday and Thursday. When we look at those seven interactive tours, they're going to be centered around a specific topic. For example, over at the Ritz-Carlton at Grande Lakes, we'll have the superintendent there and subject matter experts walking through (best management practices). So you'll physically get to see how they're implementing and you're onsite so you can ask questions.

Another example is we've got tournament prep at Bay Hill. Chris Flynn, CGCS, the superintendent there, will be walking through tournament prep, not only for major tournaments but all the way down to hosting a charity church tournament. There are seven of these (interactive tours), including one for equipment managers. It's a new and improved way to learn.

**Golfdom:** What will this look like for attendees? How many people will be out on the golf course together?

Continued on page 12

GCSAA
CEO Rhett
Evans looks to
Orlando for a
bounce-back
Conference
and Show

"San Diego was rough, from the standpoint of we weren't quite out of COVID yet, then we had the Omicron variant that popped up right before the show and the mask mandates and other issues that were going on with the state of California.

We believe we're in the clear here (for Orlando), at least



- RHETT EVANS, GCSAA CEO

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### **USGA** ups show involvement

The United States Golf Association (USGA) upped its involvement in the GCSAA Conference and Show and is now a presenting partner of the show, along with the Golf Course Builders Association of America (GCBAA) and the American Society of Golf Course Architects (ASGCA).

Part of the partnership will include the active participation of the USGA and their Green Section Agronomists in a

20,000-square-foot 'interactive grass stage' built at the 2023 conference.

"Collaboration is vital to golf's future, and this is a clear case in which we can achieve so much more than what we can do alone," Mike Whan, CEO of the USGA, said. "This is just the start, as golf leads the way to advance key issues like resource conservation while keeping our courses healthy and viable for generations."

Continued from page 9

**Evans:** I don't know the number off the top of my head ... whatever you can fit on two buses. We'll go out there in the morning and then turn around and do it again in the afternoon. The reason for that is it's going to be a walking tour. I mean, you're going to be literally in a bunker. You'll be on the property and moving around in golf carts, so it is capped.

**Golfdom:** How is attendance looking right now? How is it tracking?

**Evans:** Really good. Our key indicators are exhibitor sales. We're taking out San Diego (2022 GCSAA Conference and Show) because we want to compare apples to apples. We're going back to when we were in Orlando several years ago, and we're on pace with where we were back then. One thing that we're ahead of from the past is seminar seats. We're doing fewer of them, but they are better quality.

**Golfdom:** Orlando is your best-attended show of the rotation. With last year's San Diego show, there was some bad luck in regard to COVID and the mask mandate. Do you view this Orlando show as a chance for the show to make a big bounce back?

**Evans:** Yeah, that's what we're hoping for. And I think you said it well ... San Diego was rough, from the standpoint of we weren't quite out of COVID yet, then we had the Omicron variant that popped up right before the show and the mask mandates and other issues that were going on with the state of California. We believe we're in the clear here, at least from a COVID standpoint. Florida is easier access in and out. It's more golf-centric.

It's historically been our high watermark in terms of attendees and exhibitors. We're really looking forward to hopefully having COVID past us and back to normal if we call anything normal anymore.

**Golfdom:** How important is this show to the health of the GCSAA?

Evans: It's our crowning event. It's our opportunity to showcase all of our programs and services. We believe that our more than 19,000 members are essential to the game of golf and its success, and this show is essential to their success. It's an opportunity for them to learn, grow and network with other golf course professionals. They're learning from some of the brightest minds in the business. It's extremely important, from the standpoint of taking the industry and the profession to the next level. We believe that we will be able to deliver that with some of these new interactive facility tours.

**Golfdom:** Is there anything else you want to point out about this show?

Evans: I think last year, for the welcome reception, we had a good opportunity on the USS Midway, which a lot of people took advantage of. We found that to be successful, so we're replicating that in Orlando on Monday with the welcome reception, which will be outside at Aquatica, a SeaWorld property. I think a lot of people have been away and haven't seen some of their friends. So to be able to come together in a setting like that, it will be good to be face-to-face with folks and share the stories of the past couple of years and reconnect. **G** 



# Showstoppers!

We asked companies exhibiting at GCSAA Conference and Show which of their products would stop an attendee in their tracks. These are the products they said could do it.

#### **SERATA FUNGICIDE**

FMC // Booth 2073

**What it is:** Serata fungicide contains the active ingredient picarbutrazox — a new mode of action and its own unique FRAC Code (U17) for *Pythium* root rot, *Pythium* blight and *Pythium* root dysfunction control. Serata is ideal for the control of *Pythium* diseases, where others have failed and also an option as a rotational partner.

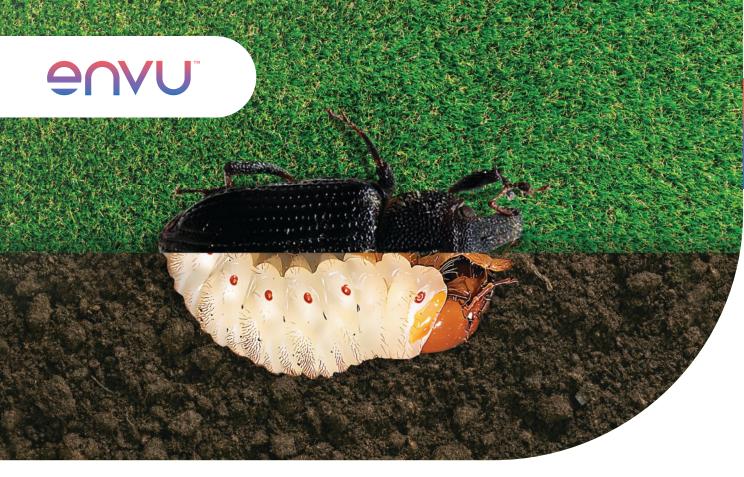
What it does: Pythium diseases are extremely destructive and progress very quickly. The disease that keeps superintendents up at night has long needed a unique solution. Serata fungicide meets those needs, performs under pressure and provides a completely new mode of action for superintendents.

Continued on page 16









# Two major pests. One complete solution.

Set a new benchmark in white grub and ABW control.

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Learn how Tetrino can up your game against white grubs and ABW at us.envu.com/tetrino-golf



# Built on a 50-year legacy of environmental excellence

Visit us at GCSAA booth #1561.





Continued from page 13

#### **BAC-PACK**

#### Soil Technologies Corp. // Booth 2621

What it is: Bac-Pack improves biological diversity in the soil and optimizes plant health so it can recover from abiotic and biotic stress. Regular Bac-Pack applications improve root growth and help restore turf affected by pathogen damage.



What it does: Recovering from disease and nematode pressure at the height of the season is increasingly challenging. Bac-Pack offers turf managers an inexpensive and effective tool.

## PRO-FLEX 120, TRI-DECK AND CONTOUR ROLLER

#### Progressive Turf Equipment // Booth 621

What it is: With the contour following of the Proflex 120, the contour hugging capabilities of the TDR-X or the versatile fairway roller, superintendents trust Progressive Turf Equipment. 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-feet and 15-feet widths.

**What it does:** The different mower widths allow the superintendent to match the proper



mower to their course to get the maximum mowing done in the shortest amount of time. Other innovative options include 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.

#### **SUPRADO**

#### Quali-Pro // Booth 2063

What it is: Suprado insecticide is a new class of chemistry to fight against annual bluegrass weevils (ABW), powered by novaluron, an insect growth regulator. Suprado timing is versatile, preventing adults from reproducing successfully and controlling larval stages.



Continued on page 18

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# ADIFICIALIZED SUSTAINABLE CREEN

GreenTRX® fertilizer provides slow-release, bio-based nutrition that feeds turf today, and enriches soil for greener, more sustainable turf management. Its standard, intermediate and elite size granules provide easy application and can deliver uniform results for up to eight weeks.

Ask your distributor about adding the immediate, long-term benefits of **GreenTRX** to your turf strategy. anuviaplantnutrients.com/where-to-buy

GREENTRX.

TURF'S GREENER FUTURE



Continued from page 16

What it does: The ABW is the most destructive pest for superintendents in the northeast. Suprado addresses the growing issue of ABW resistance to traditional chemistries by introducing a highly effective active ingredient that ABWs have never been exposed to before.

#### **HOSE CADDIE REEL**

#### Underhill International // Booth 1273

What it is: The new Hose Caddie Reels and Trailers are designed by and built for turf professionals to make hand watering easier.

What it does: The days of lifting a heavy, wet and awkward hose in and out of a utility vehicle when spot-watering turf around the golf course are over. The Hose Caddie Reel keeps the hose in better condition, prevents kinks and tangles and increases efficiency.



#### GX-1A

#### GroundWorx // Booth 1021

**What it is:** The GX-1A is an advanced wireless in-ground moisture, salinity and temperature sensor specifically designed for use on golf courses.

Continued on page 20



PHOTO BY: XXXXXXXXXXX

# COMMERCIAL GRADE. ALL DAY POWER.















**All Day Power** 



**User Friendly** 



**Planet Friendly** 



Find a Dealer at: meangreenproducts.com





Continued from page 18

#### What it does:

GroundWorx provides the sensor data necessary to make the right water and electricity usage decisions in a user-friendly appbased platform. Track the metrics needed to show efficiencies and manage the conversation on these valuable resources.



#### GREENCASTONLINE.COM/ GCSAASHOW

Syngenta // Booth 2872

What it is: Syngenta is excited to discuss its proven innovations, including Acelepryn insecticide, that help turf industry professionals tackle difficult pests on the course. As a key product in several agronomic programs, Acelepryn is a trusted solution to help ensure optimal turf quality.

**What it does:** Powered by an innovative mode of action, chlorantraniliprole,

Acelepryn provides exceptional control of key insects that severely damage turf and landscape ornamentals, including

white grubs, turf

caterpillars, Japanese beetles and annual bluegrass weevils.
Acelepryn is the longest-lasting insecticide in the turf market, delivering the flexibility to apply early without the need to water in.



## NINJA GPS SPRAY CONTROL SYSTEM

Frost // Booth 1673

What it is: By using spray technology like the Ninja GPS Spray Control System, more work can be accomplished by fewer people. Hundreds of golf courses across the country



have depended on the performance and reliability of the Ninja system since 2012.

What it does: The Ninja system controls each nozzle individually to minimize overspray. It automatically controls spray rate and manages dual nozzles to allow faster driving speeds. Simple to use, the Ninja system keeps records following each application, which users can later view on Google Earth.

#### PEDIGREE FUNGICIDE SC

PBI Gordon // Booth 2264

What it is: Pedigree Fungicide SC is formulated to provide provide excellent control of brown patch, fairy ring, leaf and sheath spot, large patch, red thread, pink patch, yellow patch, southern blight and gray snow mold.

What it does: Pedigree has shown safe and consistent performance on creeping bentgrass, Kentucky bluegrass, annual bluegrass, annual and perennial ryegrass, red fescue, tall fescue, bermudagrass, zoysiagrass and St. Augustinegrass. The first liquid flutolanil formulation, Pedigree is labeled for use on golf courses, residential and commercial properties and sports fields.





# **Golfdom** Product Showcase



# **AQUARITIN TURF**

with Anil Nanda
President

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

Aquaritin 19 is a highly concentrated foliar spray applied at just 6 ounces per acre. That's a lot less handling of materials, as compared to nearly 120 gallons of 30-0-0 and 40 gallons of micronutrient foliar apps commonly applied on the fairways.

While you would still need a slow-release granular at the beginning of the season, Aquaritin 19 will deliver color, density and protection against biotic and abiotic stress throughout the playing season. No other supplemental applications are necessary and depending on the conditions, superintendents may be able to lower the total number of fairway applications.





#### How do your products or services save labor?

Aquaritin 19 tank mixes easily with all fertilizers, fungicides and plant growth regulators (PGRs). It does not require any preparation and each 33-ounce bottle covers 6 acres. Unlike other nutritional products, Aquaritin 19 delivers plant health without surge growth, which translates to a lot less clippings and cleanings.

The nanosilica in Aquaritin 19 is known to reduce water loss and protect the plant

against heat stress. Our customer feedback suggests that they have had to hand water less frequently and experienced less stress from foot traffic.

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

At nanoscale Aquaritin is more than 60 times more concentrated as compared to conventional products. And that is 60 times less product handling. When added to the tank, it enhances the efficacy of fertilizers, fungicides and PGRs by up to 30 percent.

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

Aquaritin 19 is a part of the greens program in at least five PGA tour courses. It is known to have increased density, improved green speeds without lowering HOC and maintained playability late into the day. All of this means happier repeat customers.

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

Because we are not trucking water around the country, we can afford to price competitively. At \$29 per acre, Aquaritin 19 is at least half the cost of comparable product combos.

Nanosilica is known to enhance plant resistance against biotic and abiotic stress. Over time this can result in lowering the applications of fungicides and pesticides.

Silica also lowers water loss resulting in lower use of water. One of our customers has estimated a 22 percent reduction in irrigation.

AquaritinTurf.com @Aquaritin\_Turf



**GCSAA Conference and Show Booth 2177** 

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# **Golfdom** Product Showcase



## **DRYJECT**



with John Paddock
Owner and president

#### How does your service save superintendents time?

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

#### How does your service save superintendents labor?

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

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

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

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



golfer's perception on playability).

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

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



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

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

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

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

307 Lincoln Ave., Hatboro, PA 19040 (2) 215-444-0310 (3) DryJect.com

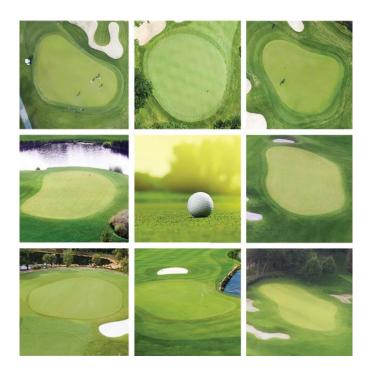


DryJect Hatboro 💟 @DryJect



**GCSAA Conference and Show Booth 2727** 

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# Take good care of your babies.



#### **HOW DRYJECT SERVICE WORKS**

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

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

### Put DryJect<sup>®</sup> to work for you.

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

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

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



Aerate, amend and play right away™



DryJect



DryJect



Technologies



**800-270-8873** DryJect.com

# **Golfdom** Product Showcase



# **FMC**



## with Mike Sisti

North American marketing manager

#### **How do FMC products** save time?

Serata is a Pythium control product powered by the active ingredient picarbutrazox, an entirely new mode of action. This novel chemistry represents a major addition to the Pythium control toolbox and a much-needed option for healthy turf. Pythium can be devastating and, until now, has been a disease with limited control choices. With Serata. superintendents can rest easy knowing they have a powerful option protecting their turf.

#### **How does Serata help** superintendents in a resistance management program?

Serata is from a new class of chemistry, tetrazolyloximes. While





the exact mode of action pathway is still being defined, it is theorized that picarbutrazox works by affecting the biosynthesis of phospholipids, which disrupts the normal function of the pathogen's cellular membrane. It will be listed as FRAC U17.

Given the new mode of action. Serata will also serve as a new choice for superintendents to add to their fungicide program to help break or manage resistance.

Serata has translaminar activity and no known cross resistance between it and other oomycete chemistries, making it an ideal tool for Pythium control and resistance management.

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

Several recent university trials from across the country have shown Serata to be very effective and for longer periods against Pythium root rot. Based upon these trials, superintendent will not only have peace of mind against a truly destructive turf disease, Serata's longevity will also reduce the likelihood of additional applications and rescue applications when other products fall short and fade.

2929 Walnut St., Philadelphia, PA 19104 215-299-6750 ( GSS.FMC.com





(F) @FMCTurf (F) @FMCProSolutions (In linkedin.com/company/fmc-professional-solutions/ (P) @FMCTurf

**GCSAA Conference and Show Booth 2073** 

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It's true. Sometimes the unlikely happens. Serata™ Fungicide brings an entirely new mode of action for the control of pythium diseases with picarbutrazox. With a new class of chemistry, Serata™ Fungicide controls key diseases like Pythium Root Rot, Pythium Root Dysfunction and Pythium Blight. Believe it.





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

# **Golfdom Product Showcase**



## **HUNTER INDUSTRIES**

with Carl Eberts
Golf Category Manager

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

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

#### **How do your products** save labor?

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

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

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

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

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



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

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

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

1940 Diamond Street, San Marcos, CA 92078 ( 760-744-5240 HunterIndustries.com/Golf



@HunterIndustries ( @Hunter\_Ind



**GCSAA Conference and Show Booth 2440** 

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# GET A COURSEWIDE AUDIT EVERY DAY — IN MINUTES!



# LIFE IS BETTER WITH PILOT® CCS



Integrating the power and intuition of Hunter Pilot Command Center Software with the unmatched hardware and data analysis from POGO will help you save time and resources with more informed scheduling adjustments based on real-time soil data.

Identify and address problem areas with ease using color-coded visual insights that highlight turf in need of immediate attention — often before symptoms appear.



#### **WORK SMARTER AND SAVE WATER**

We'll audit your system to help you reduce costs, maximize resources, and deliver a better golf experience for players. Contact us today to get started.

hunter.info/lifeisbetter



# **Golfdom** Product Showcase



## **JACOBSEN**



# with Adam Underwood Senior manager of international marketing

The new Eclipse 360 ELiTE from Jacobsen combines the next generation of ELiTE lithium-ion batteries with Jake's signature cut. Find out from Adam Underwood, senior manager of international marketing at Jacobsen, why golf course superintendents around the world have been so excited to order them.

#### **How does the Eclipse 360 ELiTE** make golf courses more environmentally friendly?

The latest ELiTE lithium-lon battery and a hydraulic-free design make the Eclipse 360 electric reel mower the greenest, quietest and highest-quality Jacobsen cut available for your golf course. ELiTE batteries powered E-Z-GO vehicles for more than 60 million hours, and the Eclipse 360 ELiTE has adopted that technology to make a mower that can cut 36+ large greens on a single charge. Noise during operation is reduced to virtual silence, meaning the machine can cut anywhere early in the morning without disruption. Expect a significant reduction in noise pollution combined



with zero air pollution in the allelectric model.

#### **How does the Eclipse 360 ELITE** help golf course superintendents get the best quality cut?

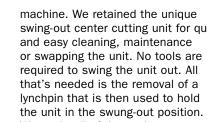
Jacobsen has a decade's worth of experience with the Eclipse range and the features of this new machine reflect that experience. The Patented Frequency of Clip Control ensures a consistent cut every time by linking the reel speed to the forward speed. By having the reels turning in time with the wheels, you keep a consistent frequency of cut regardless of who is mowing but still have the option to increase it without reducing the mowing speed. This control is taken further with individual unit controls that can adapt the cutting configuration to vary wheel runs and truly eliminate triplex ring.

#### What is the Eclipse 360 **ELiTE like to maintain?**

We paid great attention to the access and maintenance aspects of the

machine. We retained the unique swing-out center cutting unit for quick and easy cleaning, maintenance or swapping the unit. No tools are required to swing the unit out. All that's needed is the removal of a lynchpin that is then used to hold the unit in the swung-out position. We made all of these changes following a 360 durability review that has also included the addition of new brushless lift actuators that have transformed the lifespan of the previous option.

See the Eclipse 360 ELiTE in action and view the full tech specs online, or contact your nearest Jake dealer for a demo: Jacobsen.com/



golf-mowers/eclipse-360-elite

1451 Marvin Griffin Road, Augusta, GA 30906 1-800-848-1636 Dacobsen.com















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PROVEN | POWERFUL | PROTECTIVE







# **Golfdom** Product Showcase



## **POGO TURF PRO**



with Carmen Magro, CGCS
President

#### How does POGO save time?

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

#### How does POGO save labor?

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





#### **How does POGO** save materials?

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



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

#### **How does POGO** impact revenue?

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

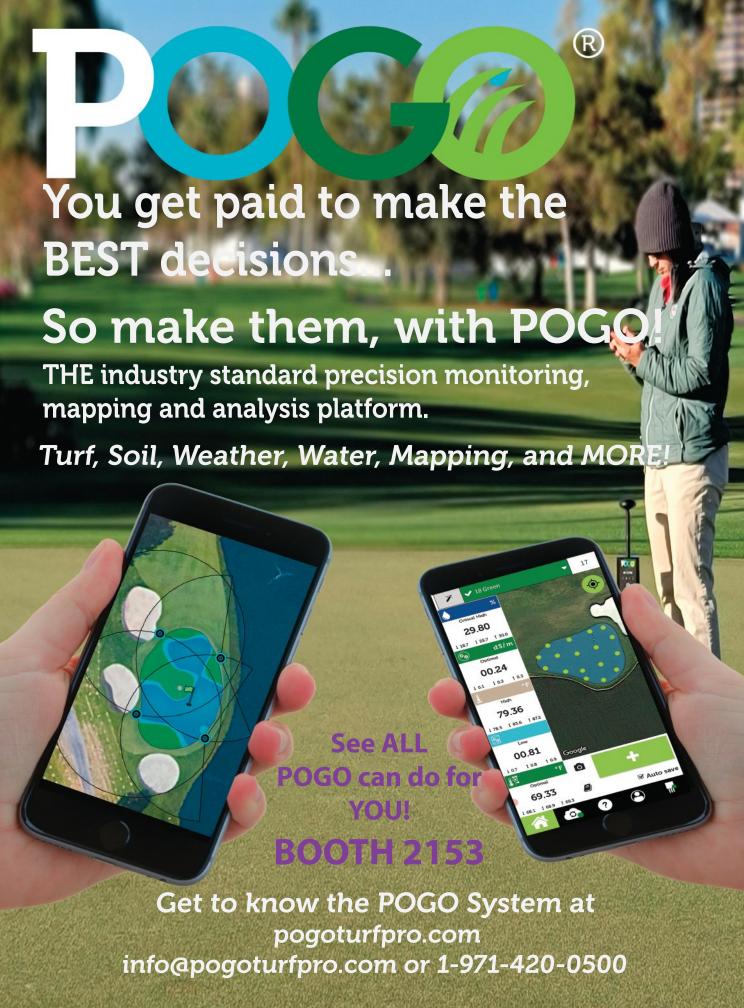
12067 NE Glenn Widing Drive, Suite 106, Portland, OR 97220 (2) 215-908-0044 (##) PogoTurfPro.com @PogoTurfPro





**GCSAA Conference and Show Booth 2153** 

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## **POROUS PAVE**

with A. John Harvey, ASGCA, ASLA

Parks, landscape and golf industry specialist

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

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





the reuse of scrap tires in golf and landscape applications.

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

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

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

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

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

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

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

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

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





PorousPave in Linkedin.com/company/porous-pave-inc-/

**GCSAA Conference and Show Booth 900** 







## PRIME SOURCE

with Steve Jedrzejek
Proprietary product 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 num-

ber 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, including inhibition of photosynthetic activity. Its multifaceted control platform takes out target weeds at first application every time, which drastically reduces re-spraying — 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 coolseason 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?

Universities including Purdue, North Carolina State, Virginia Tech, Tennessee and Rutgers have conducted trials over the past three years.

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.

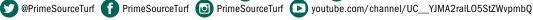


1525 NE 36th St., Ankeny, IA 50021 800-247-8013 PrimeSource-Albaugh.com









**GCSAA Conference and Show Booth 2521** 



THERE'S SIMPLY
NO OTHER HERBICIDE
LIKE SUBLIME.



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**.





# **QUALI-PRO**

# with Allan Fulcher President of turf/Quali-Pro division

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

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

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

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





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

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

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

When you use products that work, your golf course will look wellmaintained 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 for your pesticide needs. Quali-Pro continuously works to develop new solutions that save you time, money and increase your bottom line. Check out our portfolio today!

5903 Genoa Red Bluff Road Pasadena, TX 77507 🔇 800-242-5562 🌐 Quali-Pro.com



@Quali\_Pro **GCSAA Conference and Show Booth 2063** 



# Explore. Discover. Earn \$50.

### What is it?

Quali-Pro Academy (QPA) is an incentivized product training program covering several key Quali-Pro products in a self-guided learning experience that takes only about 45 minutes.

### Who is invited?

Golf Superintendents and participating distributor reps.

#### When is it?

February 1, 2023 through March 31, 2023.

#### Where is it?

Visit www.QualiProAcademy.com to register and take the training.

### What's in it for me?

High-quality, professional product training that will boost your comfort & confidence with some of Quali-Pro's best solutions! You will earn a \$50 gift card after you complete the required training modules and score 80% or better on the guizzes.

### Earn on-the-go!

QPA is mobile-friendly and works anytime, anywhere!

QualiProAcademy.com







# **SIPCAM AGRO USA**

Q+A

with Linda Satter
Key account manager

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

The unique combination of the active ingredients in Coastal herbicide gives the superintendent preemergent and postemergent control on some difficult-to-control weeds. Multiple active ingredients with multiple modes of action mean less tank mixing and fewer containers to triple rinse and dispose of.

In addition, the spectrum of weed control minimizes the number of products a superintendent needs to add to the tank mix.

### How do your products or services save labor?

At a maximum use rate of 64 ounces per acre, and the combination of key herbicides, less cases and products to mix equals more time applying and less time at the fill station. Fewer products to mix also reduce the potential for mistakes. Both pre and postemergent qualities allow the





superintendent flexibility of timing based on target weeds and specific requirements when implementing their agronomic strategy and labor needs.

# How do your products or services fit in with resistance management programs?

Without a doubt, one of the biggest challenges a superintendent faces today is resistance management. The rotation of chemistries and a sound agronomic program are key.

We designed Coastal herbicide

with that in mind. Simplicity and ease of use make Coastal herbicide a strategic product when designing turf management programs. Resistant weeds and weed shift created a need for a product like Coastal herbicide to be added to a superintendent's rotation of herbicides in their arsenal.

# How does your product or services allow for application flexibility on multiple turf types?

Coastal herbicide is registered for use on all four major warm-season turf types including bermudagrass, zoysiagrass, St. Augustine and centipede grasses. This allows the superintendent to apply one product in one tank on multiple sites, including clubhouse lawns and surrounding areas.



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**GCSAA Conference and Show Booth 3173** 





# STANDARD GOLF

with Matt Pauli
Vice president and director of marketing

### What is GreenActivator?

GreenActivator is a naturally sourced liquid fertilizer that improves turf health by enhancing root mass. It combines a extraction process of humic and fulvic acid with a low dose of NPK. Superintendents apply this proprietary blend in a plant-ready form which absorbs into the plant in less than 15 minutes.

### **How does GreenActivator** improve turf health?

Simply put, GreenActivator enhances root mass in both the base and fine root systems. With stronger, healthier roots, the turf becomes more resilient requires less water and will more quickly regenerate from traffic, divots and turf damage. A healthier, stronger root system below the surface creates a greener, thicker, sturdier grass above the surface, improving the appearance and also playability.

### Has GreenActivator been tested in any university trials or research?

Yes, researchers studied



GreenActivator. Turfgrass researchers at Iowa State University discovered more root branching, improved stress tolerance. increased soil microbial activity and more soilavailable nitrogen. In a recent study, researchers found that a bentgrass sample treated with GreenActivator had a root length 800 percent greater and a root surface area of 1,100 percent more than a controlled sample of the same grass

How does GreenActivator save materials and money?

First off, you only need 48 ounces of GreenActivator per acre (1.1 oz per 1,000 square feet), which is much less than other humic products. Secondly, by growing a stronger and healthier turf, there can be less need and use of traditional fertilizers, herbicides and fungicides, thus lowering and potentially eliminating these expensive inputs. Third, GreenActivator does a lot of its work below ground on

the root system as the plant utilizes more energy to grow roots vs. aboveground biomass, reducing the required amount of mowing, saving fuel, maintenance and labor.



### Can GreenActivator save on water and nitrogen use?

Absolutely. Because GreenActivator helps to increase both the base and fine root system, the base root system produces more nodal roots. These nodal roots dig deeper, are stronger and uptake more water and soil available nitrogen. In test studies, we've seen as much as a 25 percent reduction in synthetic nitrogen use.

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APPROVED BY SUPERINTENDENTS

GREENACTIVATOR BY STANDARD GOLF

Your livelihood depends on a consistently great playing experience. Your pride drives you to achieve a great looking course. Score both with the holistic above and below ground - turf health boost from GreenActivator. By enhancing root mass with GreenActivator you achieve greater water uptake and greener, overall healthier grass that delivers a great golf course experience.

#### MORE ROOT BRANCHING

which means better water absorption, better nutrient uptake & increased drought tolerance

### **IMPROVED STRESS TOLERANCE**

that equates to faster recovery from turf damage caused by traffic, divots or ball marks

### INCREASED SOIL MICROBIAL ACTIVITY

which results in a healthier soil and root zone

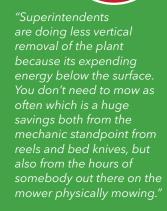
### **MORE SOIL-AVAILABLE NITROGEN**

enabling reduction of synthetic nitrogen by 25%

"With GreenActivator, I've noticed much lusher fairways. For me, it was like mowing on a cloud because the grass was standing up. The grass is thicker, but not higher, so the ball sits up better for golfers and improves playability. I get positive comments from golfers constantly."

### **Scott Rohlfsen**

IAGCSA 9-Hole Superintendent of the Year



### Adam Thoms, Ph.D.

Assistant Professor, Commerical Turfgrass Management and State Turfgrass Extension Specialist



setting the standard in golf course accessories since 1910



# STEEL GREEN **MANUFACTURING**

with Matt Smith
Co-founder and sales manager

### This will be Steel Green's first year at the GCSAA **Conference and Trade Show.** Why now?

We're eager to introduce ourselves to the golf industry with our new machine, the SGXL. The SGXL is a multifunction applicator engineered specifically with golf courses in mind. We spent time sharing prototypes with superintendents and applied their feedback to the design of the machine.

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

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

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

The SGXL is ideal for high-volume applications. Its large capacity makes tank-mixing more precise and





chemicals more efficient. The SGXL comes standard with a 2.5-gallon foam marker, which helps prevent overlapping or missing applications.

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

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

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

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

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# TARGET SPECIALTY **PRODUCTS**

### with Steve Loveday

Turf Fuel Product Development Manager

### How do your products save time?

Since its inception, Turf Fuel has made it easier to maintain high-quality turf. Our products produce an unparalleled plant fitness level, conditioning plants to overcome stress and adversity through increased photosynthetic

activity and plant defense system activation. That means when you use Turf Fuel your plants will look great and be ready for whatever you have to throw at them.



### How do your products save labor?

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



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

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

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

We also have nitrogen control technologies to improve growth

rates in areas like fairways. More growth control allows golf courses to save fuel with decreased mowing needs and significantly fewer clippings.



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

Our products help turf managers achieve optimal playing conditions



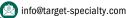
while maintaining peak aesthetics by optimizing photosynthetic abilities and overall turf quality. We've blended high-quality raw materials with cutting-edge stress-fighting technology. The result is turf that can withstand the

traffic of outings and tournaments, allowing extra revenue opportunities without jeopardizing daily play.

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

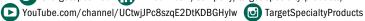
Our product solutions help turf managers build strong turf capable of standing up to the cultural practices needed for exceptional putting surfaces. Higher-quality playing surfaces bring in more rounds while increasing the overall stress and disease resistance of the turf to help save budget dollars.

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## **TURFCO**

with Scott Kinkead Executive vice president

### How do your products save time?

We design Turfco products to help save time for staff and free up superintendents for other projects. We just introduced a new feature to the Torrent2 Debris Blower that takes the guesswork and extra time out of debris blowing. Whether clearing leaves, grass clippings, aerator cores or cart paths, our patented MagnaPointdriven controller has a setting for each, with an icon that matches the task. We determined the optimum angles for each task, so your operators don't have to. Even the greenest operator can achieve the productivity of a seasoned veteran with a single click. This can potentially shave two hours off the day. For both the WideSpin 1550 Topdresser and the CR-15, you can save up to eight presets in the controller to lock in different settings for your greens, tees and approaches. They are ready to go for the next time with the push of a button.



With the Turfco CR-15, you can dial in your spread to the right width, so you are not wasting material in the rough while spreading on the fairways. You can adjust the application and material rates for the correct width to control materials more effectively and even predict what you may need for the season. The TriWave 45 Overseeder optimizes seed-to-soil contact for maximum germination rates — often an increase of 30 percent, all while minimizing turf disruption.

### How do your products save labor?

When developing new products, our mantra is: how can we help golf superintendents deal with the labor shortage by offering innovations that make the staff more productive? Through field research and working closely with the crews, we've engineered products like the WideSpin 1550, bestselling for its overall performance. The unique design eliminates the need for overlapping on each pass to get an even application. With precise edge-to-edge spreading,







the topdresser can save up to 720 passes per year and reduce traffic on greens. With the preset controller, operators can move from greens to tees and approaches seamlessly, saving personnel and time. When you send your staff out with Turfco products, you know they can accomplish the job quickly, efficiently and right the first time. It makes it easier to achieve the vision you have for your golf course.

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# Me Our greatest invention.

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







# **Z LINE BUNKER SYSTEMS**

with Casey Jones
National sales manager

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

With the confidence of knowing our lining system is protecting their bunkers, daily results are predictable and manageable. Bunkers go from high priority to a lesser priority in the daily cycle.

### How do your products or services save labor?

Our premium liners protect bunkers from subsurface contamination and keep sand in place, meaning golf courses have unprecedented control over even their most challenging maintenance tasks. Damage by storm events — whether it be large or small - that would previously take 50 manhours to restore to a playable condition can be completed in a fraction of the time. Creating verifiable results on a yearly basis to your labor budget.

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





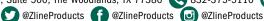
Do to the fact that our systems protect the bunker from subsurface contamination or erosion due to storm events, daily watering or bunker maintenance, the life span of the bunker sand is drastically increased and does not require the course to replace or replenish bunker sand nearly as frequent as they have been accustomed to.

### In what other ways do your products or services make

### golf courses profitable?

Zline's Bunker Systems extend the lifespan of your bunkers, reduces maintenance costs and produces improved playing conditions daily. Affordable product costs quickly produce a true ROI for the course. With all the benefits, Zline bunkers allow quicker repair times, getting your course open sooner and golfers back on the course creating revenue that the club may have lost otherwise.

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# Introducing

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### **NUFARM**

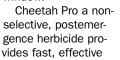
Q+A

with Chris Fronczek
Golf Market Manager

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

Save time with an herbicide tank mix of SureGuard® SC + Cheetah® Pro for bare ground, landscapes, cracks and crevices and dormant bermudagrass.

SureGuard SC delivers long-lasting preemergent and postemergent broadleaf weed management up to 2 inches in height for a wider application window.



control of the toughest broadleaf and grass weed challenges, including those resistant to glyphosate.

Aloft® GC SC offers you both preventive and curative insect control, avoiding problematic surface and subsurface insect breakouts like ants, fire ants, chinch bugs, billbugs, ticks, caterpillars and white grubs.

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

You can save labor and improve playability. Anuew plant growth

regulator delivers longer control in cool-season turf and faster growth regulation in warm-season turf, saving labor and dollars with fewer applications, mowing and clippings.

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

Strategic growth of on-course native areas saves materials and fuel. Keep your native areas clean with Nufarm's Naturalized Areas herbicide program for broadleaf weeds, grasses or sedges.

With more activity, Anuew delivers excellent regulation at its labeled rates. There is no need to double the rate to achieve labor-saving results. University research shows increasing rates have a minimal GDD effect and only a slight effect on regulation intensity. The moral of the story, stick with the Anuew everyday rate.

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



Grow a better tomorrow



Anuew shifts carbohydrates to the plant roots (unlike early-stage inhibitors) to visibly improve turfgrass quality, density and appearance. Anuew helps evenly regulate *Poa* in mixed stands and supports seedhead suppression. Anuew improves appearance and playability on greens with bermudagrass mutations.

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

Nufarm offers course-specific recommendations based on personal technical support and product resources for your herbicide, insecticide and fungicide solutions. Amplify your productivity and profitability with Nufarm products.

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GCSAA Conference and Show Booth 2035



## **SMITHCO**

with Don Smith

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

For over 50 years, Smithco has partnered with superintendents across the globe to develop products specifically designed to solve their unique problems. This collaboration has resulted in high-quality turf maintenance equipment that performs more efficiently and offers the best features in the market. Smithco's fast and reliable customer service means extra savings on opportunity costs.

### How do your products or services save labor?

Time is money, and through strategic partnerships with companies like TeeJet, Smithco's products are more labor efficient by reducing maintenance time. We built our products to last. Made with high-quality and durable materials, your equipment will withstand repeated usage over time.

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

Smithco products with DynaJet pulse width modulation technology and advanced rate control from TeeJet Technologies can preset a specific droplet size for the type of product applied. The speed range is

increased from a narrow 4 to 5 mph to a more efficient 2 to 10 mph. cutting application time in half and minimizing waste.

Smithco's Spray Star 1110, equipped with the industry-leading Star Command system, is an example of how one sprayer can save customers time, money and fuel. Multiple-size

booms and technology drives revenue and makes the Spray Star 1110 one of the most popular sprayers in Smithco's lineup.

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

Golfers value well-maintained courses with superior playing surfaces and smoother greens. By using Smithco's top-of-the-line turf maintenance equipment, golf courses elevate their look and playability, ultimately attracting more golfers who want to keep coming back.



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

Smithco has products to meet the wide range of needs superintendents face. The Spray Star Series offers 110-gallon, 175-gallon, 200-gallon, 318-gallon and 300-gallon towable units. Smithco super booms also range from 15-, 18.5-, 20- and 24-foot widths. Superintendents will find a tank capacity and boom width for your unique needs that no other manufacturer offers.

**Smithco** 

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**GCSAA Conference and Show Booth 761** 

January 2023 **Golfdom** // **53** Golfdom.com



# FROST INC.

Q+A

with Ken Rost
President

## What do customers say about the Kubota Ninja sprayer?

The standout features for our customers are the accuracy of the individual nozzle control and the repeatable accuracy of the new Smart7 GPS receivers. Productivity is key, but the ease of use is critical. 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 ground. Customers tell us the Kubota runs cool and quiet and has a legendary record of reliability.

### How does the Ninja GPS Spray Control save time and labor?

Ninja GPS Spray Control knows which nozzles should be on or off, this takes the decision-making burden off the operator so they can focus more on piloting the sprayer. The operator is now able to be more efficient. Second, the dual nozzle configuration allows the user to achieve a wider range of speeds with no excess drift. This translates to productivity. With dual nozzles, an operator can spray five fairways in the same time it would take to spray three fairways with a conventional sprayer. With this productivity, many customers have been able to operate with one less sprayer in their fleet. It also frees up a sprayer operator to do other work. Lastly, the two-range transmission allows for spray speeds up to 10 mph, and transport speeds up to 25 mph! Allowing for a significant reduction in time spent between the fill station and the spray job. This combination of features makes for an incredible turnkey sprayer. See us at booth No. 1673 to learn more.





# Super Science

//LITTORALLY SPEAKING

### **BEST PRACTICES FOR WATER** MANAGEMENT ON GOLF COURSES

By Mike Kenna, Ph.D.

akes and ponds are golf course features that provide strategic value, aesthetics and habitat for wildlife. While some golf course ponds are natural, many are man-made to capture and filter runoff from surrounding communities before entering the local watershed.

The design and purpose of a water feature influence management. Irrigation ponds



Vegetated littoral zones improve water quality and be attractive features.

provide maximum storage capacity, and their banks are steeper and more uniform. Multipurpose ponds may retain stormwater, provide secondary water storage,

create water hazards and provide habitat. Multipurpose ponds often vary in depth and may include large littoral shelves extending outward from the banks.

Todd Lowe, a former USGA Green Section agronomist, provides some management suggestions in his article "Littorally Speaking."

The lake's littoral zone is the shallow area nearest the shore, where enough sunlight penetrates the water to provide aquatic plants with adequate light for photosynthesis. Littoral zones are only a few feet deep and extend several feet from shore, but they play an essential role in a lake or pond's long-term health and water quality.

Jim Skorulski, while with the Green Section, wrote an article titled "Golf Course Water Features Need Management." He recommends reducing nutrients or nutrient inactivation to help manage algae blooms.

Pond ecology includes bacteria, algae, plants, insects, amphibians, crustaceans, fish and mammals. Algae is an abundant organism in the pond ecosystem and is often challenging to manage. Algae can be found in all freshwater and saltwater systems and are nearly undetectable until they multiply and bloom, which becomes a problem.

Reducing nutrients can be achieved by vegetative buffers, careful fertilizer applications around water features, eliminating direct stormwater inputs, keeping grass clippings out and managing waterfowl. Nutrient inactivation uses alum to suspend phosphorous or Phoslock, a lanthanum-modified clay that binds to phosphorous.

Pond depth beyond littoral shelves should be a minimum of 6 feet, with a depth of 8 feet preferred. The deeper depth will shade out emergent plants in those areas, and temperature stratification will occur in deeper areas, which can help suppress algae.

### For more information

Jim Skorulski. 2014. Golf Course Water Features Need Management. USGA Green Section Record. 52(15):1-6. http://gsr.lib.msu.edu/article/skorulski-golf-8-7-14.pdf

Todd Lowe. 2014. Littorally Speaking. USGA Green Section Record. 52(19):1-3. http://gsr.lib.msu.edu/article/ lowe-littorally-9-19-14.pdf



### **NEWS UPDATES**

### DAVID LATSHAW JOINS **AQUA-AID SOLUTIONS**

David Latshaw, who most recently worked in the golf and sports turf industry as the national sales representative for Spiio, is now the western territory manager for Aqua-Aid Solutions.

"Coming from a long family lineage of turf managers, David has a great attitude and passion for the industry," said Sam Green, president of Aqua-Aid Solutions. "He understands what the professionals in our business go through on a day to day basis to produce quality turfgrass conditions."

Aqua-Aid Solutions of Rocky Mount, N.C., develops turf products and equipment to offer turf managers solutions with agronomic value and improved aesthetics and playability.

"Aqua-Aid Solutions is a company that I have been following closely since I started



David Latshaw

in the turf industry," Latshaw said. "They are a company that has set a standard for introducing industry leading technologies to the market for decades. I am thrilled to start working with their

talented team to start introducing proven solutions to turf managers across the western U.S."

### THE WATER QUALITY AND **CHEMISTRY OF GOLF COURSE ECOSYSTEMS** ARE SIMILAR TO ADJACENT ... PONDS IN MANAGED FOREST PRESERVES."

Joseph Milanovich, Ph.D. (see story on page 56)

**//DIVE RIGHT IN** 

# A close look at the impact of golf courses on pond ecosystems

By Joseph Milanovich, Ph.D., and Martin Berg, Ph.D.

olf courses in the United States play a significant role in maintaining and enhancing local biodiversity — mainly when the adjacent landscape is urban or agricultural (1). Managed areas that harbor native biodiversity are crucial for supplying source populations to adjacent areas and maintaining ecological processes and ecosystem integrity.

Turfgrass ecosystems constitute a significant component of land use in suburban and urban areas. Commitment to sustainable management has led to these systems providing substantial acreage for maintaining native biodiversity (2,3). Still, these systems are also intensively managed compared to other land-use types (4).

### MANAGEMENT PRACTICES

Turfgrass management practices



Research provided and funded by USGA.

typically involve chemicals affecting water quality, aesthetics and native beneficial organisms via runoff into surface waters. The effect of these chemicals is a function of their mode of action, loading rates and half-life (5). The use of pesticides and fertilizers, in particular, can have non-target effects on adjacent ecosystems (6,7). Pesticide impacts on amphibians have harmful effects on survival, development and growth (8,9,10) and concentrations below lethal exposure can create several sublethal effects, including malformities (11).

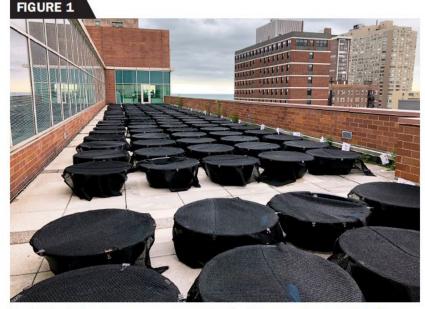
Nutrient additions via fertilizers can sometimes increase nitrogen and phosphorus in ponds located within turfgrass ecosystems (12). Additions of nitrogen and phosphorus in agriculture have caused several issues; still, concentrations are far less for golf courses indicating turfgrass management may buffer against the effects of nutrient additions (13). Nutrient additions at environmentally relevant concentrations can have sublethal effects on biofilms (e.g., algae), invertebrates and amphibians in ponds (14,15,16).

Therefore, understanding the impact of turfgrass management on the ecosystem benefits of golf courses will provide insights into their value in the face of continued global change.

The objectives of this research were to survey water quality and biotic communities of lentic (herein referred to as ponds) ecosystems across 25 golf courses and then use data from survey efforts to examine whether additions of a pesticide and nutrients (e.g., nitrogen and phosphorus) have measurable impacts on adjacent pond water quality and ecosystem communities.

### **BIOLOGICAL AND WATER OUALITY SURVEYS**

We sampled water quality and vegetation twice annually (April and August 2017) at a single pond ecosystem adjacent to a fairway on each of the 25 golf courses in the Chicago metropolitan area. During each sampling period, we measured watercolumn dissolved oxygen (milligram/ liter), nitrate (milligram/liter), ammonia (milligram/liter), conductivity (microsecond/centimeter) and algal abundance



Randomized array of mesocosms to examine the influence of azoxystrobin, nitrogen and phosphorus on pond biotic communities.

### TABLE 1

### Concentrations of analytes within golf course ponds and course inflows. Mean, range and sample size (n = number of courses where each analyte is found).

Avaluta	Within course ponds				Course inflows			
Analyte	n	Mean	Std. error	Range	n	Mean	Std. error	Range
Azoxystrobin	11	2.21	1.05	0 -24.39	2	0.45	0.9	0-2.29
Bifenthrin	0	0	-	_	0	0	_	_
α-Chlordane	2	0.14	0.12	0 - 2.81	1	0.09	0.47	0 - 0.63
γ-Chlordane	0	0	-	-	0	0	-	-
Chlorpyrifos	0	0	-	-	0	0	-	-
Cypermethrin	0	0	-	-	0	0	-	_
Oxadiazon	2	0.16	0.11	0 - 2.22	1	0.11	0.52	0 - 0.77
cis-Permethrin	0	0	-	-	0	0	-	-
trans-Permethrin	0	0	-	-	0	0	-	-
Fenvalerate	0	0	-	-	0	0	-	-

(blue-green (phycocyanin) and green (chlorophyll *a*); microgram/liter) using a YSI EXO2 Sonde. After digestion by acid-persulfate oxidation, we measured the water column's total phosphorus by analyzing filtered water samples using the molybdate blue-ascorbic acid reaction.

Our team quantitatively sampled zooplankton and macroinvertebrate diversity and abundance with a 20 centimeters diameter 80-micrometer mesh plankton net attached to a 74-micrometer mesh bucket and a D-frame dip net (500-micrometer mesh), respectively. Plankton and D-frame dip nets were swept five times across a 0.3-meter (linear) area. We preserved all samples in 70 percent ethanol and identified to the lowest possible taxonomic level (20).

Amphibian diversity, abundance and percentage of malformities were quantitatively sampled using five pipe samples per pond on five dates between March and August 2017. The pipe sampler consists of a 52-by-27-centimeter galvanized steel trash can with the bottom removed and the perimeter smoothed to not harm the organisms. To take each sample, we quietly approached the sampling site and quickly pushed the can into the substratum of the wetland. We used nets (23-by-15 centimeters) to remove

all animals within the can and water column until we took 10 consecutive sweeps without capturing an individual.

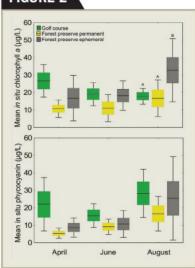
#### MESOCOSM EXPERIMENTS

In the second and third years, we utilized a randomized array of mesocosms to examine the influence of pesticides and nutrients found in golf course water samples. Mesocosms are small tanks (Beckett Corp.; approximately 30-centimeter water depth and 99 centimeters diameter) stocked with 120 liters of tap water and 150 grams of hybrid cattail (Typha x glauca) to provide a consistent food source. We inoculated each mesocosm with 1 liter of pond water from the locations where we collected egg masses and invertebrates to provide colonization of biofilms (algae) and zooplankton (Figure 1).

### RESULTS AND DISCUSSION

Water quality/chemistry and algae: We examined concentrations of 10 analytes (Table 1) within each of the 25 golf course ponds and seven accessible course inflows (e.g., courses with accessible wells or naturally filled ponds) in April and August 2017. Azoxystrobin, α-chlordane and oxadiazon were the only compounds above the detectable

#### FIGURE 2

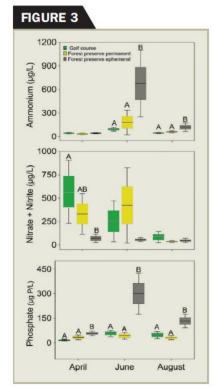


Box plots (line = mean, box = SE and whiskers = 95 percent confidence interval) of in situ chlorophyll a and phycocyanin concentrations within sites across months. Different upper case letters suggest statistical significance (p $\leq$ 0.05) within months using one-way ANOVAs and Tukey multiple comparison tests.

limit in any of the 25 courses or course inflows in August, and no detections occurred in the April samples. Nearly 30 percent of course inflows we examined (3/7) had detectable compounds that likely contributed to the concentrations found in course ponds (Table 1).

Continued on page 58

### Super Science



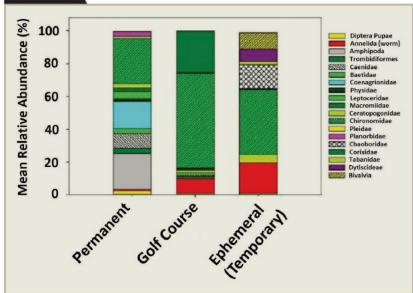
Box plots (line = mean, box = SE and whiskers = 95 percent confidence interval) of phosphorus, ammonium and nitrate and nitrite values within sites and across months. Different uppercase letters indicate statistical significance (p  $\leq$  0.05) within months using the Tukey HSD test.

### Continued from page 57

Concentrations of chlorophyll a were only significantly different between ephemeral (i.e., temporary) ponds and the forest preserve/golf course ponds in August (Figure 2), whereas concentrations of blue/green algae (phycocyanin) were not measurably different between any pond type.

Water quality variables taken with a YSI multi-probe meter show significant differences between golf courses and temporary wetlands but not between golf courses and forest preserve ponds (data not shown). Water chemistry values (i.e., nitrate, ammonium and phosphorus) show temporary wetlands have higher nitrogen and phosphorus levels than the golf course and forest preserve ponds in April and June (Figure 3). This data suggests the water quality and chemistry of golf course





Mean relative abundance of macroinvertebrate families in a permanent, fish-filled forest preserve or golf course ponds and ephemeral wetlands in August 2017. We presented only taxa representing more than 1 percent of relative abundance across all sites.

### Research Takeaways

- Concentrations of analytes (fungicides, insecticides and herbicides) measured in golf course ponds were low and infrequently detected for 8/10 analytes examined.
   Azoxystrobin, a fungicide, was the most widespread analyte measured and tested in mesocosm experiments.
- Amphibian diversity was low across the region and was similar in golf course ponds and ponds in forest preserve habitats.
- Concentrations of algae (both green [Chlorophyta and Charophyta] and blue-green [Cyanobacteria]) were similar across the golf course and forest preserve ponds.
- Water quality was measurably different between golf course ponds and ephemeral

- (i.e., temporary wetlands) but not between golf course ponds and permanent forest preserve ponds containing fish.
- The results suggest golf course ponds provide similar aquatic ecosystems and macro- and microinvertebrate diversity to more natural, forested ecosystems.
- Azoxystrobin had no measurable, consistent influence on aquatic organisms (biofilms or amphibians)
- Nitrogen and nitrogen and phosphorus additions led to an increase in the size and development rate of American toads.

ecosystems are similar to adjacent permanent, fish-containing forested ponds in managed forest preserves (Piacente et al., 2020).

Biotic assessment: We collected 495 macroinvertebrates and 495 microinvertebrate samples from April to August 2017 (3 or 5 each month/site) to quantify micro (zooplankton) and macroinvertebrate diversity and density. To date, our results show species diversity of macroinvertebrates on golf course pond ecosystems from April to August 2017 using Shannon's

diversity index. (The lower the value of H, the lower the diversity). A value of H = 0 indicates a community that only has one species.

Our results show diversity on golf courses (H=1.38) is higher but similar to permanent, fish-filled (H=1.36) and lower than temporary, fishless adjacent ecosystems (H=1.41); however, these represent an incomplete data set of 20 golf courses, 13 temporary and 11 permanent, fish-filled sites (Figure 4). Our results indicate microinvertebrate diversity between April to August

### TABLE 2

Concentrations of azoxystrobin, nitrogen (N), phosphorus (P) and both N and P found in wetlands across 55 pond ecosystems sampled and the concentrations used in the 2018 and 2019 mesocosm study. Mean values from systems and treatment concentrations (low or high) in mesocosm studies.

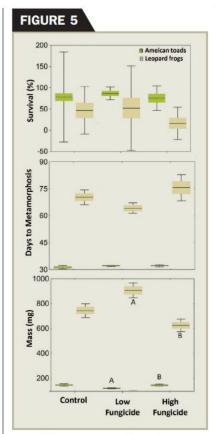
Fermiten	Azoxystrobin (ppb)		Phos	phorus (µg/L)	Course inflows	
Ecosystem	Means	Treatment	Mean	Treatment	Mean	Treatment
Golf course	2.1 (L) 24 (H)	1.4 (L) 14.3 (H)	58	99 (L) 1700 (H)	252	263 (L) 7350 (H)
Permanent forest preserve	NA	1.4 (L) 14.3 (H)	43	99 (L) 1700 (H)	421	263 (L) 7350 (H)
Temporary wetland (ephemeral)	NA	1.4 (L) 14.3 (H)	300	99 (L) 1700 (H)	57	263 (L) 7350 (H)

2017 was variable but was more similar across pond ecosystem types than macroinvertebrates (data not shown).

First experimental mesocosms: We designed a mesocosm experiment to investigate the influence of azoxystrobin fungicides, nitrogen (N) and phosphorus (P) additions on aquatic ecosystems. In the spring/summer of 2018, we implemented a randomized experiment with nine treatments (see Table 2 for mesocosm treatments and concentrations). We replicated each treatment with 4 to 6 mesocosms using organisms from three trophic levels: amphibians (American toads and leopard frogs), dragonfly nymphs (Pantala and Leucorrhinia) and biofilms (algae) for a total of 120 mesocosm units.

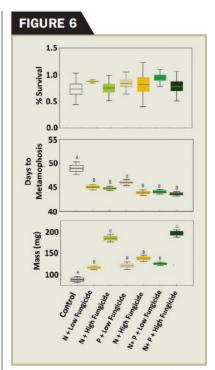
Our results suggest chlorophyll *a* and phycocyanin concentrations did not differ across treatments. However, American toads raised in low concentrations of azoxystrobin were smaller than control or high-concentration azoxystrobin mesocosms (Figure 5). We believe this may result from a decreased, though not significant, amount of food resources. We also found that high nutrient levels, particularly N and N+P, resulted in larger toads at metamorphosis, but low phosphorus concentrations led to smaller toads (data not shown).

Second experimental mesocosms: In the spring/summer of 2019, we implemented a randomized experiment with 15 treatments (see Table 2 for mesocosm treatment concentrations). We replicated each treatment with four mesocosms



Box plots (line = mean, box = SE and whiskers = 95 percent confidence interval ) of survival, days to metamorphosis and mass of American toad and leopard frog larvae raised in control or low/high fungicide treatments in a mesocosm setting. Different uppercase letters indicate statistical significance (p  $\leq 0.05)$  within months using the Tukey HSD test.

using organisms from two trophic levels: amphibians (American toads) and biofilms for a total of 120 mesocosm units. Our results suggest American toads raised in low or high concentrations of



Box plots (line = mean, box = SE and whiskers = 95 percent confidence interval) of survival, days to metamorphosis and mass of American toad larvae raised in control or low/high nitrogen, phosphorus, nitrogen and phosphorous and fungicide treatments in a 2019 mesocosm setting. Different upper-case letters indicate statistical significance (p ≤ 0.05) within months using Tukey HSD test.

azoxystrobin or N, P and N and P reached metamorphosis significantly faster than control animals and were significantly larger and no measurable difference in survival (Figure 6).

In addition, we examined the influence of N, P, N and P and azoxystrobin Continued on page 61



Superintendent Derrick Wozniak says the PondHawk system helped eliminate an "unbearable" smell from an irrigation pond.

# The importance of water quality

An out-of-sight pond behind the clubhouse draws attention, for the wrong reason

By Christina Herrick

For Derrick Wozniak, superintendent at Radley Run CC in West Chester, Pa., irrigation pond management used to stink.

Wozniak says their 3.6-acre long, narrow pond, surrounded by woods and in a valley, suffers from minimal air movement and would get significant algae bloom. Following a rain event or high relative humidity, the pond would emit a strong smell.

Located behind Radley Run's clubhouse, tennis courts and pools, members would complain about the pond's smell. So, it would be a stinky situation for Wozniak and the Radley Run maintenance team.

"At times, it was literally unbearable," he says.

Wozniak says it was a challenge to get his club on board with the investment for a pond that is literally out of sight. But, following a presentation from PondHawk and the pond's location, solar energy made sense to the club. Radley Run has three solar panels along the pond with six diffusers.

"It oxygenates the water and aerates the pond, which leads to healthier water conditions and improves the health and the aesthetics and everything else in the ecosystem within the pond," he says.

Wozniak says Radley Run's irrigation pond is its lifeblood. He says thanks to the PondHawk system, the pond continually feeds the course with water free from impurities even as runoff feeds into this pond.

"Irrigation water quality is extremely important," he says. "It affects everything. On the golf course, it affects your soil, it affects plant health."

Wozniak says the PondHawk system needs routine maintenance with pump replacements every few years. But the best part of the system?

"They were installed in 2018, and we haven't heard a complaint about the smell since," he says. **G** 

PHOTOS BY: PONDHAWK

### **Ecologel Solutions**

JAMES SPINDLER, CPAG, CCA, CSSA

Director of agronomy

Golf course water features can

be a critical part of a golf course's character. Ponds and lakes add beauty and challenge the golfer, but they can also be a management challenge to the superintendent. Keeping the water clean and odor-free takes planning. Managing nutrients and oxygen content in water bodies is key to maintaining clean, odor-free water. Nutrients come from sources such as leaves, clipping, waterfowl droppings and runoff. Anything that can be done to limit these nutrient sources during the winter months and the rest of the year will help water quality during the season. Plan to use a bacterial product in a program to digest the excess nutrients that tend to promote algae growth, cloudy water and foul odors.



### **PondHawk**

**CRAIG BURTON**Co-founder

For many superintendents, January is budget time. By

recalling the pond headaches from the summer, winter is the time for superintendents to develop a plan for subsurface aeration to improve water quality. Subsurface water aeration delivers oxygen and circulation to the pond, reduces algae and odors and helps superintendents cut costs, all while improving the water that will eventually nourish the turf. Most superintendents understand the benefits of adding oxygen to the water but have found running power to the pond cost prohibitive. This is where solar aeration really delivers. By using solar-powered subsurface aeration, the superintendent gains the benefits of improved water quality without the cost of power, ongoing electric expenses and winter labor maintenance.



### Continued from page 59

concentrations on dragonfly nymphs (Pantala and Leucorrhinia) survival and mass across 30 days using 10 liter plastic containers. We fed dragonflies black worms after being exposed to treated water. We changed the water with control water after the initial treatment inoculation. We found all nymphs survived the full 30 days in single combination doses and although mass varied across the treatments, it was not significantly different. In combined treatments, variation existed for mass and survival; however, the results were insignificant.

Joseph Milanovich, Ph.D., and Martin Berg, Ph.D., Loyola University, Chicago. Contact Joseph Milanovich at jmilanovich@luc.edu for more information.

This article was adapted from: Milanovich, Joseph; Berg, Martin. 2019. Examining the response of golf course lentic ecosystems to insecticide and nutrient additions using survey and experimental approaches. Turfgrass and Environmental Research Program: 2019 Research Summaries. p. 356-373.

### https://archive.lib.msu.edu/tic/ressum/2019/2019.pdf#page=364

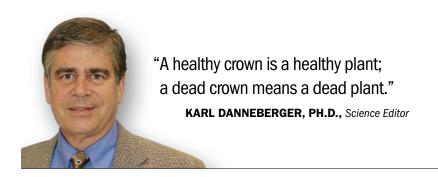
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Golfdom.com January 2023 Golfdom // 61



# The importance of the crown to the turfgrass plant

ocated at the base of the grass plant, the crown is the conduit from where the energy flow occurs between the roots and the shoots.

The crown is the lifeblood of the turf, producing new tillers, stems (rhizomes, stolons) and adventitious roots. Through the emergence of these structures, you can think of the crown as the heart of the turfgrass plant.

When assessing winter injury or any environmental stress, the health of the crown is of the greatest importance. Simply stated, a healthy crown is a healthy plant; a dead crown means a dead plant.

Expanding beyond this simple statement when considering how resistant or tolerant a turfgrass species is to stress, an important factor is how rapidly the plant recovers poststress. The pace that new tillers, roots and stems emerge from the crown and replace dead tissue is critical in determining the tolerance of a plant to environmental stress.

#### **IDENTIFYING**

The crown is a stem, but not the only stem of a turfgrass plant. Stems include the crown, flowering culm and lateral stems, commonly known as rhizomes and stolons. All but the crown has elongated inner nodes that are easily recognizable. The crown, however, is a highly contracted stem with its nodes appearing to be stacked.

As other stems, leaves and most roots

originating from the crown grow, the crown grows very little, except for a slight increase in its diameter. I find it difficult to visualize the crown, given its location at the soil surface and its upper portion, including the growing point, enclosed within the basis of sheaths.

#### WINTER INJURY

Given its small size, injury can still occur differentially to the crown. An example is freeze injury to *Poa annua*. In this scenario, a *Poa annua* green may emerge from winter and look healthy and green. However, within a few days, *Poa annua* begins to die rapidly.

In this case, often, the lower portion of the *Poa annua* crown has been damaged or killed. Thus, the vegetative tissue may look healthy and actually initiate growth, but the roots are dead, and new roots from the lower axillary buds are not occurring. Potentially atmospheric conditions (ex. sunny, or windy) cause desiccating conditions, resulting from a lack of root support.

Monitoring the health of a turfgrass species, especially one susceptible to

winter injury, primarily consists of checking the crown periodically. Peel back the sheath. If the crown area appears white and firm, it is healthy. If the crown is brown and mushy, that plant has died or will soon.

In addition, remove plugs from suspected or potentially injured areas and place them in a well-lit area for several days or weeks. Observing new growth from injured areas provides a clue as to how rapid or not recovery will occur.

### AN OUNCE OF PREVENTION

Protect the crown by keeping it in close contact with the soil surface. Specific practices going into winter focusing on the crown include:

- Raising the mowing height at least slightly. This practice is especially important for superintendents with warm-season turfgrasses.
- ② On greens, heavy topdressing in the fall can help to protect the crown from potential exposure to fluctuating air temperatures.
- **3** Along similar lines, **minimize thatch.** A significant thatch layer results in the plant's crown losing contact with the soil as it "rises" into the thatch layer. A crown elevated into a thatch layer is readily exposed to temperature extremes.
- **4** Use covers where appropriate. Covers can help to protect the crown from freeze/thaw cycles and rapid drops in temperature.
- **5** Provide good surface drainage. Low wet areas promote the potential for freeze/thaw cycles around the crown and potentially cause rotting of the crown.

Should winter injury occur, you should have a head start on anticipating the severity of the damage and extent by monitoring the health of the crown, thus aiding in your recovery plan. **②** 

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



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# Get to know the Japanese beetle

David Held, Ph.D., shares how superintendents can spot Japanese beetle damage in cool- and warm-season turf.

By Rob DiFranco, Associate Editor

he Japanese beetle is a unique pest for superintendents to manage, says David Held, Ph.D., professor of entomology and chair of the entomology and plant pathology department at Auburn University.

The pest, commonly found in the east, has begun to spread West to states like Michigan and Wisconsin in what Held calls a forward-moving line. Held says, adding to the complexity of dealing with a new pest, Japanese beetle populations can come and go, seemingly at random.



David Held

"We don't know what drives these patterns, but you'll have a couple of years where there will be no problems at all with Japanese beetles," he says. "And then we'll go

through a two- or three-year period where we have plague-like populations."

### TWO PESTS IN ONE

Held says Japanese beetles provide several issues for superintendents in their larval and adult stages.

"The larval stage, which damages turf, is active for eight to nine months a year, and the adults are active for roughly two months," he says. "They cause damage in two different locations. The larvae damage the turf, and the adults feed on the flowers, foliage and other ornamental plants."

Superintendents should look for Japanese beetle damage starting in late July all the way through September. According to Held, signs of damage from Japanese beetle larvae include





Japanese beetle larvae damage can be easier to spot in cool-season turf thanks to its slower root mass growth.

irregular yellow patches caused by a loss of root mass.

Adult beetles will attack and feed on plant life like shrubs and other ornamental plants, according to Held.

"The adult damage starts from the top and goes down, making the foliage look like lace," Held says. "The adult beetles feed on the material between the veins of the leaves."

#### COOL- VS. WARM-SEASON TURF

Held says superintendents with coolseason grasses will have an easier time spotting Japanese beetle damage in their turf than those with warmseason turf

"You can actually get some physical response from the grass above the ground," Held says. "The cool-season grass will just roll right back like a carpet if you grab them because the turf isn't putting out enough roots to outgrow the damage."

Damage in warm-season grasses won't roll back like cool-season varieties, according to Held.

"That won't happen because of the stoloniferous root systems that they have," he says. "They produce a lot more root mass which allows them to mask the damage much better."

Held says that skunks and raccoons

could also alert superintendents to Japanese beetle larvae within the turf. While that's a potential warning sign, it's not a surefire way to know.

"Superintendents might think, 'Oh, I've got moles, so I must have grubs," he says. "They might not realize that moles feed on earthworms the same as they do on white grubs. So it would be an indication to go out and look more closely at those areas as opposed to a trigger to treat."

### TREATMENT

Held says there are several options for superintendents who seek long-term control of Japanese beetles.

"Something like chlorantraniliprole (Acelepryn, Syngenta) provides the ability to put out material and have it last for two or three months in the soil," Held says. "There is quite a bit of good soil insecticides to use. There's also the anthranilic diamides that have fairly long residuals."

Held says there are some chemistries with shorter residuals ready for use in a pinch, like trichlorfon.

"If you find that you have varmints starting to dig and you want to get quick control of (Japanese beetle), you can apply something like (trichlorfon)," he says. "It will kill (the larvae) quickly and then be gone shortly after that."

O DEL CINACIONA SOTTONIA



"Over the years, nearly a million dollars allowed for a better understanding and management of wildlife conservation on golf courses."

MIKE KENNA, PH.D., Research Editor

# How golf improved its environmental game

n the 1980s and '90s, there was growing concern that golf courses negatively impacted wildlife. Concerns included declining bird species, and malformities in amphibians, to name a few. Environmental groups and journalists referred to golf courses as toxic wastelands absent of wildlife.

The USGA hosted several environmental groups in Washington, D.C., to discuss the perceived impacts of golf on birds, fish, reptiles, amphibians and mammals. One conclusion from the meeting was that there was a lack of peer-reviewed research on the impact of golf courses on wildlife.

Peter Stangel, Ph.D., worked for the National Fish and Wildlife Foundation (NFWF) and participated in the Washington, D.C., meeting. He suggested that the USGA collaborate with the NFWF to fund wildlife research on golf courses.

### **GOLF AND BIRDING**

Stangel grew up on a golf course. His front yard was just a chip shot from the first green of the Rockport (Texas) Country Club. After school on most days, he would come home, grab a quick snack and head over to the course — to go birding.

Close to the Gulf Coast of Texas, the club had no special management programs to benefit birds and other wildlife, but both were abundant.

"Many of the members, and certainly the groundskeepers, were aware of wildlife and did their best to con-

Front Nine	Back Nine			
1. Take Stock	10. Start Here			
2. Develop a Game Plan	11. The Bees-Knees			
3. Save What's Left	12. Why Wing It			
4. Use What You Have	13. Wetlands Are Wonderful			
5. Protect Endangered Species	14. For A Wild Time			
6. Establish Corridors	15. You've Got Game			
7. Naturalize Out-Of-Play Areas	16. Check Out the Leader Board			
8. Start An IPM Program	17. Every Day Is a Good Day to TGIF			
9. Engage Golfers	18. All Good Things			

serve natural habitats," Stangel recalls.
"The features typical of any course
— water hazards such as streams
and ponds, brushy edges where rough
meets wood and even the wide open
fairways — were important to both
migratory and resident animals."

#### 18 HOLES OF CONSERVATION

Stangel was a willing partner and helped the USGA Green Section establish the Wildlife Links Program. This partnership was golf's first comprehensive investigation of the game's relationship with wildlife and its habitat. It was established in early 1995 to fund research, management, and education projects needed to provide the game of golf with state-of-the-art information on wildlife management issues.

The USGA contributed \$200,000 annually for funding to more than 17 projects. Over the years, nearly a million dollars allowed for a better understanding and management of wildlife conservation on golf courses. In 2006, the USGA published a summary of the funded projects. Wildlife Links: Improving Golf's Environmental Game has a quote by Albert Einstein on the inside cover: "Look deep into nature, and then you will understand everything better."

The layout of the Wildlife Links has a list for superintendents to consider. You can find these suggestions at the beginning of the summary in the front nine and the end in the back nine.

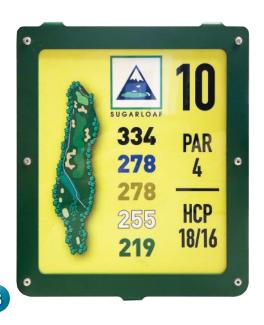
The publication is only 21 pages and includes some excellent background information on birds, pollinators, small mammals, amphibians, water features and environmental planning. You can find it on USGA's website.

Maybe this winter, you can take some time to look through Wildlife Links and implement a few recommendations in 2023. **©** 

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







### 1 TurnAer XT10

The TurnAer XT10 stand-on aerator from TURFCO delivers consistent performance across different types of turf with a cyclone air cleaner and 27-hp engine. The foot-operated pedal control offers ease of operation. The XT10 stays the course, pulling plugs at a consistent pace and depth even through uneven turf conditions because of its automatically adjusting, patent-pending Auto Depth Control feature. The XT10's drive system keeps chains protected and outside the aeration area to remain clog-free throughout the workday. Turfco.com

### 2 | Motorola HLKN4606 remote microphone

The MOTOROLA HKLN4606 allows users to attach the remote speaker microphone to a shirt collar to keep sound near their ears. The push-to-talk button on the left side of the microphone faces the user for easy access and features a mouthpiece handy for quick responses. The coiled cable is approximately 23 inches long and expands to nearly 6 feet. The HKLN4606 works with RD Series, DTR series, DLR series, RDx series, CLS Series, XTN Series radios and VL50. HQ98.com

### **3** Standard Golf laser-cut signs

STANDARD GOLF's dye-sublimated laser-cut signs are ideal for adding tee distances, hole design, forward tee placement and fairway yardage while embedding into the turf. The 8-inch by 9-inch aluminum sign is attached to a laser-cut metal frame with spikes for superintendents to embed into tee boxes or fairways with no sight-line distractions or mower interference. StandardGolf.com



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### 4 | Spectrum BKFlex glasses

BRASS KNUCKLE's Spectrum offers flexible comfort and anti-fog protection for safety eyewear designed for superintendents. Spectrum's anti-fog is permanently bonded to the lens and will not wear or wash off. This anti-fog protection helps the lenses remain fog-free until they match the temperature change that causes fogging — sweat, sun, cold or steam.

BrassKnuckleProtection.com

### **5** | AG-110 drone

The AG-110 drone from **HYLIO** streamlines golf course maintenance from inspection to product application. The AG-110 meets federal legal requirements to be flown safely within residential and mixed-use areas. The AG-110 has a 2.6-gallon tank. It can treat up to 15 acres per hour and deploy up to a 20-foot-wide swath of product, or it can also spot-spray with precision down to a centimeter.

Hyl.io

### **6** | Aercore 2000

The **JOHN DEERE** Aercore 2000 aerator improves operator efficiency with a 77.5-inch coring swath and fiberglass reinforced belts that can pull up to 30 cores per square foot. The 2000 is compatible with six different tine options. The drive assembly is readily accessed for daily checks and routine maintenance. Changing tines, belts and altering hole spacing can also be accomplished in minutes.

Deere.com

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Dey Mansion, Washington's headquarters

# **Doug Vogel**

**SUPERINTENDENT** // Preakness Valley GC, Wayne, N.J.



### Doug, what are you having? Black and tan; Guinness and Bass.

Tell me about Preakness Valley. It's a county-owned facility built in 1930. It's two 18-hole courses, and we surround an old mansion that George Washington set up as his headquarters during the Revolutionary War (Dey Mansion). That's our responsibility, too. He ran the war here on-site in the fall of 1780.

You published the book Babe Ruth & the Scottish Game recently. How did that come about? I was at a GCSA of

New Jersey chapter meeting, and Kenny Krause, the editor of our newsletter, was

looking for volunteers to write articles. I told him I wanted to write about Babe Ruth — here in Northern New Jersey and the whole metro area; he played at all these courses - he was America's guest. I started collecting some of

these stories. After 20 years of research, I started putting it in writing. My family helped me push it over the finish line.

How big is your family? My wife Susan and I have three grown children.

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//BEST ADVICE "JIM MCNALLY, A LONGTIME NEW JERSEY SUPERINTENDENT, TOLD ME, 'KEEP EVERYTHING **NEAT AND IN ORDER.** AND COME FALL, THEY **WILL FORGIVE A LITTLE BROWN HERE AND THERE.""** 

My son Noah is an aerospace engineer. My daughter Emily is a K-8th grade art teacher. And my youngest Faith

> is a soon-to-be-graduate. She's getting a degree in the fashion industry.

Ziggy Zaleski, your first boss, was one of your biggest influences. What do you remember about him?

He was an old and crusty World War II veteran. He treated the

crew like an Army unit. He was a very stern guy. But at the end of the day, he was a great guy — he was always looking out for the crew. He treated the women like royalty. When it was ladies' day at the club, we had to put flowers on each tee. He put out special pink flagsticks. None of the men could complain about him because the women would come to his defense so quickly, 'Quit picking on Ziggy!'

What's your most memorable day at

work? I've been through some big floods. One time I was sitting at my desk during a hurricane when the club president called to see how the course was doing. I said, 'Joe, there's 2 inches of water in my office; I'm about to abandon ship!' By the end of that flood, there was 6 feet of water in my office. During another flood, the township sewer line broke. It ran right through the course. It was a slurry of sludge. Two weeks later, when the water went down, the course was white. All the toilet paper emulsified and dried. We had 80 percent kill.

That sounds terrible. Luckily two weeks later, we had a tropical storm - we got about 9 inches of rain, and it washed everything away. Now that was the best tropical storm we ever had.

As interviewed by Seth Jones, Dec. 8, 2022.



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