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At Robert T. Lynch GC in Boston, two robotic mowers quietly pick up the slack



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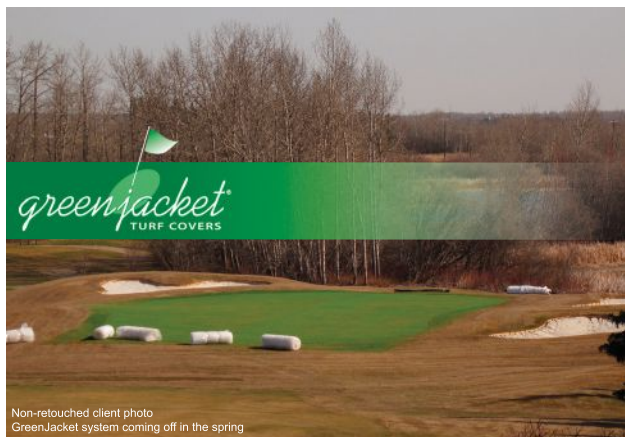
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“What’s the point of all the blood, sweat and tears when you have a front-of-house employee who is determined to rain on the visitor’s parade?”

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

About one minute

Recently I took a short two-day vacation with an old friend. We drove to Minneapolis to attend a fantasy football draft for a league that we suddenly realized we’ve been in for almost 20 years. And, of course, we snuck in 18 holes the following morning at beautiful Rush Creek GC.

Matt Cavanaugh, an occasional writer for *Golfdom*, is the superintendent of the course. It’s a fantastic course, and I absolutely love the greens there (I putted the lights out.) They clearly know what they’re doing, and I applaud Matt and his crew.

But before we even got on the golf course, our first, second and third impression was that we were at a golfer-friendly, first-class place. The pro shop attendant was warm and friendly. When I asked about breakfast, she directed me to the bartender, who kidningly warned me that I was about to be knocked out by their breakfast sandwich and to come back in five minutes. The starter joked with our

crew before we went off.

It was all part of a memorable experience. I look forward to going back.

I recently had the opposite treatment at a course. I took my daughter out to hit a bucket of balls. Her final junior varsity match of the season was in two days, and she wanted to get some range time in beforehand.

The course changed ownership recently, and with that came a change in staff. I walked in and saw this guy behind the counter, and I immediately got the look that said, ‘why are you here?’ It was my second interaction with this guy, and my first one was already bad. Based on his look, I asked if he was

still open, and he responded, ‘for about one more minute.’ That’s a strange way to say no, so I just said OK, turned around and walked out.

My daughter looked at me like I was crazy as I walked back to the car. ‘Sorry, Sis, we can’t hit here today.’ We went back home and hit low-flight balls in the side yard. (Good news, her and her partner finished the season with a second-place medal.)

I drive by that course all the time, and I see how hard they work to make it shine. They do the best they can on a limited budget.

But what’s the point of all the blood, sweat and tears when you have a front-of-house employee who is deter-

mined to rain on the visitor’s parade?

Everyone is entitled to an occasional bad day. Maybe this guy has something personal against me that I’m unaware of (maybe he hates my column!) As I drove away, I realized that I was on the wrong end of fool me once, fool me twice. And now I have to mark that course off my list of places I will play.

Maybe I was the one in the wrong in this situation, and we should have gotten there 30 minutes earlier. If that is the case, if he would have just said, ‘hey man, I was just about to walk out and close the gate ... I can’t sell you a bucket today, but we’ll be open again tomorrow morning at 7 a.m.’ I would have said, ‘right on, we’ll come back tomorrow, have a good one.’

It takes hours and hours of work to keep a golf course looking good late into the summer. And it takes seconds for the guy in the pro shop to treat a customer rudely. You can have the best greens in town, but if your pro shop attendant is running people off, it doesn’t matter.

Recently we celebrated “Thank a superintendent day.” Thank you, superintendents. And if you have a front-of-house operation like they have at Rush Creek? Be thankful for that because first impressions on the golf course are so important. **G**

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NEWS, NOTES AND QUOTES



//IN MEMORIAM



In addition to Blackwolf Run and Whistling Straits, Herbert Kohler Jr. served as a co-designer of the Baths of Blackwolf Run, a 27-acre, 10-hole course.

HERBERT KOHLER JR., WHO MADE WISCONSIN A GOLF DESTINATION, DIES

Executive chairman of Kohler Co. was GCSAA's 2016 OTM award winner

BY SYDNEY FISCHER // Digital Media Specialist

➔ Herbert V. Kohler Jr., 83, executive chairman of the Kohler Co., died on Sept. 3. Kohler served as CEO of the company for 43 years before his son, David Kohler, took over the role in 2015.

The Wisconsin Athletic Hall of Fame enshrined Kohler for his contributions to making Wisconsin into a worldwide golfing destination. In the late 1970s, he transformed The American Club, built for Kohler Co.'s immigrant workers, into a notable location for hospitality and golf.

"To take a small town like Kohler and to transform it into a destination hospitality facility was a definite accomplishment," Greg Hanis, president of Hospitality Makers International, told the *Milwaukee Journal Sentinel*. "I think he set the benchmark and said that if you wanted to be a five-star

resort, this is what you have to do."

Kohler founded Blackwolf Run in 1988 and Whistling Straits in 1998 with Pete Dye at the helm of the construction. Whistling Straits hosted three PGA Championships and the 2021 Ryder Cup.

"Herb Kohler was a larger-than-life figure whose enthusiasm and love of golf helped bring significant men's and women's professional events to the state of Wisconsin over the last 25 years while transforming his home state into a golf destination," a statement from the PGA Tour said.

The Golf Course Superintendents Association of America (GCSAA) presented Kohler with the Old Tom Morris Award in 2016 for his "indelible mark on golf and focus on the importance of environmental stewardship."

//HONORING A LEGEND

GCSAA LAUNCHES NEW LARRY POWELL SCHOLARSHIP

The Golf Course Superintendents Association of America (GCSAA) created the Larry Powell Scholarship. The Powell Scholarship recognizes students in underserved populations seeking a career in golf course and turfgrass management.

The scholarship is named in honor of Larry Powell, a 48-year GCSAA member and superintendent at Clearview GC in Canton, Ohio. Clearview was the first and only course to be designed, constructed and owned by an African American.

"Larry Powell has served and advanced his family's legacy," GCSAA CEO Rhett Evans said. "He is a humble leader who has shaped and impacted the lives of many. Larry serves as a beacon of hope for young minorities seeking to establish meaningful and rewarding careers. We want to help create pathways and provide financial support to others who desire to establish a meaningful career in our industry."

GCSAA plans to award the first Larry Powell Scholarship in 2023.

//A NEW FACE

FLORIDA GCSA ELECTS NEW PRESIDENT

The Florida Golf Course Superintendents Association (FGCSA) elected Bryce Koch, CGCS, as its 21st chapter president.



Jerry Matthews

Koch is superintendent at Cypress Lake Country Club in Fort Myers, Fla.

Koch joined Cypress Lake in 2010 and is a past president of the Everglades GCSA. He is also certified in Florida golf course best management practices, now recognized in Florida statute as the benchmark for sound and sustainable environmental stewardship in golf course management.

The FGCSA also elected Parker Ferren, CGCS, from Copperleaf Golf Club in Estero, as its new vice president and Jason Zimmerman from The Nest Golf Club in Bonita Springs, as secretary-treasurer. Andy Jorgenson, CGCS, from On Top of the World Golf Club in Ocala, will serve as immediate past president.



The PGA expects PGA Frisco to drive more than \$2 billion in economic impact for stakeholders and the Frisco community over the next 20 years.

//HOME SWEET HOME

PGA opens new headquarters

➔ The PGA of America has a new home. The newly built Home of the PGA of America in Frisco, Texas, cost more than \$33 million and spans 106,000 square feet. Initially, the facility will house 120 PGA employees.

The facility features an indoor education center with an indoor bunker, a golf education center — with indoor and outdoor hitting bays — and instructional technology designed to measure all elements of a golf swing. The facility includes a workshop for hands-on training in building and caring for golf clubs and equipment.

It also includes educational spaces to train, certify and develop PGA Members. These spaces include classroom-style instruction across three career paths: executive management, teaching

and coaching and golf operations.

The headquarters has Leadership in Energy and Environmental Design (LEED) Silver certification, meaning the facility has a sustainable design and construction. The potential for LEED certification played a large part in the facility's design.

Notable sustainable features include:

- Water-efficient fixtures, which result in a 200,000-gallon reduction in water use compared to baseline measurements
- More than 60 percent reduction in outdoor water use from the EPA baseline
- Recycled and reused more than 75 percent of construction waste
- The use of LED lighting, daylight harvesting, automatic dimming and light pollution reduction

//PASSING NOTED

IN MEMORIAM: ASGCA PAST PRESIDENT JERRY MATTHEWS

American Society of Golf Course Architects (ASGCA) past president



Jerry Matthews

Gerald (Jerry) Matthews, ASGCA Fellow, died Sept. 15, 2022, in Mackinac Island, Mich. He was 88.

Part of multiple generations of Matthews who have positively impacted golf in Michigan — including his father, Bruce, and nephew, W. Bruce — Matthews designed or renovated more than 200 courses. He began in the golf industry at age 12, working for his father on the maintenance crew at Green Ridge CC.

Matthews gained recognition for such Michigan courses as The Lakes Course at Michigaywe in Gaylord; Timber Ridge Golf Course in East Lansing; St. Ives Golf Course in Stanwood; Timberstone Golf Course in Iron Mountain; and Bucks Run Golf Club in Mount Pleasant.

As his architecture career wound down, Matthews returned to the classroom as an instructor, teaching golf course design and construction technique in the turfgrass program at Michigan State.

//NOW AVAILABLE

PAIR OF BAYER PRODUCTS NOW AVAILABLE IN N.Y. AND CALIF.

Bayer's Tetrino insecticide and Densicor fungicide are now available for purchase in New York and California respectively. Bayer originally released both products in 2021.

Tetrino features the active ingredient tetraniliprole. Bayer says the insecticide helps control white grub, bluegrass billbugs, fall armyworm and other pests. In addition to flexible application timing, superintendents can incorporate Tetrino into other management programs for treating pests like chinch bugs, caterpillars and billbugs. Absorbed through the roots and shoots of the turf, tetraniliprole causes immediate cessation of insect feeding following exposure.

Densicor controls dollar spot, brown patch, anthracnose, gray leaf spot, snow mold and other harmful turf diseases, according to Bayer. Densicor offers safety on cool- and warm-season turf, according to the company.



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LEGENDS INITIATIVE



TIM HIERS, CGCS

Director of Agronomy

White Oak Conservation, Yulee, Fla.

By Seth Jones

Started by Anuvia and co-sponsored by Audubon International and *Golfdom*, the Legends Initiative celebrates superintendents who have gone above and beyond in their careers — not just in maintaining tremendous golf courses but also in their contributions to the industry, creative problem solving and mentorship. *Golfdom* sat down with Anuvia Legend Tim Hiers to discuss his unique job and advice for the industry.

How did you feel when you got the call telling you that you were the newest inductee into the Anuvia Legends class?

Matt Shaffer called me; it was a big surprise. You're not sitting there waiting for that call. I know the people who have won this — and this is not me being falsely humble — I'm not one of those guys. I think my tenure, being around a long time, has helped. I think of all the people inside and outside the industry who have helped me. If you remember when you were 18, 19 or 20 ... we were pretty dumb. I've had a lot of people coach me up. The things you think you'd think about that are obvious, but you don't think about them until someone tells you? It helps! I got a lot of advice from people in the industry.

Tell me about White Oak and what all is going on there — you have a really interesting job.

It's a large property, 17,000 acres. They breed and protect endangered species. They breed cheetahs, whooping cranes, Cape buffalo, okapi ... I've seen animals I've never heard of before I came here. For example, the Florida grasshopper sparrow, which was almost extinct a few years ago. In the past three years they've released 600 back into central Florida. But it's not just breeding animals, it's conserving land properly. It's a holistic approach.

We're north of Jacksonville by about 20 miles, right on the Saint Marys River. The golf course was playable in late 2019, but we still don't have a clubhouse. COVID-19 had a big impact on the operation. We hope to break ground on our turfgrass center next month. Then we're building

an eight-room dormitory. We're going to do a lot of research here. The people inside the gate here are seeing a different side of golf than what they've heard.

I know I'm fortunate. I'm blessed. I never even dreamed about a job like this.

We'll honor you next month at the *Golfdom* Summit with this new award. Any parting thoughts you want to share?

I would encourage the younger superintendents today to use technology but not rely on it too much. It would be helpful to develop a relationship with three or four guys who have been in the business for a long time. Always be willing to bounce thoughts off those guys. Don't be afraid to ask questions. I know that's an old axiom, but I'd rather look stupid than be stupid.

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//NOV-DECEMBER MEGAISSUE

WHAT IS YOUR FAVORITE PRODUCT OF 2022?



Coming next month, *Golfdom* will try something we've never done before — a joint November/December megaissue to end the year.

The magazine will include our regular content, including our research section, our columnists and the 19th Hole. It will also include our end-of-the-year State of the Industry Report, sponsored by Nufarm. In that feature, we include reports from chapter presidents around the country on how the golf season went in their area.

And, for the first, time we're going to present a feature that shares the top products of the year — voted on by you, the reader. Just take a photo of the QR code here, and you'll be taken to a short, three-question survey that will help us create this new feature. Whether it's a cutting-edge new chemistry or something as old as your trusty pocketknife, we want to hear from you on this special project.



//FAMILIAR FACE

GCSAA selects new COO

The Golf Course Superintendents Association of America (GCSAA) named Kevin P. Sunderman, CGCS, its next chief operating officer (COO). Sunderman currently serves as the GCSAA's vice president.

Sunderman is a 21-year GCSAA member and became a certified golf course superintendent in 2019. He is a past president of the Florida GCSA and Florida West Coast GCSA.

"I am extremely excited to be joining GCSAA as the COO. Being a member of the association has had a tremendous impact on my life and career as a golf course superintendent," Sunderman said. "From the time I first served on a chapter board to the GCSAA Board of Directors, it was always about service and leadership."



Kevin Sunderman

Sunderman most recently spent 17 years at Isla Del Sol Yacht and Country Club in St. Petersburg, Fla., where he was director of grounds.

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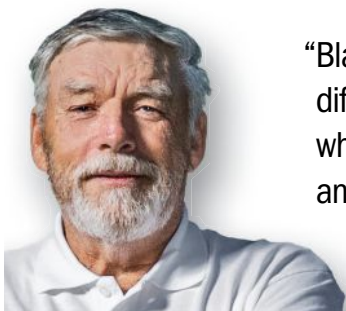
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“Blaming the Stimpmeter for fast greens is no different than blaming your car’s speedometer when you took that 55-mph curve at 75 mph and ended up in a ditch.”

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

Don’t blame the messenger

I have been close to golf and golf management for more than 50 years. During that time, nothing has changed more than the quality of putting greens.

It was 1966 when I first learned how to sharpen and set the cutting height on a walking greensmower. Our greens were bermudagrass 328 (Tifgreen), still a fairly new variety in those days. I always felt it should have been named Tifgreen 3/16 because that was as low as you could cut it. Stimpmeter speeds of 6 feet were not uncommon.

Throughout my career, cutting heights decreased, and speeds increased. There were many times I thought, “Ok, this is as low as we can cut, and the greens cannot get any faster.” I was always wrong.

Today, I hear superintendents talking of cutting heights below 1/10-inch and greens speeds in excess of 13 feet. Have we finally reached the point where we cannot go farther? As much as I hate to say it, probably not.

Extremely low cutting heights unquestionably put stress on turfgrass and, in turn, those who manage it. The

quest for Stimpmeter speeds in the teens predisposes turf to failure from many directions. Such speeds also result in slower play and higher scores for most everyday golfers.

But, somehow, the race continues.

Pointing fingers

Who’s to blame? There are probably many we can point our fingers at, including the USGA, PGA, state golf associations, low-handicap golfers, and yes, even superintendents. However, there is one entity we should stop blaming — the Stimpmeter itself.

I have listened to superintendents gripe about the Stimpmeter for years, and I’ll admit, it drives me nuts. To me, blaming the Stimpmeter for fast greens is no different than blaming your car’s speedometer when you took that 55-mph curve at 75 mph and ended up in a ditch. Or, in my case, believing that the old, ugly face I see in the mirror must be the mirror’s fault.

If only mirrors had never been invented.

The old saying that you can’t manage something unless you can measure it is true when it comes to putting green management. Today we use TDRs to measure moisture, thermometers to measure surface and rootzone temperature, salinity probes to monitor salt build-ups, the height of cut gauges to set our equipment and so on.

The Stimpmeter is simply a measurement tool that allows you to evaluate the end result of your overall greens management regime. It can provide insight into the timing of growth regulators, fertilization and cutting height.

And yes, it does measure the speed of your greens. Like it or not, the speed of the putting surface impacts overall putting quality. So much so that I guarantee you that if it had not been the Stimpmeter, someone else would have invented something to measure the speed of greens.

Mind your business

Having argued for the use of the Stimpmeter, I’ll argue just as hard that golfers do not need to be informed of the speed of your greens on a regular basis any more than they need to know the height of the cut.

In jest, I have always said there are only two lies a superintendent should tell golfers.

The first is your golf lie. You should tell them you are a single-digit player.

Unfortunately, in the world of golf, this makes you an expert on all things, so you might as well join the club (although you may never be able to play golf in front of them).

The second lie is the Stimpmeter speed.

Once you have determined the speed that achieves a balance between the needs of your turf and the majority of your players, this is the answer to give whenever you just can’t avoid the question.

Hopefully, you never have to tell the second lie. There is a Stimpmeter speed for every course that achieves this balance. It is up to you to determine what that number is and then use the Stimpmeter to measure and maintain it as best as possible.

There is more than one way to achieve extremely fast green speeds. **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.

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While my mower gently creeps

At Robert T. Lynch GC in Boston, two robotic mowers quietly pick up the slack | **By Seth Jones**



Mike Murphy's crew at Robert T. Lynch Municipal GC in Brookline, Mass., varies in size from day to day. At peak season, on a good day, he'll have 11 or 12 people working on the course. On a day like today, including himself, he has four-and-a-half people.

His crew is now supported by a hard-working novelty act around the clubhouse: two robotic mowers that mow 16 to 18 hours a day. The robotic mowers are especially useful around the clubhouse because they're silent and don't detract from the serenity of the clubhouse with unwanted mower engine noise. But while they were brought to the course to go unheard, they have also stood out as an endearing duo to the golfers.

"It's become a novelty. People will just sit and watch them; it's hysterical," Murphy says. "They get really interested and ask,

'what are they doing?' and I tell them, that's a lawnmower."

While the golfers have gotten a kick out of watching the random pattern of the robots, Murphy and his team enjoy the added benefits of bringing the two robots on the team.



Mike Murphy

Watch and learn

Murphy learned of the robots from a company he already did business with, Boston-area tech company GreenSight Agronomics. Murphy utilizes the company's job board at Robert T. Lynch. When GreenSight started working with robotic mowers, he told the company he wanted to give them a try.

Murphy designated an area near the clubhouse as a good loca-

Continued on page 18

“It’s really increasing turf health. Compaction isn’t an issue; it only weighs 12 to 15 pounds. There are no clippings. There’s no dust blowing around. It really has been so beneficial in so many ways.”

— MIKE MURPHY

**SUPERINTENDENT, ROBERT T. LYNCH MUNICIPAL GC
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// ROBOTIC MOWING

Continued from page 15

tion for the mowers. They mow around the 18th green, around the 9th green and the practice area. They also mow about 100 yards of rough on each hole.

The obvious benefit to Murphy was his crew had one less area to mow. There were additional benefits he realized over time.

“It’s basically cutting this area three times a week, and with a razor blade,” Murphy says. “It’s really increasing turf health. Compaction isn’t an issue; it only weighs 12 to 15 pounds. There are no clippings. There’s no dust blowing around. It really has been so beneficial in so many ways that it has increased the environment tenfold.”

To set up the mowers, Murphy downloaded the TurfCloud app on his phone. Then he drove the mowers around the area he wanted them to mow like he would drive a remote-controlled car. He says it was similar to setting GPS limitations on a golf cart.

Once he set the boundaries, the mowers went to work. They mow for five or six hours, then take a 60- to 90-minute break to recharge. Once they’ve recharged, they go back out. When Murphy pulls up to work each morning, he sees the headlights of the mowers already in action.

The mower also adjusts its height of cut automatically, so it can



Robotic mowers at Robert T. Lynch Municipal GC helped super Mike Murphy and crew save time while also entertaining golfers.

go from cutting rough to approach height without stopping.

Sustainability factor

Jason VanBuskirk, vice president of sales and marketing for GreenSight Agronomics, says the robotic mowers — Husqvarna’s

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550 EPOS — were particularly welcome at Robert T. Lynch because of the environmental benefits the machines offer.

“Being a town-run golf course in a city like Brookline, they care very much about their surroundings, their environment and the sustainability factor,” VanBuskirk says. “The carbon footprint and the sustainability factor of using a robotic mower is a big deal.”

VanBuskirk says GreenSight recently signed a reseller agreement with Husqvarna in July for the robotic mowers. Currently, the company has three golf courses using the robots, as well as Major League Baseball’s San Francisco Giants.

Since the mowers rely on satellites, it’s important the area for the mowers have an open sky and a high point for a reference station. Once that is determined, a power source, preferably somewhere out of sight and out of mind, is needed to set up the recharging station.

VanBuskirk adds that he jokes with superintendents and mechanics that the height of cut adjustment is the easiest height adjustment they’ll ever make since it comes at the touch of a button right inside the app. Changing the blades is also easily done with a Phillips head screwdriver.

“You don’t have that heavy footprint of a bigger unit. You don’t have the wear and tear of a reel mower. These units are using a razor blade; it’s a very clean cut. The frequency of cut also adds to that because you don’t see what you see from a rough unit — a lot of clip,” VanBuskirk says. “When the rough is growing to 3 1/2 inches, you mow it down and there’s a lot of clip left behind. Now you need another man to come out with a blower. Maybe you don’t have the chance to get over there because you lack the manpower. With the robotic mower, that’s not a concern anymore.”

Justin Lawson, PGA, general manager at Robert T. Lynch, says bringing the robotic mowers to the course was a ‘no-brainer.’

“Robotics is a key element of being efficient with a scarce skilled and unskilled workforce,” Lawson says. “They also allow

Continued on page 20



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Continued from page 19

us to be more environmentally friendly at the same time, which is absolutely critical at a time when climate change is a part of our everyday life. We are committed to being at the forefront of technology and how it can work for us.”

Mowers in action

Lawson calls Murphy ‘the ultimate superintendent’ and says he’s lucky to get to work with him. When it comes to the robots, he’s happy Murphy embraced them and gave them a chance. He says Murphy is a visionary who likes to lead.

Murphy says area superintendents and sales reps have been stopping by Robert T. Lynch to check out the mowers in action. He says it takes a while to sit and watch and see what the robots are capable of. His colleagues have told him they see how robotic mowers could possibly be put to use at their courses.

“Your clubhouse grounds area, you could be having a wedding in your clubhouse or something, and these things keep moving,” Murphy says. “If I hadn’t been experimenting with them already, I’d be skeptical. Could they take over (all) mowing down the line? Maybe. But they definitely have applications that are useful right now.”

Rise of the machines

What it is: Echo Robotics autonomous range picker

What they say: “It’s completely autonomous. You can pick 24/7,” says Joe Fahey, vice president of product service and robotics. “Our experience is all good course managers pick the balls before they go home. With this, you can go home early, because when you come back in the morning, all the balls will be gone. Each unit has a capacity of 300 balls. It counts them and then drops them and then goes out and picks some more. On a normal cycle, it’ll pick up 12,000 balls.”



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A look at a few robots we've seen in recent months



What it is: RC Mowers TK-52XP remote-controlled slope mower
What they say: "It's a mower on tracks, and it's designed to mow extreme landscapes: steep slopes, hazardous areas, wet areas," says Tim Kubista, vice president of sales and marketing, RC Mowers. "It'll take on heavy brush, and it can mow steep angles. Two reasons people buy it: one is safety. People who have had rollover accidents, will purchase this and mow in a safe manner. Other folks know the work isn't safe, and they're doing the work by hand with string trimmers. This replaces that manual labor."

What it is: Exmark autonomous mower prototype

What they say: "We're committed to giving our customers tools that deliver a competitive advantage," says Daryn Walters, general manager, Exmark. "When the technology is ready, and the timing is right for the marketplace, Exmark will be ready. As an industry, we're still working to fully understand where autonomous and robotic equipment fit into the equation. We see a big future for autonomous and robotic mowers. We're excited for what the future holds and are prepared to give our customers the tools they need to succeed."



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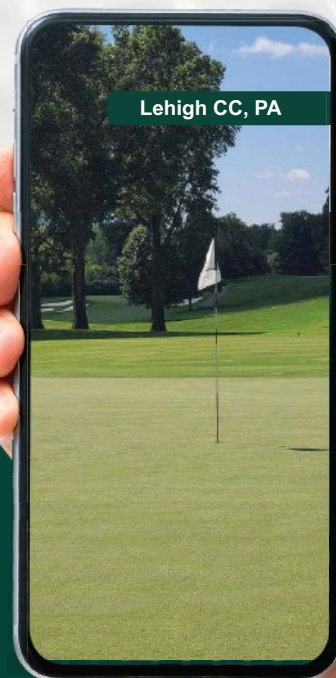


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// HI-YO SILVER

EVALUATING MID-WINTER APPLICATIONS OF QUICKSILVER FOR SILVERY-THREAD MOSS

By Mike Kenna, Ph.D.

Researchers across six northern states evaluated the potential injury of mid-winter applications of carfentrazone-ethyl (Quicksilver, FMC) on putting greens. Silvery-thread moss grows when desirable grasses are dormant in the northern United States. They found that Quicksilver applied to dormant creeping bentgrass did not cause injury. However, it would be best if you avoided applications of Quicksilver as creeping bentgrass transitions out of dormancy.

Eradicating silvery-thread moss (*Bryum argenteum* Hedw.) from golf course putting greens is difficult due to limited chemical control options. Quicksilver is the most commonly used herbicide for selective suppression of silvery-thread moss in putting greens. The active ingredient, carfentrazone-ethyl, causes rapid injury of silvery-thread moss shoots; however, the damage is often temporary.

RESEARCH

In 2017, researchers experimented on creeping bentgrass research greens from January to June in Kansas, Nebraska, Indiana, Illinois, Ohio and New Jersey to assess the effects of standard rates of Quicksilver on creeping bentgrass following a winter application.

The five treatments were a nontreated control, 0.25, 0.5, 1 and 2 times application rates of carfentrazone-ethyl (where 1-time application rate = 6.7 fluid ounces Quicksilver per acre). The five treatments were applied once at each location in January or February using a CO₂-powered backpack sprayer with a spray volume of 44 gallons per acre.

Researchers recorded normalized difference vegetation index (NDVI) measurements and percent creeping bentgrass injury at 0, 2, 4, 8 and 12 weeks after treatment (WAT). The research team obtained NDVI values using hand-held meters. The percentage creeping bentgrass injury was visually estimated using a 0 to 100 percent scale.

RESULTS

Creeping bentgrass injury was only observed in Nebraska at 2 WAT because of significant winter injury. Neither treatment nor treatment times location effects were significant for NDVI or injury. The location effect was highly significant for NDVI, and values were, on average, lower in Nebraska than in other locations from 2 to 12 WAT.

The lack of treatment or treatment by location effects indicates the safety of labeled and above label (up to two times) applications of Quicksilver. ©

For more information, contact Zane Raudenbush, Ph.D., turf and herbicide specialist with the Davey Institute at Zane.Raudenbush@Davey.com.

Reference

Raudenbush, Z., Benelli, J., Elmore, M. T., Hoyle, J. A., Patton, A. J., & Thompson, C. Evaluating injury potential from a midwinter application of carfentrazone-ethyl to putting greens. *Crop, Forage & Turfgrass Mgmt.* 2021;7:e20107. <https://doi.org/10.1002/cft2.20107>



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

NEWS UPDATES

ECHO INTRODUCES THREE NEW BROADCAST SPREADERS

Echo launched a new lineup of three commercial-grade broadcast spreaders that allow users to distribute seed, fertilizer, herbicides and ice melt products quickly and accurately.

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The three spreaders are available in two turf and one winter application style. Each has an 85-pound capacity hopper, a T-handle, 13-inch pneumatic tires and side deflectors.

The RB-85 features a powder-coated steel frame for corrosion resistance, while the RB-85S features a stainless-steel frame for further corrosion resistance.

Both include a hopper grate and cover to protect materials from the environment and are intended for spreading seeds, fertilizers, herbicides and pesticides.

The RB-85W features a salt-specific hopper and agitator and four-sided foot deflectors that create an operating spread of 2 to 8 feet to keep salt off landscaped or grassy areas.

“WE AIMED TO EXAMINE THE EFFICACY OF LATE-SEASON BERMUDAGRASS REMOVAL USING HERBICIDE COMBINATIONS.”

Ross Braun, Ph.D., and Jared Hoyle, Ph.D.
(see story on page 24)

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//THE BIG 3

Efficacy of late-season bermudagrass removal using herbicide combinations

By Ross Braun, Ph.D., and Jared Hoyle, Ph.D.

Multiple summer applications of glyphosate at rates up to 3.75 pounds acid equivalent (a.e.) acre⁻¹ are commonly recommended for bermudagrass (*Cynodon spp.*) control (1,3,5). However, this regime results in an extended period of 3 to 4 months of displeasing and nonfunctional turfgrass and is not ideal for spring establishment.

An autumn glyphosate application before winter dormancy in the Southern U.S. can control bermudagrass and benefit spring establishment projects (2,3). However, researchers have not evaluated this strategy in the Central Plains region.

We wanted to define the parameters for late-season herbicide applications to control bermudagrass as it transitions into dormancy in the Central Plains. Recommendations and previous research support adding herbicides such as fluazifop or mesotrione to improve nonselective control of bermudagrass (5).

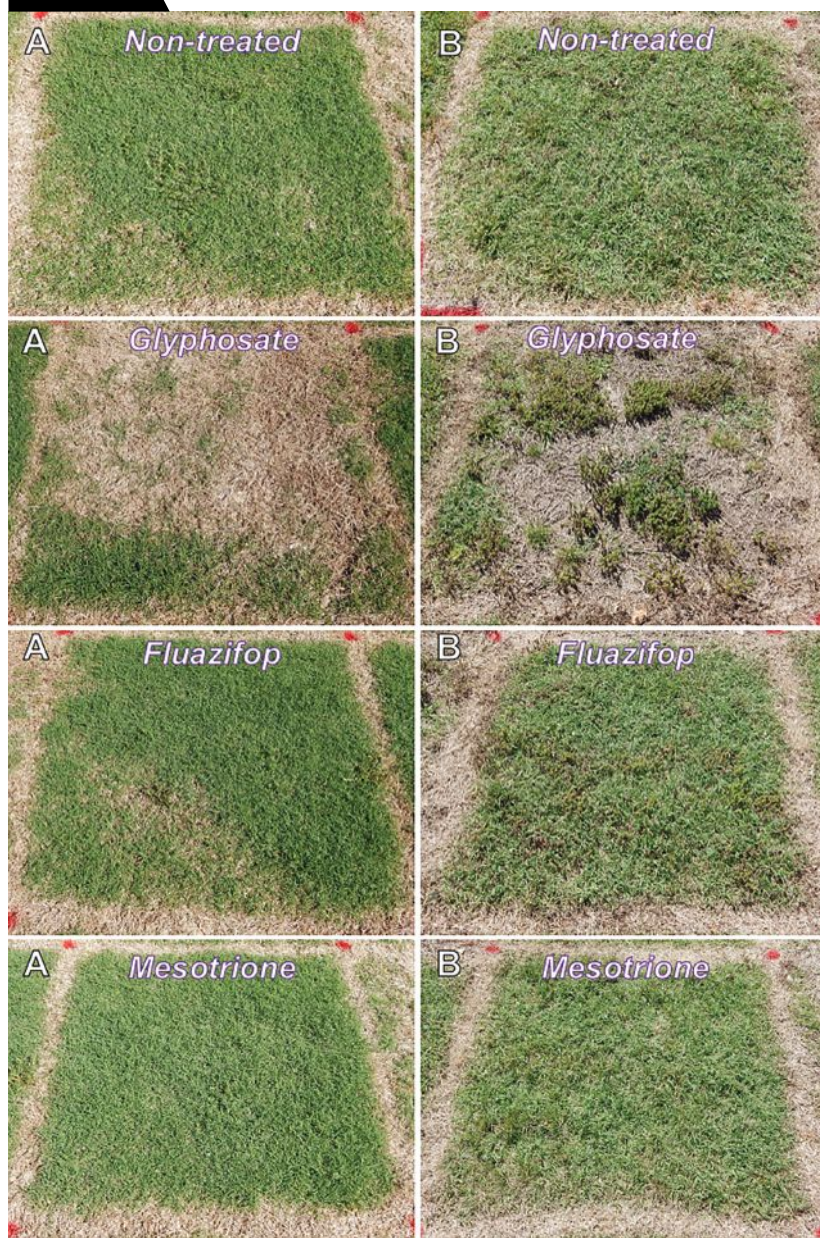
This experiment aimed to examine the efficacy of late-season bermudagrass removal using glyphosate, fluazifop and mesotrione herbicide combinations.

MATERIALS AND METHODS

We initiated experiments on Oct. 3, 2013, at the Rocky Ford Turfgrass Research Center in Manhattan, Kan., on mature 'Midlawn' hybrid bermudagrass and at Stagg Hill Golf Course in Manhattan, Kan., on mature common bermudagrass. At both sites, we maintained research plots (5-by-5-foot) at a 3-inch mowing height.

Seven herbicide treatments containing glyphosate (GlyphoMate 41, PBI-Gordon Corp.), fluazifop (Fusilade II, Syngenta) and mesotrione (Tenacity 4 SC, Syngenta) were arranged in a randomized, complete block design with four replications at each site. The team applied herbicide

FIGURE 1



(A) 'Midlawn' bermudagrass plots and (B) common bermudagrass plots on June 12, 2014 (252 days after application on Oct. 3, 2013) recovering from autumn applications of glyphosate, fluazifop and mesotrione combinations. All other treatments containing glyphosate (not pictured) had a similar percentage of green cover as glyphosate plots and plots treated with fluazifop and mesotrione (not pictured) had a similar percentage of green bermudagrass cover as those treated only with fluazifop.

PHOTOS BY: JARED HOYLE, PH.D.

Differences in green bermudagrass cover between cutlvars may have been improved genetics of 'Midlawn' which is known to have improved stand persistence and cold tolerance compared to common bermudagrass

treatments with a CO₂-pressurized boom sprayer equipped with XR TeeJet 8004-VS flat-fan nozzles calibrated to deliver in 44 gallon acre⁻¹ at 40 psi.

We based product application rates (Table 1) on extension recommendations and previous research (2,3,5), and we included an untreated control.

We visually estimated green bermudagrass cover (ranging from 0 to 100 percent) when we initiated treatments and every 14 days after application (DAA) until the bermudagrass was

completely void of green cover (Oct. 31, 2013). Data collection resumed before spring green-up on May 2, 2014, and continued until Aug. 25, 2014 (326 DAA).

We conducted a separate analysis for each site to limit confounding effects from cultivar differences. Data were subjected to ANOVA using the GLIMMIX procedure of SAS (SAS 9.3, SAS Institute) with block as a random effect. Means were separated using Fisher's protected LSD test ($P < 0.05$).

Continued on page 26

TABLE 1

Products and treatment combinations applied at Rocky Ford and Stag Hill in Kansas on Oct. 3, 2013.

Treatment ¹	Rate
	lbs. a.i. or a.e. acre ⁻¹
Non-treated	—
Glyphosate	2.0
Fluazifop ²	0.38
Mesotrione ²	0.25
Glyphosate + Fluazifop ²	2.0 0.38
Glyphosate + Mesotrione ²	2.0 0.25
Fluazifop ² + Mesotrione ²	0.38 0.25
Glyphosate + Fluazifop ² + Mesotrione ²	2.0 0.38 0.25

¹ Glyphosate (GlyphoMate 41, PBI-Gordon Corp.), fluazifop (Fusilade II, Syngenta), mesotrione (Tenacity 4 SC, Syngenta).

² Nonionic surfactant (75 percent surface-active agent) added to mix at 0.25percent v/v.

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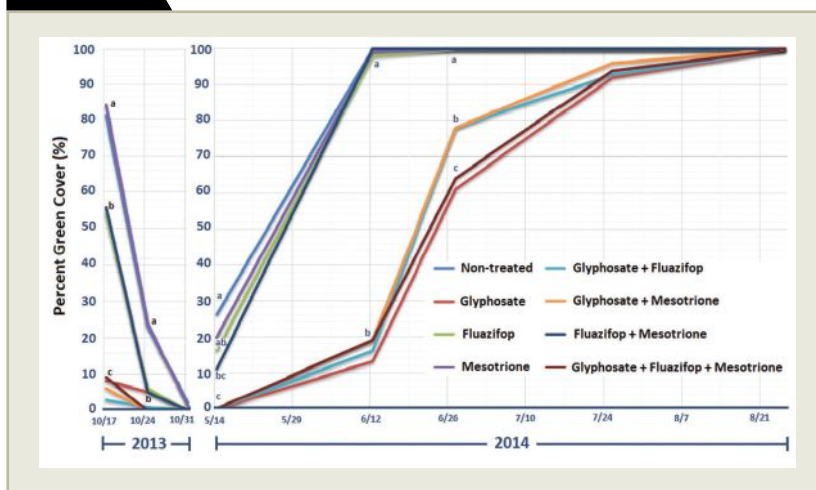
RESULTS AND CONCLUSIONS

All treatments reduced green bermudagrass cover at each site at 14 DAA (Figures 1 and 2), excluding mesotrione at Rocky Ford, mesotrione, fluazifop and a combination of mesotrione, fluazifop at Stagg Hill. However, only treatments containing glyphosate delayed spring green-up at each location the following year.

Treatments at Rocky Ford resulted in a similar 'Midlawn' green cover compared to the non-treated control by July 25, 2014 (Figure 1). At Stagg Hill, common bermudagrass treated with glyphosate or mixes containing glyphosate had significantly less green cover (≤ 38 percent) at the last rating on Aug. 25, 2014 (Figure 2).

Across all rating dates and locations, adding mesotrione, fluazifop or both to glyphosate did not further reduce green bermudagrass cover, which is different from previous research (5).

FIGURE 2



Percentage green cover of 'Midlawn' bermudagrass 14 to 326 days after application (Oct. 17, 2013, to Aug. 25, 2014) at Rocky Ford Turfgrass Research Center. Different letters on observation dates indicate significant differences at $P < 0.05$.

Differences in green bermudagrass cover between cultivars may have been due to improved genetics of 'Midlawn', which is known to have improved stand persistence and cold tolerance compared to common bermudagrass (4). The reduced cold tolerance of common bermudagrass may have enhanced the

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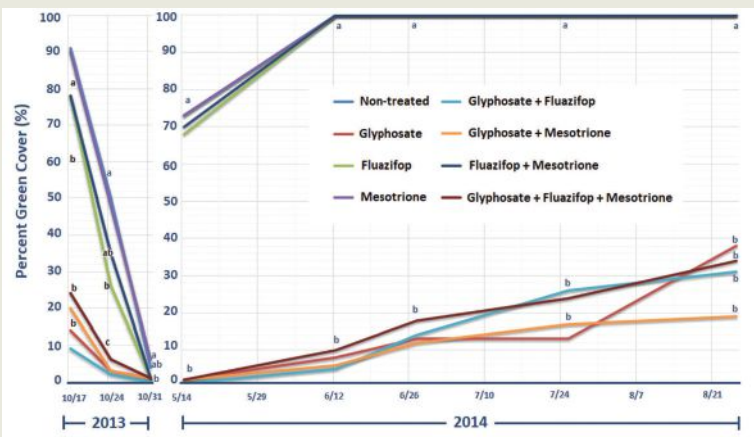
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FIGURE 3



Percentage green cover of 'Midlawn' bermudagrass 14 to 326 days after application (Oct. 17, 2013, to Aug. 25, 2014) at Stagg Hill Golf Course. Different letters on observation dates indicate significant differences at $P < 0.05$.

efficacy of glyphosate treatments at Stagg Hill.

Similar to our results with 'Midlawn' bermudagrass at Rocky Ford, other research (2) reported that a single autumn application of glyphosate reduced Tifway hybrid bermudagrass cover but did not give complete control.

Overall, results indicate that a single autumn application of glyphosate before bermudagrass dormancy reduces turfgrass cover the following spring. Treatments containing glyphosate resulted in a similar or slightly faster appearance toward winter dormancy when compared with untreated bermudagrass and delayed spring green-up.

Adding mesotrione, fluzifop or both to autumn glyphosate applications did not enhance bermudagrass control in our experiments. Even though we observed a significant reduction at spring green-up, turf managers may need to make additional applications in the spring for increased efficacy before spring establishment.

Further research is needed to optimize autumn glyphosate application rates and the combination of autumn and spring applications for more efficient bermudagrass control. **G**

Research Takeaways

- Only treatments containing glyphosate reduced the green cover of bermudagrass at each site the following year.
- Across all ratings dates and locations, adding mesotrione, fluzifop or both to glyphosate did not further reduce green bermudagrass cover.
- Overall, results indicate that a single autumn application of glyphosate before bermudagrass dormancy reduces bermudagrass cover the following spring.
- The significant reduction in spring green-up may allow turf managers to make additional applications in the spring for increased control before spring establishment.

Ross Braun, Ph.D., is an assistant professor at Kansas State University and can be reached at rossbraun@ksu.edu. Jared Hoyle, Ph.D., is a turf and ornamental territory manager with Corteva Agriscience and was previously an associate professor at Kansas State University.

Article adapted from Hoyle, Jared A., Ross C. Braun, Cole S. Thompson, and Jacob A. Reeves. 2018. Late-Season Bermudagrass Control with Glyphosate, Fluzifop, and Mesotrione Combinations. *Agrosystems, Geosciences & Environment*. 1:180014(2018). doi:10.2134/age2018.06.0014

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Experts say supers can control both crabgrass (left) and goosegrass (right) with preemergent herbicide applications.

How to manage crabgrass and goosegrass

To treat these weeds, superintendents should utilize preemergent herbicide applications when soils reach certain temperatures.

By Chris Lewis

To successfully manage crabgrass and goosegrass — a pair of problematic weeds in turfgrass systems — a consensus of experts say a preemergent herbicide application is the best approach.

According to Florence Breuillin-Sessoms, Ph.D., a researcher in the department of horticultural science at the University of Minnesota, superintendents can use various herbicides — including Dimension (dithiopyr), Pendulum (pendimethalin), Barricade (proflam) and combination products, such as Cavalcade PQ (proflam and quinclorac) and Echelon (proflam and sulfentrazone) — for preemergent control of crabgrass on either in warm- or cool-season turfgrasses.

“Superintendents can also use preemergent herbicides like Bensus (bensulfide) for putting greens and tees,” Breuillin-Sessoms says. “Goosegrass is more difficult to control, though, even as a preemergent. And, as of now, herbicides containing Ronstar (oxadiazon) seem to be the most efficient preemergent control method for established warm- and cool-season turfgrasses.”

To ensure successful spring applications, superintendents must consider the soil temperatures by closely monitoring it between a 0- and 2-inch depth. For instance,

crabgrass (smooth and large) will start to germinate after a couple of days when soil temperatures reach 55 degrees F, while goosegrass will germinate after soil temperatures are above 60 degrees F for several days. Superintendents must implement proper preemergent applications exactly when the soil reaches these optimal temperatures.

Superintendents can utilize growing degree days (GDD) as they strive to pinpoint the best times for preemergent herbicide applications. Michigan State University’s GDD tracker (at GDDTracker.MSU.edu) offers a GDD32 model, which provides a preemergent application timeline. GDD32 — with a base temperature of 32 degrees F — forecasts when soil temperatures will consistently reach 55 degrees F or higher. A GDD32 between 250 and 500 indicates when superintendents can implement a preemergent herbicide application for crabgrass.

Additionally, superintendents can use GDD50 (with a base temperature of 50 degrees F) to time their preemergent herbicide applications. For crabgrass, a GDD50 above 200 will indicate when a preemergent herbicide application can begin.

“All GDDs accumulate during the growing season,” Breuillin-Sessoms adds. “For that reason, GDD models will always provide superintendents windows of application.” ©

PHOTOS COURTESY OF SYNGENTA

Nufarm Americas

AARON HATHAWAY

Technical services manager



Superintendents can be precise with preemergent herbicide applications, as they're able to wait closer to crabgrass and goosegrass germination, thereby receiving a longer residual while also potentially reducing breakthrough. For crabgrass, 80 percent of germination will occur when soil temperatures — at 0- to 2-inch depths — are consistently between 60 and 70 degrees F. Goosegrass tends to begin germination a few weeks later than crabgrass. By timing a preemergent herbicide application before crabgrass germination occurs, superintendents can control both. If superintendents can't apply their application until later in the year — perhaps when crabgrass has already begun to germinate — a product containing dithiopyr is a nice option, as it can provide very early postemergent crabgrass control. However, it's important to remember that it may not offer goosegrass control.

Quali-Pro

IAN RODRIGUEZ, PH.D.

Technical services manager



The name of the game in preemergent use is ensuring applications are on the ground before optimal environmental conditions for weed seed germination. Soil temperatures are typically used to plan these applications. Preemergent herbicide applications need to be applied earlier in more southern locations. Initial crabgrass preemergents should be applied when warming soil temperatures first reach between 52 and 55 degrees F. Dinitroaniline products, such as dithiopyr and prodiamine, are good crabgrass options. Goosegrass seeds begin germinating closer to 60 degrees F — sometimes two to four weeks later than crabgrass. Oxadiazon is highly effective for preventing goosegrass and offers superintendents the additional advantage that it doesn't hinder root growth of the desirable turf species. Herbicides begin degrading as soon as they are applied, so multiple applications are ideal.

Syngenta

DEAN MOSDELL, PH.D.

Technical services manager



Preemergent herbicide applications will prevent weed emergence from soil, including the growth and development of newly germinated weed seeds. The site of activity depends on the herbicide mode of action, but the optimum application timing is prior to the germination of weed seeds. Soil temperatures and moisture trigger the germination of weed seeds. Crabgrass seeds will germinate as soil temperatures exceed approximately 58 degrees F for several days, while goosegrass seeds will germinate several weeks later, especially as soil temperatures exceed roughly 62 to 63 degrees F.

FMC

KEN HUTTO, PH.D.

Product development manager for herbicides and fungicides



For crabgrass control, the most common active ingredients are products that contain dithiopyr, indaziflam, pendimethalin or prodiamine. On the other hand, for goosegrass control, superintendents will commonly use products containing indaziflam, oxadiazon or prodiamine. Geography and turfgrass type will dictate which active ingredient a superintendent may use. It is important to understand the product label to determine which rate to use and if the desirable turfgrass type is tolerant to the product.

Prime Source

BRET CORBETT

Technical services manager



Crabgrass and goosegrass are true annuals that have become perennial problems in turf systems. These plants germinate in the spring and grow rapidly throughout the year, so the best method for reducing pressure is having healthy turf and soil. However, sometimes the only option is herbicides. The best way to prevent these grassy weeds is through preemergent herbicide applications, as they prevent weeds from developing in the first place. To prevent any growth, superintendents must utilize their applications before the weeds germinate, though.



“Coring is a positive disruptor in turfgrass health by improving soil aeration, drainage and reducing organic matter.”

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

Getting to the center of coring

People often view disruption as a negative, a means for changing the status quo. In business, however, disruption is often looked at as a positive. For example, a positive disruption saves a business money or makes it more efficient. In the biological or turfgrass world, disruptors alter the structure or function of the turfgrass system.

A fall management practice that I consider one of the original and annual disruptors of turfgrass is coring. Here, I define the practice of coring as using at least 1/2-inch hollow tines on 2-by-2-inch spacing to a depth of 2.5 inches, with cores removed and sand topdressing applied to fill the holes.

BOTH SIDES OF THE COIN

Coring includes aspects of both positive and negative turf disruption. From a negative perspective, it disrupts the status quo of a green as it makes the turf less stable or firm.

Golfers are most attuned with coring disruption. An uneven putting surface, lack of stability and firmness under footing are frequent consequences of coring. Golfers may avoid golf courses weeks after coring.

During relatively good growing conditions, it may take 2 to 4 weeks or longer for the greens to get back to the playing surface conditions prior to

coring. Golfers' concerns about coring often result in superintendents pushing coring later into the season. Spring coring is scheduled earlier in the season to avoid potentially good golfing weather.

A NET POSITIVE

Coring, however, is a positive disruptor in turfgrass health over time by improving soil aeration, drainage and reducing organic matter. The benefits of coring consistently outweigh the disruptive effect on golf. Discussions questioning the frequency of coring between golf course superintendents and golfers often occur.

Occasionally, the question arises, 'If we have USGA greens, can we just topdress with sand to control organic matter and eliminate coring?'

This is actually a good question. If organic matter control is the only concern and factors related to compaction are not, it is possible to topdress at a

rate that can manage the organic matter. Like the line from the movie *Top Gun*, when Maverick says, "That is a lot of pushups," it takes a lot of sand.

Generally speaking, on cool-season putting greens, it can take at least 25 cubic feet of sand per 1,000 square feet per year, while on hybrid bermudagrass greens, the amount of sand can exceed 60 to 70 cubic feet per 1,000 square feet per year. Getting this amount of sand down over the course of a growing season is intensive.

Coring and topdressing, as I described above, is an effective means to get a large amount of sand down. But helping to get the allotted sand topdressing material down is only one aspect of improving turfgrass health.

BEST PRACTICES

To enhance turf recovery, core during times of optimum turfgrass growth. A good guide is when soil temperatures range between 60 to 65 degrees F. Use new or relatively new coring tines. A core cut with a sharp tine tip provides a clean cut. An old or dull tine tends to tear the turf around the hole, which requires a longer recovery time for the turfgrass plant from that of a clean cut.

After coring and topdressing, roll the green. Rolling will smooth the green, helping to reduce any minor deformities caused by coring. Check the moisture status of the green and irrigate it if needed to prevent any drying, desiccation or stress associated with coring.

When the greens look their best from both an aesthetic and playability view, spring and fall coring seems scheduled. It is in this context — the status quo — that coring is so disruptive. Turf disruption leads to enhanced turf health. **©**

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

Is it spring dead spot or billbugs?

BILLBUGS WILL TAKE ADVANTAGE WHEN MISTAKEN FOR DROUGHT STRESS OR DISEASE

By Christina Herrick

Let's say you're a superintendent in the Southeast. Your course has bermudagrass roughs and fairways. You notice large patches of dead turf about 2 or 3 feet in diameter. It's spring dead spot, right?

Not so fast, says David Shetlar, Ph.D., entomology professor emeritus with Ohio State University.

"Billbugs have always been mistaken for drought stress or disease," he says. "Don't make an assumption that you're dealing with a disease or you're dealing with a poor irrigation system or a drought issue or something without looking first. Billbugs will take advantage of those situations."

Hunting billbugs are particularly challenging as adults emerge in June to join the overwintered adults and have a long life cycle. If a superintendent applies an insecticide in April and May, it's possible to miss some of the hunting billbug larvae that will hatch in August and September. When September rolls around, the hunting billbug population ranges from nearly mature adults to larvae. The larvae will overwinter and continue to feed.

In the case of the superintendent with the supposed case of spring dead spot? Shetlar says superintendents need to examine the turf by raking through the blades and stolons.

"There will be little bits and pieces of the stolons that come up," he says. "It will be dead grass with the dead stolons. If we start digging around in that area that had the little bits and pieces, we will come up with hunting billbug larvae."

Shetlar says insecticides with clothianidin and bifenthrin work well for hunting billbugs and an application in the fall would protect courses in the Southeast in the winter.

"That will give you enough residual that it will kill any adults emerging from pupae that might be there, but it's also active enough to kill even larger larvae," he says. "So, if there are larger billbug larvae, small billbug larvae and even emerging adults, that one application in September should zero that out so that you don't see any damage the next spring."

Superintendents with cool-season turfgrass should also keep an eye out for hunting billbugs. Shetlar says Doug Richmond, Ph.D., professor of entomology at Purdue University, found hunting billbugs in Indiana.


COOL-SEASON FOE

Superintendents with cool-season turf typically see bluegrass billbug damage. As the pest's name implies, it

enjoys feeding on Kentucky bluegrass. Shetlar says many superintendents may mistake bluegrass billbug damage for drought. Shetlar says on occasion he'll notice a dead spot on a bunker slope when he visits a superintendent. When he asks the superintendent about the patch of turf, the superintendent often suspects it's a drought issue.

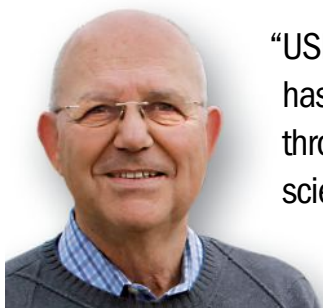
"When I would go over and do the tug test in those areas, I'd say, 'See all these stems are hollowed out and they've got fresh pellets in there?'" he says. "What you're seeing is the billbug damage on this slope and because of lack of irrigation, it's showing up."

Shetlar says superintendents should train crews to scout dead patches or yellowing of turf. A superintendent could mark a square meter of turf and use a detergent solution to flush out any pests to stay ahead of any issues. He recommends superintendents apply insecticides with active ingredients imidacloprid, clothianidin and bifenthrin in the last few weeks of April or early May. It's also possible to grow through a bluegrass billbug issue.

"Where I see most of the damage on golf courses is usually in the areas that they don't like to irrigate on a regular basis," he says. "Damage shows up in those areas because the turf isn't healthy. It's stressed from not being irrigated. The tillers aren't able to establish a root system, and they'll die." 



This superintendent assumed this damaged bunker edge was from drought conditions, but upon closer examination, the damage was the result of bluegrass billbug larvae.



“USDA Specialty Crop Research Initiative has provided more than \$25 million through several grants to turfgrass scientists at land-grant universities.”

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

A look at the history of turfgrass research in the USDA

In the late 1990s, the U.S. Department of Agriculture (USDA) tried eliminating the National Turfgrass Evaluation Program (NTEP) from their Beltsville, Md., laboratory budget. It was only \$50K of in-kind support for office and greenhouse space. NTEP asked turfgrass faculty and industry leaders to write letters of support to keep the program alive each year.

At this time, Robert Shearman, Ph.D., NTEP executive director, arranged to have the NTEP Policy Committee visit with the USDA Agricultural Research Service (ARS) program staff. Turfgrass science and management was not a priority within the USDA-ARS since there were no longer ARS scientists who worked on turf.

Shearman led a presentation to justify hiring one turfgrass scientist at Beltsville, and to our surprise, the USDA-ARS program staff suggested the need for more scientists. Hence, a workshop with more than 200 attendees took place in Dallas the following year. University turfgrass faculty, association leaders, industry representatives and USDA-ARS scientists developed the first National Turfgrass Research Initiative (NTRI).

WORKING WITH CONGRESS

Following the development of the NTRI, the turfgrass industry lobbied Congress to increase funding in the Farm Bill for USDA-ARS scientists.

There were big plans to eventually provide \$32 million in research for the turfgrass industry. Unfortunately, a series of national disasters derailed the growth of NTRI. First, 9/11, the Afghanistan and Iraq wars and then Hurricane Katrina slowed the new federal funding.

The USDA-ARS did fund a research scientist at Beltsville, technician support in Logan, Utah, and soil research at the Beaver, W.Va., laboratory. Also, support for the warm-season grass breeding program at Tifton, Ga., received some extra funding. During this time, Kevin Morris, NTEP executive director, established the National Turfgrass Federation (NTF) to lobby Congress.

After several years of visiting Congress, the 2008 budget had more than \$1.9 million in funds for drought mitigation research in Riverside, Calif., and Maricopa, Ariz., and permanently funded the position in Beltsville, Md., Beaver, W.Va., Logan, Utah, and Tifton, Ga. However, the change of presidential administrations and Congress in

November 2008 canceled this funding.

TURFGRASS AS A SPECIALTY CROP

A disappointed NTF did not give up on the effort to increase federal funding for turfgrass research. Participating in the USDA Specialty Crop Research Initiative (SCRI) grant program was a new direction. The SCRI program addresses the needs of the horticulture industry by awarding research and extension grants to universities. The program focuses on national and regional challenges in agriculture sustainability.

The NTF was interested in SCRI funding to address 1) plant breeding, genetics and genomics; 2) threats from pests and diseases and 3) production efficiency, productivity and profitability. At first, SCRI proposal reviewers rejected turfgrass requests because they were not a specialty crop. Fortunately, that changed thanks to Turfgrass Producers International (TPI) getting the rules and regulations changed in the Federal Register to consider turfgrass a specialty crop.

Since then, SCRI has provided more than \$25 million through several grants to turfgrass scientists at land-grant universities.

The Turfgrass Summit II, held in October 2020 during the pandemic, refocused research priorities for USDA and universities. The conference summary and presentation videos are available at: [NationalTurfgrassResearchInitiative.info](https://www.nationalturfgrassresearchinitiative.info).

Finally, after years of effort, in the latest Farm Bill, the USDA-ARS received \$3 million to fund new scientists and research support. There is now an active turfgrass research culture within the USDA. The new group of scientists will significantly contribute to turfgrass science and management for years to come. **G**

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

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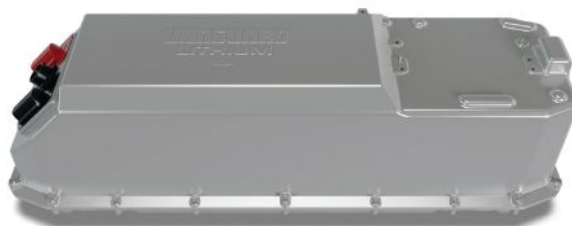
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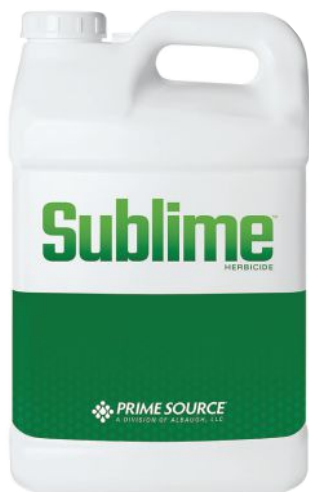
The **STEINER** Rotary sweeper clears away light snow and other debris on pathways, cart paths and parking lots and drives all around golf courses, delivering a clean finish. It features a 54-inch wide brush to help clear paths. The company says the rotary sweeper attached to a Steiner 450 tractor gives operators the control they need to clear snow efficiently.

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The 7KWH Diecast commercial battery from **VANGUARD** utilizes lithium-ion chemistry and technology to ensure performance and features a battery management system that monitors voltage and temperature. The battery can be fully charged in less than eight hours and has a charging temperature range of 50 to 122 degrees F.

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5



6

4 | Sublime Herbicide

Sublime Herbicide from **PRIME SOURCE** combines mesotrione, triclopyr and dicamba into a non-2,4-D option for superintendents. In trials, Sublime did not show weed bleaching. Sublime is labeled for the control of more than 200 broadleaf weeds including ground ivy and several grassy weed species.

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The 19th Hole with...



Mike Bellino

SUPERINTENDENT // Heathrow (Fla.) CC



Mike, what can I get you?

Rum and Coke for me.



Tell me about Heathrow CC.

It's a Ron Garl design, built in 1985. Water comes into play on 16 of the 18 holes. It was the first course Concert Golf bought; they're up to 26 clubs now. Their corporate office is just across the street. I'm finishing my eighth year here, and with any luck, this will be my last club.

Do you have a family? Yes, my wife, Debbie, is in the insurance business. I have two kids, a daughter, Sophia, and a son, Nicholas. My son works with my wife in insurance. The building they work in is off our second fairway. I get to see them all the time, drive my golf cart over and have lunch with them.

GCSAA Conference & Show comes to Orlando next year. Any recommendations for the area?

My advice is shorts and flip-flops — that's our uniform all year round. If I had one recommendation, it would be ICON Park and the Wheel; it's super-close, almost in the shadow of the convention center. Top Golf is right there. There's all sorts of stuff to do.



How do you judge a good golf season?

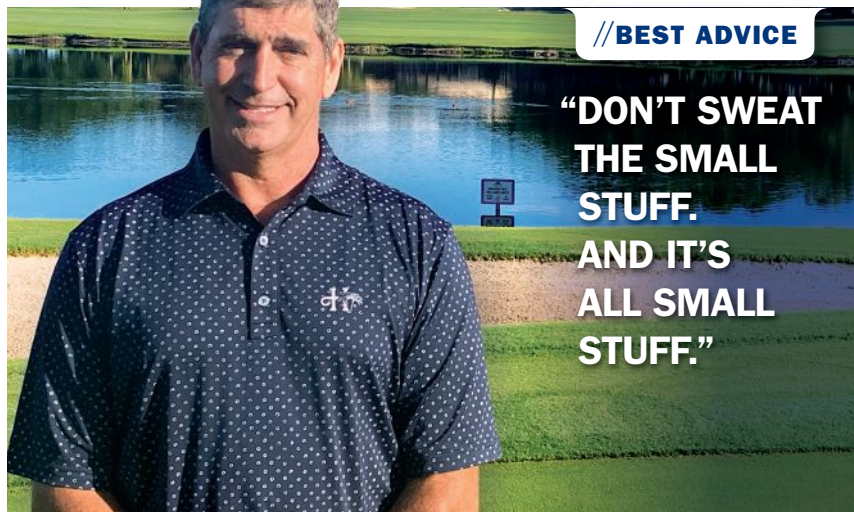
Our season is from Thanksgiving to Easter. After Easter, everyone goes home; it's too damn hot. If we get through the spring and summer and I don't have to buy any sod, that's a successful season, in my opinion.

How did you get into motorcycles?

Probably my dad. When he passed, I got his bike. But my wife bought me my first motorcycle. Now I have four. I keep my dad's old bike at work; it's a '74 CB 350. I just rode it to Home Depot this morning. Then I have a 1972 CB 750, an '86 Rebel that my son rides and a '99 Harley Road King. If I could find a way to fit another one, I'd get it, but the garage is getting full.

Do you have a day at work that stands out in your mind?

Yes. I was an assistant at the time. We had just finished overseeding greens, and a helicopter landed on our sixth green, dead center. I walked over to the paramedic and said, 'Geez, you could have landed anywhere! On the approach, on the fairway. I got all of these places you could have landed. Why did you have to land on the middle of the green?' And he said, 'Because a man's life is at stake.' A guy was roofing nearby and fell off the roof. All I'm thinking about is the brand new *Poa trivialis* coming up. I was like, 'Oh, my gosh.' It all worked out.



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