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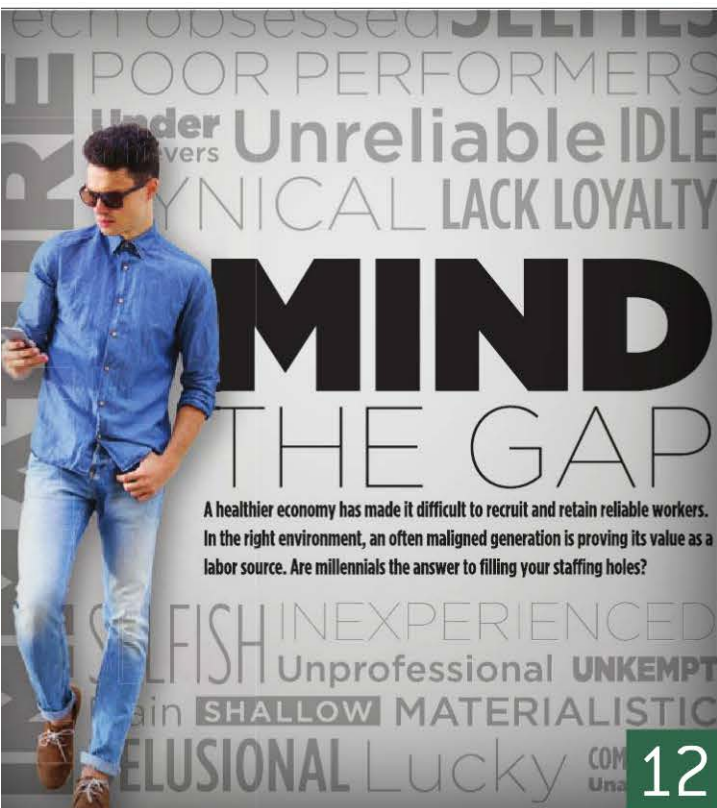
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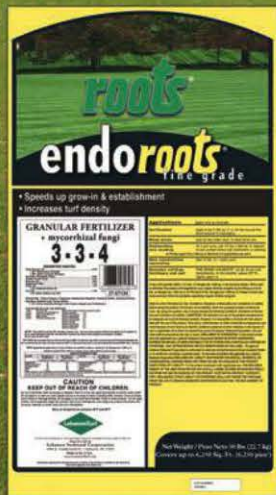
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TEERING OFF

GIVE THEM AN ASSIST

I'm an assistant. I'm proud of it.

That didn't hurt to admit.

Of all the events this assistant editor has attended since fortuitously arriving at GCI in May 2014, Green Start Academy sparked the most introspection on the flight home. The event sponsored by Bayer and John Deere was held Oct. 7-9 and brought together a few dozen assistant superintendents from across the U.S. and Canada.

I also attended the 2014 Green Start Academy and, admittedly, headed to Raleigh last month expecting to hear much of the same chatter:

- *The five-star jobs are impossible to land.*
- *Reliable crew members are impossible to find.*
- *The networking opportunities Green Start Academy*

provides for assistants are impossible to replicate.

• *Achieving a work-life balance while advancing a career and surviving on an assistant's salary are impossible concepts to comprehend.*

Working as an assistant editor for a magazine provides numerous wonderful opportunities, including time to write stories. Writing is our version of mowing: a soothing task that reminds you why

you entered the business. The higher you move up the editorial hierarchy, the less you write. Superintendents will tell you a similar thing. The gaudier your title becomes, the less you mow.

Writing a quality story, in most cases, involves interviewing, the process of getting a subject to describe his or her background, work, employer, goals, emotions, worldview, etc. Not all sources handle being interviewed the same. Some shutdown or, even worse, shut you out (either by personal choice or corporate mandate). Others reluctantly agree to the interview and tell you the basics.

Fortunately, a special few make interviewing the most fulfilling part of the writing process. These sources look you in the eye and open up about almost everything. This group understands the loony holding a recorder, notebook and pen can help promote an industry, organization or personal cause.

For this assistant, the best part of Green Start Academy was standing across from other assistants and learning about their lives. Yes, they all want the same jobs, struggle finding employees for the wages their owners/bosses are willing to pay and make personal sacrifices to flourish in their chosen field.

Above all, they are a determined lot, and competent ones ensure a superintendent stays sane while attending board meetings, handling vendors and crafting budgets. A quality



Guy Cipriano
Assistant Editor

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TEERING OFF



The 10th annual Green Start Academy sponsored by Bayer and John Deere was held Oct. 7-9 in North Carolina. The event brought together 54 assistant superintendents from the United States and Canada.

assistant raises the boss's profile. A poor assistant threatens the boss's prospects of remaining a boss.

Yet, is the golf industry doing enough to keep the best assistant superintendents in the business? Events like Green Start Academy are rare, and how many superintendents are sacrificing their own spot at the national or regional turf show so an assistant can advance his or her career? How many superintendents willingly make passionate, well-researched presentations urging their owners or boards to pay their assistants more?

The Department of Labor, as part of the Fair Labor Standards Act's "white-collar" exemption, has drafted a proposal that would require employers to pay overtime to workers making up to \$50,000 annually, including those classified as managers. We all know there are driven assistants who work way more than 40 hours per week and make way less than \$50,000 under the premise a short-term sacrifice will yield a long-term payoff. If this proposal is enacted, it might force some facilities to eliminate the assistant superintendent position altogether. And you think a superintendent has it tough now? The last thing this industry – or any other – needs is to lose a generation of talent.

A good interviewer stares into a source's eyes when asking questions. The eyes of the Green Start Academy attendees willingly stared back, especially when they learned the loony holding the recorder held a similar title, albeit in a different field.

They didn't need to say much to get their point across.

They are assistants. They are proud of it.

It doesn't hurt to show them they are a source of industry pride. **GCI**

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North Jersey Country Club superintendent Tyler Otero, left in both pictures, and Oakmont Country Club director of U.S. Open operations and projects David Delsandro returned to Green Start Academy as alums.



Then and now

Two members of the Green Start Academy rookie class describe their first decade in the golf industry.

By Guy Cipriano

The list of presenters resembled an agronomic all-star team a pair of recent Penn State graduates had only experienced through seeing the names in trade publications.

Ken Mangum. Bruce Williams. Bob Farren. Cal Roth. Dean Graves.

"To sit in the room with Bob Farren and Bruce Williams and those guys you see in the magazines and see on TV ... That's who you aspire to be," Tyler Otero says. "It just kind of gave you that little bit of extra drive."

Otero occupied a different place in the room when he returned to North Carolina last month for the 10th anniversary of Green Start Academy. The former Trump National Bedminster assistant superintendent is the superinten-

dent at North Jersey Country Club, a position he has held since December 2013. Otero, a participant in the inaugural Green Start Academy, spent six years as a superintendent in the Trump organization before landing at North Jersey.

One of Otero's college classmates, David Delsandro, is another fast riser from the first Green Start Academy class who returned to North Carolina last month. Storied Oakmont Country Club hired Delsandro in 2013 as its director of U.S. Open operations and projects. He received the job after working three years as the grounds superintendents at Nassau (N.Y.) Country Club. Delsandro was an Oakmont assistant when he participated in the 2006 Green Start Academy.

"You are young, right out of school and Bob Farren is on the panel back then," he says. "It was neat to meet people like him, take their advice and get to hear them speak on different factors."

The event represented a new experience for everybody, including Bayer and John Deere, which saw value in creating a national workshop for motivated assistants. Neither company has relinquished its sponsorship

despite some turbulent times in the industry. Otero and Delsandro managed to advance their careers during the uneasy period, and they reflected on industry changes and the evolving role of assistant superintendents during their time in North Carolina last month.

Today's assistants are navigating a leaner industry, with the number of golf facilities decreasing from more than 16,000 in 2004 to 15,372 in 2014, according to National Golf Foundation data. Fewer facilities mean fewer head superintendent positions. Fewer available jobs means more frustration for emerging turf-grass managers who harbor ambitions similar to what Otero and Delsandro displayed when they left Penn State.

"I think it's more competitive," Otero says. "Golf courses are closing. With the economic climate of golf, there are less jobs and turf schools are struggling to fill rosters. But yet there is still demand for middle management guys on golf courses and those top jobs are getting harder and harder to get because there are a lot of young superintendents out there. It has

created better assistants, but I think some guys get frustrated, too."

Assistants who endure the waiting game are playing more prominent roles at their respective facilities than they did in 2006, according to Delsandro. "As superintendents are taking on greater responsibilities and greater demands are being put on them at their facilities, it's a trickle-down effect," he says. "The assistants are probably, if anything, doing more now."

Observing how his assistants handle their work is a reason Otero remains bullish on the next generation of superintendents. His interactions with the 54 Green Start Academy participants reinforced his optimism.

"The biggest compliment you get is your assistant getting a superintendent job," he says. "That means you have done your job. They're happy and you're happy, and you get the next guy coming through. As you can see, there's a lot of talent behind them waiting to fill those spots. I think the industry is in a good spot right now." Spoken like an industry veteran.

TOUR TURF

Here's something that might have sneaked up on even the most avid professional golf fans working in the industry: a new PGA Tour season started Oct. 15. Crazy, right?

Following the PGA Tour has become a year-round task with few respites. The 2014-15 season, after all, ended Sept. 25. Imagine if the NFL or NBA only had a three-week "offseason."

The official 2015-16 PGA Tour schedule includes 47 events, meaning plenty of opportunities for high definition images of manicured turf. To honor the never-ending season, we offered an agronomic preview of what awaits. It can be viewed by entering bit.ly/1Lcbwzz into your web browser.



From THE FEED

Keith Happ, a longtime USGA Green Section agronomist, died Oct. 27, 2015. Happ was serving as the Green Section's Central Region director before suffering an illness. He was 58.

The USGA hired Happ as an agronomist for the Mid-Atlantic Region in 1993. He opened a sub-regional office of the USGA Green Section Turf Advisory service in Pittsburgh in 2000 and provided on-site consultation, education and outreach to superintendents and greens committees. He was appointed director of the North Central Region in 2013 and continued his leadership in the restructured Central Region through 2015. Happ worked eight years as the superintendent at Legend Lake Golf Club in Chardon, Ohio, and attained Certified Golf Course Superintendent status before enrolling at The Ohio State University.

Memories of Happ filled Twitter feeds shortly after the turf community learned of the agronomist's death.



Peter Wendt

@WoodmontGCG

Keith was an extremely humble gentleman, a great agronomist, and a true friend. RIP Keith Happ.



Scott Furlong

@SfurlongScott

So sad..what a great man. Between Keith and Stanley the grass will be firm, fast and green in heaven. Thank you Keith



Chad Mark

@KirtlandTurf

Thoughts and prayers go out to the Happ family. Keith was a tremendous person and will be missed.



Bill Keene

@BillKeene5

Another huge loss for the turf industry in the Mid Atlantic. Great agronomist but an even better person. #vaturf



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on Twitter
@GCIMagazine!

IN THE BHAG



Henry DeLozier is a principal in the Global Golf Advisors consultancy. DeLozier joined Global Golf Advisors in 2008 after nine years as the vice president of golf for Pulte Homes. He is a past president of the National Golf Course Owners Association's board of directors and serves on the PGA of America's Employers Advisory Council.

Do you have a BHAG? If you don't, maybe you should. "BHAG" stands for Big Hairy Audacious Goal; it's an idea popularized in the business bestseller *Built to Last* by James Collins and Jerry Porras. According to the authors, a BHAG (the acronym is pronounced Bee Hag) is a long-term goal that changes the very nature of a business' existence. Mowing all greens before 8 a.m. does not qualify as a BHAG; achieving the club's first top 100 course ranking most certainly does.

Here's the story of a small club with a mighty BHAG. Over the last half century, Westward Ho Country Club in Sioux Falls, S.D., earned a reputation for family fun and friendship. But not long ago, the club found itself struggling as it tried to retain members and service \$2.4 million of debt. Westward Ho was in trouble. Its BHAG? Staying in business. The decisions board members at "The Ho" and their manager made are a case study for an inspiring turnaround. They made five very smart decisions.

HIRE RIGHT, DREAM BIG

First, they recruited and hired an exceptional manager in Tim Walton. A PGA member and trusted deputy at Bonita Bay Group, Walton saw opportunity where others saw only problems. A "go bold or go home" kind of guy, Walton is not afraid of BHAG's – in fact, he relished the challenge he was presented.

In his first year at the club, Walton improved EBITDA to \$750,000 by changing the scope of operations, which resulted in reduced labor costs, improved costs of sales and enhanced productivity by the management staff.

"We changed the overall way we conducted business," he says. That included an attitude change: no more devaluing the product. "No more deals," he announced as he eliminated the club's \$199 membership. He then went to work improving quality and service, which allowed the club to reduce the part of its budget normally set aside for giveaways to appease disgruntled members.

ELIMINATING DEBT OPENS NEW OPTIONS

Second, the club improved its operational performance, which allowed it to reduce debt. This paved the way to planning a sorely needed clubhouse. Then, the club introduced a \$1,000 increase in joining fees with every eight memberships sold. In a rapidly expanding local economy, which was driven by banking services and health-care companies, CCSF kept building momentum. Soon, the club was able to secure new debt at a lower repayment rate. Plans for the new clubhouse call for a 24-hour fitness center, comfortable lounge, new swimming pool with a children's splash-park and stylish banquet facilities.

BRANDING DECISION PROVES DIVISIVE

Next, "The Ho" needed a new identity. But the idea of a new name and visual identity was met with resistance. But Walton felt it was the right move and persisted. After a "no" vote in June 2014, Walton and club leaders (based on a branding study) were successful in introducing a new name (the Country Club of Sioux Falls), along with a new logo, which was later credited with a 60 percent increase in merchandise sales.

SIMPLIFYING MEMBERSHIP

A fourth key decision involved membership categories, which were reduced from 15 to four. With such positive momentum, CCSF produced a net growth of 90 full memberships over the past 18 months. Executive and social memberships are sold out and on a wait-list, which requires members-in-waiting to join with restricted access rights. Obviously, improved service quality and new facilities make a difference to existing and prospective members.

INCREASE NON-MEMBER REVENUE

Incremental, non-member revenue was the fifth element of the comeback plan. CCSF now averages 13 to 15 wedding receptions annually. The new facilities have generated 28 new bookings for the coming 12 months. The new and attractive clubhouse amenities continue to extend the growing reputation of the club.

LOOKING AHEAD TO A BRIGHT FUTURE

Today the club enjoys EBITDA in excess of \$1 million annually, which is projected to increase to \$1.25 million by the end of fiscal year 2017. Maybe the best part of the story: no assessment to the membership.

The Country Club of Sioux Falls is an example of what can happen when strong leadership commits to a vision for excellence and has the courage to turn a big, hairy, audacious goal into reality. **GCI**

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SELFISH INEXPER

Unprofessional

Plain **SHALLOW** MATE

DEHUSIONAL



By **Guy Cipriano**

The largest potential labor source for golf courses might also be the most maligned

If you believe the cynics during the labor discussions at turf shows and conferences, millennials don't work enough and text and tweet too much. They would rather play videogames than work outdoors. They arrive late and leave early. They work 15 hours but want to get paid for working 40.

Superintendents relying on millennials are ignoring the noise. Their eyes are telling them something entirely different.

With the proper managerial approach and handling, millennials, and in particular those ages 18-23, can provide the industry with a valuable labor source. Statistically, millennials represent a huge part of the labor pool. The generation, which consists of adults ages 18-34, surpassed Baby Boomers earlier this year as the largest group in the American workforce, according to a Pew Research Center analysis of U.S. Census Bureau data. There are 53.5 million millennials in the workforce.

The National Golf Foundation released a 76-page report earlier this year to help industry stakeholders attract more millennials to the sport. A similar study designed to help industry stakeholders recruit and retain millennial workers has yet to be conducted.

As the economy improves, superintendents, especially in economically prosperous regions, are going to experience greater labor pinches than the ones they already face. And, remember, the pinches are always a political decision from becoming full-blown industry crises. Imagine maintaining your course without assistance from workers holding H-2B visas. Or what happens to your staff if the Department of Labor passes a proposal that would require employers to pay overtime to workers making up to \$50,000 annually, including managers?

Still ready to give up on tapping into the millennial workforce?

Millennials are different than other generations, but they aren't unreachable or lazy, according to superintendents who work closely with the generation.

"This is the next group of employees in the workforce," says Dan Mausolf, the superintendent at Radrick Farms Golf Club in

Ann Arbor, Mich. “They bring a new view on the operation and the industry. They are so connected with what’s going on in the world today and always look for new ways to do things. They are constantly learning and have no qualms about passing along their opinions. The feedback they give is a tremendous asset to improving golf course management, quality of workplace morale and the way to get things done”

HOLISTIC AND FLEXIBLE

Patrick Reinhardt, the superintendent at the Georgia Southern University Golf Course in Statesboro, Ga., has little choice but to connect with millennial workers. Statesboro, population 28,422, is a college town in rural Georgia. The course is competing with other golf facilities in the area and landscape companies for student workers. The maintenance crew consists of 25 workers, including 21 students who are full-time students and part-time golf course maintenance



Superintendent Matthew Gourlay incorporates student labor into all aspects of the maintenance operation at Colbert Hills Golf Course, a 27-hole facility two miles from the Kansas State University campus in Manhattan, Kan. Every worker on Gourlay’s staff is part of the millennial generation, which consists of 18 to 34 year olds. The fall crew includes 24 part-time student workers, the equivalent of nine full-time employees. “A lot of these kids have great attitudes,” Gourlay says. “And we try to work around their schedules as much as possible.”

and initial plans involved using students as complementary pieces to a larger full-time crew. Early returns on student workers convinced Reinhardt and other university officials

work, they are hard workers and they are really, really smart kids,” Reinhardt says. “These are all kids that have gotten into a college that has high standards, so you know they

learn by some other way? I really enjoy it. I try to take every person as their own. The guys I have right now, I wouldn’t trade them for anything.”

A holistic approach is also helping superintendent Matthew Gourlay fill positions at Colbert Hills Golf Course, a 27-hole facility in the college town of Manhattan, Kan., population 52,281. The course is two miles from the Kansas State University campus, and Gourlay’s fall crew consists of 24 part-time student workers, the equivalent of nine full-time employees. Kansas State has a turfgrass program, but the majority of Gourlay’s workers are involved in other academic pursuits.

Flexibility helps Colbert Hills attract a slew of millennial workers. Instead of the

“It’s a matter of management style and finding each person’s strength and weakness. If I have a student in here and just put him on bunkers or give him a Weed Eater, they are kind of the low man on the totem pole. If I’m spending all day on the Weed Eater or raking bunkers by hand, I’m not going to have any fun. I’m going to be bored, and that’s when I’m going to turn to other things.”

—Patrick Reinhardt, Georgia Southern University Golf Course

nance employees. They work less than 25 hours per week on the course.

The facility opened in 2013,

the course could flourish with a millennial-heavy maintenance crew.

“They take pride in their

are smart. It’s just figuring out how each one of them learns. Do they learn by showing? Do they learn by doing? Do they

13

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entire crew arriving and leaving around the same time, Gourlay works with students to craft schedules that satisfy both parties. He also creates distinct schedules for the spring, summer and fall seasons based on employee availability. Reinhardt and Gourlay use digital job boards to simplify what could be a daunting scheduling process.

"A lot of these kids have great attitudes," Gourlay says. "And we try to work around their schedule as much as possible. Obviously, we need to get the golf course ready first thing in the morning, but after that our schedule is very flexible. It has to be to work with their school schedule. We have guys that come in during the afternoons and do mowing and watering and irrigation work or anything like that. We are really flexible, and I think that really resonates with the staff."

Understanding the personal needs of students helps Mauslof's course attract and retain workers. In the peak season, Radrick Farms, which is operated by the University of Michigan, employs 24 to 28 maintenance employees, with 80 percent of the crew ranging from 19 to 24 years old. If the course schedule doesn't include any events, Mauslof tries to give workers a half-day shift on Fridays and one weekend off day. "I have to keep in mind that it is their summer and they have vacations and other downtime things they want to do," he says. Mauslof also lauds his assistant superintendents for spreading jobs around among crew members, which prevents employees from getting burned out by one particular task.



Georgia Southern University Golf Course superintendent Patrick Reinhardt made millennials an integral part of his crew even before the 18-hole facility opened in 2013.

CUSTOMIZE, COLLABORATE AND COMMUNICATE

Collaboration and customization are concepts helping managers reach millennials, according to Scott Zimmer, a generational expert and speaker for BridgeWorks, which describes its employees as "generational junkies." Zimmer says millennials relish being part of a decision-making process. Managers, for example, are more apt to receive questions about a work process from a millennial than a Baby Boomer, a group comprised of 50 to 69 year olds.

"When Baby Boomers look back at their formative years, it was more of a dictatorship. There was no family vote. Someone was always in charge," Zimmer says. "But a lot of Baby Boomers didn't raise their kids that way. Millennials have been given a voice in decisions since they were young."

A failure to understand those generational differences are often the root of the stereotypes millennials hear about their work ethic. And, yes, millennials are aware of how they are often viewed by older generations. "It's not very motivating to millennials when others think they are just dumb, entitled, lazy or tech dependent," says Zimmer, a member of Generation X, a group consisting of 35 to 49 year olds. "Let's look past these stereotypes and find out who this generation is. That's when you will have the most success finding and retaining those workers."

Zimmer hasn't worked directly with the golf industry, but he says businesses are experiencing success with millennial workers by providing opportunities to create a customized work experience (unique opportunities that are easily share-

SPEAK THEIR LANGUAGE

Part of the generational divide in the workplace stems from communication gaffes. The following are ways superintendents who are experiencing success with millennial labor effectively reach and engage members of their crews.

TEXT IT

"To connect with this group, be open minded to which form of communication they are using," says Dan Mauslof, superintendent at Radrick Farms Golf Club, in Ann Arbor, Mich. "I've found in the last couple seasons that email doesn't always get a very quick response but text is the preferred form of communication for my team. As far as finding workers in this age bracket goes, be creative."

BE THERE FOR THEM

"I tell all my guys, 'I'm more than happy to help them out with their resumes,'" says Patrick Reinhardt, superintendent at Georgia Southern University Golf Course in Statesboro, Ga. "If they succeed going out to their next job, then I feel like they have learned something here. They have learned work ethic here, they have learned the value of putting in a solid day. I feel if they are really starting to push themselves and are coming to me and say I need help with my resume, then I will help with that. I love helping them out because I love seeing them succeed. There's nothing better than seeing somebody better themselves."

BRING THEM TOGETHER

"Fantasy football in the fall is big with the guys," says Matthew Gourlay, the superintendent at Colbert Hills Golf Course in Manhattan, Kan. "We have two separate leagues for the guys, and they are all into it."

able with others). This could mean something as simple as allowing a golf course maintenance employee to post a picture on a social media account of a sunrise during an early morning shift. Zimmer, who grew up working on a dairy farm in Minnesota, adds that money isn't the sole motivating factor for younger generations. "Millennials want to know that this is the job for me," he says. "They want to do something that resonates and has meaning."

Baltusrol Golf Club director of grounds Mark Kuhns isn't as reliant on millennial labor as Reinhardt, Gourlay

its program to meet the desires of students helps Baltusrol find talented interns, many of whom are apt to join the full-time staff if a position becomes available when they graduate.

"One of the things we do different here is that we give them an opportunity to get involved in all aspects of our operation," Kuhns says. "From our budgeting, forecasting, to our spraying, fertilizer applications, calibration of equipment... We even allow them, if they want to, to work on small engines or grind reels to get their hands dirty and to learn what is involved

“It's not very motivating to millennials when others think they are just dumb, entitled, lazy or tech dependent. Let's look past these stereotypes and find out who this generation is. That's when you will have the most success finding and retaining those workers.”

—Scott Zimmer, BridgeWorks LLC

or Mauslof. The 36-hole New Jersey club's national reputation and competitive compensation packages yield low turnover rates. But Kuhns places major emphasis on an internship program that annually contributes 12 workers to a peak season crew of 75.

Finding qualified interns, even for a club of Baltusrol's stature, can be tricky because of declining enrollments among major turf schools. Tweaking and customizing

in those processes.”

Kuhns, in his 39th year as a superintendent, says today's students “definitely have a different outlook on life” and “are very focused on the learning process.” In addition to exposing students to a variety of tasks, he pairs each student with an assistant superintendent to monitor progress and takes the group on industry field trips to places such as supplier facilities or the nearby



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USGA museum. He says the program receives numerous word-of-mouth referrals, a strong sign it resonates with students. "You need to keep them involved and keep them interested in it and just don't say, 'Hey, go dig that ditch all day long or go rake bunkers all summer,'" Kuhns adds. "That's going to turn them off. We want to make sure when they leave here they are inspired to go on and do better things."

Reinhardt, 33 and in his first head superintendent position, sees similar value in creating a work environment where jobs have deeper meanings. He struggles thinking where the Georgia Southern course



Providing opportunities for workers to perform a variety of distinct tasks in a team environment can help superintendents recruit and retain millennial employees.

would be had he not cultivated a strong millennial workforce.

"It's a matter of management style and finding each person's strength and weakness," he says. "If I have a student in here and just put him on bunkers or give him a Weed Eater, they are kind

of the low man on the totem pole. If I'm spending all day on the Weed Eater or raking bunkers by hand, I'm not going to have any fun. I'm going to be bored, and that's when I'm going to turn to other things. I'm going to have that lazy attitude, that play-around-

on-my-phone mentality. If you can get them engaged in their job, so they have a sense of purpose in their job, that's when you really start to see that turnaround." **GCI**

Guy Cipriano is GCI's assistant editor.

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CONSTRUCTION: A REAL-WORLD EXAMPLE



Tim Moraghan, principal, ASPIRE Golf (tmoraghan@aspire-golf.com). Follow Tim's blog, Golf Course Confidential at www.aspire-golf.com/buzz.html or on Twitter @TimMoraghan

If you've been involved in a construction project, you know everyone on staff is affected and the work starts long before the first shovel goes into the ground. Fiddler's Elbow Country Club in Bedminster, N.J., is in the midst of a long-term project. I spoke with some of the team's key members about their roles and what they've learned so far. No matter where you are on your club's management ladder, their insights and experience should prove enlightening.

In 2013, full ownership of the club was assumed by the Donovan family – father Ray, sons Ken and Keith, and daughter Mary Ellen. They created a multi-phase master for the 54-hole “for profit” (as opposed to member equity) private facility: Included in the plan is a new practice facility; a redesign of several holes on one of the courses by architect Stephen Kay; renovations to the cart paths, driveway, and parking lot; and building a new cart-storage facility. Not enough? The clubhouse and kitchen are to be renovated and expanded, a new golf shop built, and the locker rooms enlarged. Plus, the club will add a state-of-the-art aquatic and fitness center and tennis complex.

Ken, who served as the projects' point person, compared his role to that of a city planner. The key to the plan's success has been communication. “We recognize that our master plan is extremely disruptive to members and, more specifically, to their enjoyment of the club,” he says. “We had to explain there would be pain before there was pleasure.”

Members were involved from the start. In fact, elements were based on one-on-one conversations and surveys. As a family-owned club, Fiddler's doesn't have committees, but the Donovans keep their fingers on the club's pulse.

Superintendent Matt Willigan is a lead member of the management team who oversees the three courses, as well as outdoor construction and infrastructure. He works on things people don't see – irrigation, infrastructure, and drainage – so most don't know what the projects entail. What members do know is they're going to be inconvenienced. So it's vital to tell them how and for how long.

The membership has been kept in the loop from the beginning. They were given plan details and progress updates. Fiddler's Elbow is lucky there are three courses on property, so two others are open when one is under construction.

But people like routine, not change. That's human nature. Take the 13th hole, a par five, on the River Course. At the lowest point on the property, it's where water collects. Members have complained about the hole for years, about how saturated it gets, how it messes up their shoes and clothes, and how they always lose balls there. And yet, when the work began to improve drainage, the members howled: All they wanted to know was when they'd be getting the hole back.

As Ken pointed out, they understood losing a \$5 ball; they didn't understand a

\$150,000 drainage upgrade. No matter how much education, the members couldn't grasp the importance of the bigger investment as it pertained to the game and their enjoyment. So while keeping members informed is important, often human nature trumps all.

The Donovans keep to a simple philosophy: “Do what is best, when it is best... to benefit the club and to impact the least amount of people.” When I asked Willigan what he'd learned, he offered suggestions applicable to a big or small project:

- Plan well in advance so you know how much time the project should take. Then build in a buffer, considering all the outside factors that could throw off even the best plan.

- Be realistic about how much time is necessary. Don't let others tell you how long a project should take. If it gets done early, great; you'll be a hero. If it takes longer, you'll suffer the consequences.

- Grow a thick skin. Everyone is an expert, everyone has a better idea. .

- Don't get wrapped up in comparisons with other clubs, the work they did, how long it took.

- Be honest with members about costs and time. Stay truthful and you'll keep their trust.

- A good relationship with contractors will make the job run smoothly.

- When projects overlap, make sure contractors meet and talk. They must understand what the other is doing so they don't get in each other's way.

- Have permits in hand before starting a project. Or be prepared for trouble, even being shut down.

- There is no magic wand. Everything takes time.

- Speaking of time, it takes time to do it right – and more time to do it over.

- Finally, no matter how much you try to educate the membership, expect some really dumb questions. The best one Matt was asked? “Why can't you do this work at night?” **GCI**

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By **Guy Cipriano**

A Metrics Marvel

If there's a way to do it better, then Desert Mountain's Shawn Emerson wants to measure it and the data crunched. This approach, combined with key researcher and supplier input, allows Emerson to calculate what's needed to maintain a six-course oasis.



The peak Arizona golf season begins in nine days and Desert Mountain will host the Champions Tour season finale five days later.

Director of agronomy Shawn Emerson prepares for the blitz by studying metrics. There's more data to analyze than when he became the massive club's director of agronomy in 1997 – and there's as much or more evidence his department is doing the right things.

On this late October day, Desert Mountain's greens are running within two inches of each other on the stimpmeter. The accomplishment is no small feat. Desert Mountain features six courses with 108 bentgrass greens, and although the courses were designed by the same firm, Nicklaus Design, numerous microclimates exist within the 8,000-acre community nestled high in the Sonoran Desert.

The repeatable readings are neither by accident nor fluke. Getting six golf courses to play as one represents a daily agronomic mission.

"All of the designs are unique, but turf-wise I have always said we want you to putt on one green like you would all 108," Emerson says. "We try to be as consistent as we can be. I tell people I don't manage six golf courses, I try to repeat myself six times."

Emerson has plenty of help. He oversees 190 employees and manages a \$15 million budget. Each course has its own superintendent.

Help in making Desert Mountain a metrics marvel is needed because managing upscale private golf courses in Scottsdale isn't for the meek.

Emerson considers Scottsdale the “SEC” of golf markets, a reference to the popular college football conference, where neighboring schools make significant investments to plow ahead of competitors. “I have the best around me,” he says.

Emerson adds the competition, at least among turfgrass managers, is congenial and superintendents understand they all benefit by raising Scottsdale’s profile as a residential and tourist golf spot. A formal study on the relationship between golf and Arizona’s economy hasn’t been conducted since a 2004 report released by Arizona State University professor Dr. Troy G. Schmitz. The report estimated the overall economic impact of the industry in the state at \$3.4 billion. Desert Mountain has made major contributions to the total, and Emerson was involved in a major transaction that closed on Dec. 30, 2010. The deal resulted in Desert Mountain members purchasing the club’s six courses, related facilities and 500 acres of developable land for \$73.5 million.

The turf-centric side of Emerson will always exist, especially considering his father, Bill, worked as a superintendent. But CEO-like qualities help produce consistent playing conditions as efficiently as possible. Successful CEOs seek help outside their own operations to achieve goals, and Emerson is no different.

The list of outsiders assisting Emerson is extensive. Experience, spreadsheets and member reactions have taught him suppliers are a key part of this

group. Industry partners have saved Desert Mountain “hundreds of thousands, maybe millions” of dollars. He bemoans the fact more superintendents aren’t actively engaged with suppliers.

“I think it’s vital and I think superintendents need to do more,” Emerson says. “Sometimes we are just preaching to our own choir, and we need to get to know our industry partners better. We have to be more open with them about our issues and challenges because they have programs that can help us. Sometimes as superintendents we are only leaning on each other, and we should actually be leaning on vendors more.”

Suppliers are encouraged to conduct trials and demonstrations on Desert Mountain’s turf, and it’s not uncommon to invite neighboring superintendents to view the results of a product or trial. Daconil Action and Heritage Action, a pair of Syngenta fungicides with acibenzolar-S-methyl as an active ingredient, are among the products tested at Desert Mountain. Emerson says it’s important for Desert Mountain’s agronomists and superintendents, along with everybody else in the industry, to see how products react on golf courses before they are released. His partnership with Syngenta involves multiple layers, and he’s established relationships with territory manager Kimberly Gard, western technical manager Dr. Dean Mosdell and senior technical manager Dr. Lane Tredway.

Emerson has been an “immense” help not only to Syn-

genta, but to superintendents throughout Arizona, Mosdell says. The company leans on Emerson’s feedback and results of trials at Desert Mountain are carefully noted. “Shawn is extremely innovative and one of the best at growing grass in the Arizona climate,” Mosdell says. “My role is to feed him the latest technology that we have coming along and we collaborate on how to use it if it fits into his agronomic program.”

The ability to make time for others despite leading arguably the nation’s largest single-site agronomic operation is one of Emerson’s many endearing qualities. He views the opportunity to test new technologies with potential to help superintendents as a privilege rather than a time-consuming burden.

“We get to see products on our nurseries and practice greens before they even have names,” he says. “Companies are asking us what our opinions are, and Syngenta is one of the companies that really cooperates with us. It used to be that companies would take agriculture products and try to fit them to the golf market. Now companies are making and developing products for golf.”

A long tenure at Desert Mountain – he was hired as the Renegade Course superintendent in 1992 – means Emerson has seen products go from nameless curiosities to proven solutions. One of those products, Trimmit, a Class B plant growth regulator (PGR), is among the reasons Desert Mountain members are putting on greens that “don’t have a drop of Poa on them,” according to Emerson. Primo is also



part of Desert Mountain’s PGR rotation.

PGRs, which were once used on what Emerson calls a “whim,” are a staple of Desert Mountain’s agronomic program and their benefits extend beyond creating Poa-free surfaces. The increased usage stemmed from a realization in the early 2000s that PGRs could increase the consistency of two important aspects of Desert Mountain: the greens and maintenance budget. Tru-Firm and moisture meter readings and clipping yields are examined to determine how each green should be treated.

The chemistries available in today’s market make it financially beneficial to emphasize preventative approaches vs. curative methods, Emerson says. Disease pressure is lower in the Southwest than other regions, but Daconil Action and Heritage Action are part of the spray program. Conversations with North Carolina State entomologist Dr. Rick Brandenburg and properly using Acelepryn helped decrease the number



Shawn Emerson, left, has been the director of agronomy at Desert Mountain, a six-course private club in Scottsdale, Ariz., since 1997. Emerson oversees 190 employees and manages a \$15 million budget. He relies on the help of many industry sources, including suppliers to ensure consistent, high-quality playing conditions. "Sometimes as superintendents we are only leaning on each other, and we should actually be leaning on vendors more," Emerson says.

of insecticide applications over the six courses in half, according to Emerson.

"We were trying to find ways to lower costs 10 to 15 years ago and we found out it would help us to take a holistic approach rather than attacking something from one side," Emerson says. "The healthier the plant was, the less money we would have to spend. That helps me with the accounting department. Budgeting became a process of consistency and we stopped having large variances from year to year. I would tell my superintendents, 'We can manage the process.'"

Managing, tweaking and cultivating relationships are

helping Emerson avoid complacency, a concept capable of producing variances in green speeds or in the conditioning levels among the six courses. The Cochise course hosts the Charles Schwab Cup Championship, the final event on the Champions Tour schedule. But Emerson is steadfast when explaining how the courses are treated. All six were designed to be memorable and they must be maintained accordingly. That's why consistent green readings still excite an agronomic veteran such as Emerson.

"Everybody talks about course rankings and things like that," he says. "The differential for us – and we are different because of our size – is that we have six quality courses that are all at a very high level. They were all designed by Jack Nicklaus and they are all Nicklaus Signature courses. If they

were on their own, they would be six quality clubs."

Establishing consistent conditions in a desert environment isn't easy, says Mosdell, who has spent 17 years working with West Coast superintendents for Syngenta. Water is scarce, expectations are high and maintaining a course is a 365-day endeavor. Desert Mountain and other Scottsdale-area clubs receive heavy play from golfers from northern climates accustomed to seeing green courses void of diseases and weeds. "The demands on golf courses have increased so much," Mosdell says. "Our technology has to keep pace."

Emerson doesn't envision demands decreasing. He remains a proponent of finding innovative ways to provide the healthy, verdant turf members want. The philosophy meshes with how Desert Mountain

wants its employees to approach their jobs. If there's a way to do something better, it must be examined.

"We want to be known as one of the finest facilities and a difference-maker that's leading the industry in all aspects," Emerson says. "We don't want to be standing put. We want to be evolving by using better products and better strategies and listening to others instead of just sitting back and watching. It's easier for me to change than it is for our membership to change." **GCI**

Guy Cipriano is GCI's assistant editor.

LOOKING AT WATER DIFFERENTLY



Brian Vinchesi, the 2009 EPA WaterSense Irrigation Partner of the Year, is president of Irrigation Consulting Inc., a golf course irrigation design and consulting firm headquartered in Pepperell, Mass., that designs irrigation systems throughout the world. He can be reached at bvinchesi@irrigationconsulting.com or 978/433-8972.

Since the early 1990's lower quarter distribution uniformity (DULQ) has been used to evaluate the performance of sprinklers. Data obtained from irrigation audit cup tests is used to calculate DULQ. Although it has been used for improving irrigation scheduling since the mid 1980's, DULQ is not without its detractors. Problems include not being consistent with operational conditions, only testing single sprinklers, using computer simulation to group sprinklers and having no allowance for sprinkler interference. DULQ focuses toward the "dry" and, as a result, when used as a basis for scheduling – such as in the IA/GCSAA golf auditor program – has a tendency to over water. It also does not measure whether the water is on target.

Today, every drop of water is important and how to measure whether the water is on target has become the new challenge. With new sprinkler technologies, there is the ability to be very precise with sprinkler spacing's and grades. As a result, stream interference is also becoming a big issue. Technically called "jet interference", measuring jet interference occurrence has become of interest to some researchers and water regulators. Throw in the normal losses due to deep percolation (seepage), atmospheric evaporation and overspray to the calculation and there is a new way to characterize sprinkler performance that is more accurate and hopefully useful than DULQ, called "sprinkler operational efficiency".

Measuring and calculating sprinkler operational efficiency requires sprinklers operate simultaneously and cup tests be performed. So what is a good measurement of sprinkler operational efficiency? For starters, 75 percent of the targeted area receives the scheduled amount of irrigation. The percolation loss and overspray losses are also calculated. Jet interference is shown graphically much like the densogram you might be familiar with that was used with DULQ.

You probably have never looked at the sprinklers on your golf course from the standpoint of jet interference. You may want to take a look. The newer your system, probably the more noticeable it is as the sprinklers apply water more uniformly and they are most likely installed closer to grade and level. Operate your sprinklers in groups, beside and across from

each other. See how often the streams interfere with each other. You might be surprised. Data shows eliminating jet interference improves sprinkler operational efficiency. What we have learned is you need to be more careful about operating sprinklers in close proximity to each other. Eliminate this by scheduling your sprinklers differently so sprinklers beside and across from each other do not operate at the same time.

Why is sprinkler systems efficiency a concern to water purveyors and regulators. To start, if you are on a potable water supply it may impact how much water you can use in the future. It may also end up in a standard dictating various irrigation techniques and allowable water use for golf courses or as part of a state's water withdrawal permitting process and approval.

Measuring and quantifying how sprinklers more precisely apply water has been a result. Expect this trend to continue and for your irrigation practices to be impacted long term. **GCI**



Today, every drop of water is important and how to measure whether the water is on target has become the new challenge.

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Ready for the TURF'S reaction

Converting to paspalum will help The Resort at Longboat Key Club solve its salinity issues. Relying on a critical relationship will help director of agronomy John Reilly handle any disease issues the change produces.

By **Rick Woelfel**



John Reilly's official title at The Resort at Longboat Key Club in Sarasota, Fla., is director of agronomy. He might prefer something along the lines of partner with the environment. As much as he is committed to providing quality playing conditions for members and guests, he's also dedicated to environmental stewardship.

Reilly is a minimalist when it comes to applying products to his golf course. Like the physician who believes in prescribing the lowest effective dosage of a pharmaceutical to deal with a patient's illness, he takes the less-is-more approach to applying chemicals to his turf.

"We just try to create balance," he says, "and look at it from the aspect of air, water and then the inputs that we use, i.e. nutrients, fungicides or whatever the case may be."

Reilly notes the order in which those elements are listed is significant. "Are we giving the plants the right amount of sunshine and air?" he says. "Are we giving the plants the correct amount of water? And then, if we can't change those things in our favor, then we obviously use the inputs necessary to grow, or to get rid of the disease, the pest or whatever the case may be."

Reilly developed this philosophy at Rutgers University where he became enamored with the philosophies of Dr. William Albrecht, a renowned agronomist who had a long and distinguished career as a University of Missouri professor. Albrecht had an agricultural background but Reilly says the concepts he espoused are effective in the golf industry as well.

"I really became a believer in the approach to soil developed by William Albrecht," he says.

"If you work to create a certain balance in your soil and manage your air and water you can, in agriculture, increase yield. I know the way we manage turf on golf courses is a contrived, manipulated environment. I just try to maximize the natural checks and balances of Mother Nature before turning to manufactured inputs."

At 15, Reilly took his first job at a golf course at historic Rolling Green Golf Club outside Philadelphia and worked there through college. He embarked on a career in social work, but his decision to enroll at Rutgers signaled a career change. He left Rutgers in 1999 with a soil science degree.

Before arriving at Long Boat Key in 2009, he worked at a number of clubs in Florida, most notably the Innisbrook Resort, where he served as superintendent of the renowned Copperhead Course and oversaw a renovation. Over the course of his career, he has been responsible for four grow-ins and two renovations.

At Long Boat Key, Reilly is responsible for 45 holes spanning 205 acres along the beach adjacent to the Gulf of Mexico just west of downtown Sarasota. Construction on the original 18, christened the Islandside Course, began in the late 1950s; it opened for play in 1962. Today, the original course is known as Links on Longboat. The Harbourside Course, consisting of three nines, was completed in 1984. Both courses were originally designed by William Byrd, but Ron Garl was commissioned to do a redesign of all 45 holes. The renovation is scheduled to be completed in 2016. Both courses feature a soil composition that is a blend of calcareous sand and shell.

The property is situated on a barrier island that, before the resort was built, served as a dump for the city of Sarasota. Unfortunately for Reilly, the area around the resort averages only about 24 inches of rainfall per year. He notes there has been more rain this year. He had recorded 33.5 inches of rain for the year through October, but the mainland had received double that amount.

The salinity issue led Reilly to make the decision four years ago to regrass both golf courses and replace his Bermudagrass (primarily 419 and Ormond with Tifdwarf greens) with Platinum Paspalum, a strain of grass developed for golf courses and sports facilities in warm climates. Platinum Paspalum was introduced to the market in 2007 and is used on golf courses in such diverse locales as Florida, Mexico, the Bahamas, Spain, China, Vietnam, Singapore and the United Arab Emirates. It is also in use at Minute Maid Park, the home of baseball's Houston Astros.

Most importantly, from Reilly's point of view, Platinum Paspalum is renowned for its extremely high salt tolerance. It will thrive in soil irrigated with water containing more than 5,500 ppm of salt, making it ideal for a golf facility situated near the Gulf of Mexico. In addition, it can be used "wall-to-wall" on greens, tees, fairways and in rough areas.

As of this writing, the transition wasn't quite complete. A total of 55 acres, encompassing the White Nine of the Harbourside Course, plus two ranges are still to be converted. All the greens have been completed, however.

Reilly notes utilizing a single variety of turfgrass through-

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John says. Read the complete Pinehurst story online at:

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SPONSORED CASE STUDY

Preventative and curative fungicide use is a necessity with paspalum grass. While it handles salt stress well, it has a higher propensity for disease.

out the entire playing area of the golf course offers some distinct advantages. "It's a good thing, especially around the greens," he says. "You don't fight contamination. If you have a stressed area or an area that's getting traffic, you can change the mowing height. A lot of times that's all you need to do and you don't need to change anything else.

"If there's a back of a green where people come on and off, we can kind of move it in as a collar or the other way around. Or if there's an area that would make the game more fun, we can mow it out as green and have a false front that we didn't have before because we don't have to change grass types."

Once he made the decision to convert to Platinum Paspalum, he needed an effective fungicide.

"Preventative and curative fungicide use is a necessity with paspalum grass," he says. "Our real disease pressure started when we planted paspalum grass on the courses. Paspalum certainly handles the salt stress better (than Bermudagrasses), but has a higher propensity for disease."

When he arrived at Long Boat Key, Reilly found himself dealing with a fairy-ring issue due to the age and composition of Byrd's original greens. But with the installation of paspalum, he had to contend with leaf spot, patch diseases and dollar spot, and needed a solution.

Enter Chris Key, the senior sales specialist for BASF. Key and Reilly connected at a company seminar hosted by agronomist Fred Hemming, a territory sales manager for Residex. Key introduced Reilly to BASF's array of fungicides, including Honor Intrinsic, Lexicon Intrinsic and Xzemplar. Honor Intrinsic and Lexicon Intrinsic both contain Insignia (active ingredient: pyraclostrobin), which, data suggests, contributes to plant health.

"John became very familiar with BASF's plant-health story," Key says. "It kind of opened John's eyes to the idea that there really is something to the plant-health claims that BASF is making."

Reilly was drawn to the BASF product line because of the company's passion for protecting the environment matches his



own. "They label plant health as part of the design of their products," he says. "So, if we're looking at it from a health standpoint as opposed to a disease model, that made me lean toward BASF."

Reilly and Key have worked together for three years now and have built a solid relationship. "I enjoy the accessibility and transparency of working with Chris," Reilly says. "He understands my challenges, is always there to offer the latest research, and is a realist when it comes to the time and place for the BASF products."

Reilly gets solid results from BASF products with relatively minimal input. "We can treat for the myriad of disease pressure and keep our inputs to a minimum, as well as our costs," he adds. "What we all suffer from, I think sometimes, is the idea that 'A little works and more is better.' That's the kind of thinking that can get things out of whack. I got response out of this nitrogen product, so I'm going to put more nitrogen down. I think many, many people have made those kinds of mistakes so we don't have to any more. We all can suffer from being an overwaterer, which also can lead to disease pressure. At other times, we can suffer from our egos and take our greens to the edge by lowering heights of cut and shutting off the water to increase green speed and firmness."

As he heads into the peak of his 2015-16 season, Reilly's turf concerns remain, including fairy ring, which has reappeared. But he's confident that BASF has provided him with the tools to ward off problems.

"If you had talked to me 10 years ago, I'd have tried to tell you, 'I'm an organic farmer that's a golf course superintendent,'" Reilly says. "Now I would say I seek the ideal balance between maximizing playability for our members and guests while sustaining plant health." **GCI**

Rick Woelfel is a Philadelphia-based writer and a frequent GCI contributor.

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WE NEED A GOLF COURSE MUSEUM



Monroe Miller retired after 36 years as superintendent at Blackhawk CC in Madison, Wis. He is a recipient of the 2004 USGA Green Section Award, the 2009 GCSAA Col. John Morley DSA Award, and is the only superintendent in the Wisconsin Golf Hall of Fame. Reach him at groots@charter.net.

I have been under a little heat lately. My successor is anxious for me to find a new home for my “antiques.” I want to comply, but I’m boxed in.

I don’t have a second home or a farmette where I could store things, my garage holds two cars only, and I simply cannot afford renting storage space. Soon my only alternative will be a junk yard.

What a shame. I’d love to donate all of my items and artifacts to a museum, a golf course museum. But, as far as I know, there isn’t such a thing. If there is, it is a well-kept secret. For a business/industry as formidable as golf course management, it doesn’t seem possible to lack a museum devoted to the long and rich history of turf management and machinery.

We are a country almost obsessed with museums. There are thousands and thousands of them, and even my hometown of about 2,000 in Southwest Wisconsin has two museums! When the subject comes up, most people think of the Smithsonian Museums, the Field Museum or the Museum of Science and Industry. But here, close to home, we have a cheese making museum, a National Dairy Shrine Museum and one devoted solely to Harley Davidson motorcycles. We have a beer museum close by and a circus museum even closer. Twice a year I visit the National Farm Toy Museum in Iowa, and even more often than that I visit the Veterans’ Museum across from the state capitol. You can visit museums dedicated to the various branches of the military – the Airborne Museum in North Carolina is my favorite among these – ethnic museums (Norwegian, Cornish and Scottish are my faves), and those dedicated to the arts.

It seems every profession has a museum somewhere in the country dedicated to preserving its heritage, history and artifacts. We also have major sports museums at Cooperstown, Canton, Springfield, Far Hills and Newport.

Golf has a wonderful museum at USGA headquarters, but its displays of golf course equipment have been sparse and infrequent. One time they had an excellent – albeit small – area with golf course maintenance in mind, and most of it belonged to Mel Lucas! I am going to visit again this fall and see if anything has changed.

As Vince Lombardi was given to frequently say, “What the hell is going’ on here?”

Some companies in our business have done an admirable job of collecting objects they designed and built and putting them on display. John Deere is the best example; you can spend the better part of a day in Moline visiting them, before driving east to Grand Detour, Ill., and seeing the original Deere foundry and his home at the time. But most of their wonderful collection revolves around plows, tractors and combines. Turf equipment is scarce.

Toro has done a wonderful job of saving some of its history, which we share in. Last year was the company’s 100th anniversary. Part of that celebration was the printing of a book of their history and the presentation of old machines in the headquarters building in Bloomington, Minn. But their devotion to company history is rare.

During a visit to the Turfgrass Information Center at Michigan State University this past summer, I asked Peter Cookingham about donating small items and printed materials. He was polite but mostly declined. “We have a shortage of space,” he said, “and we are a library, not a museum.”

Collections sit, collectors get old, and heirs have little or no interest in our collections.

What can we do with these artifacts of turf? The answer, of course, is to establish, develop and fund a golf course museum. Most museums start out as private collections, so the time is getting short before too much is lost. Years ago, I edited our chapter publication, *The Grass Roots*, and wrote a fictional piece in each issue under *The Back Nine*. Once I composed a story about a golf course museum in Wisconsin, had an engineer friend of mine develop blueprints for it and designed a floor plan of displays. There was lots of positive feedback, and one GCSAA staff person was in Chicago on business and contacted me for directions to get there.

I think interest is still high, many collectors are still around, and some veteran greenkeepers and superintendents who were active in the past are still alive. But the artifacts slowly disappear. I saw a machine for sale recently that I would have bought had a museum been in place. It was a Jacobsen Leaf Mill, a machine with golf course application. I’d never seen one before and wanted so badly to save it. But I couldn’t. It’s an often-repeated story.

Will we do anything before it is too late? **GCI**

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The **nose** *knows*



By Guy Cipriano

In the war for turf, dogs specially trained to sniff out pests like ABW may lead to more efficient use of inputs and greater pest management success for superintendents.

A dog, golf course and perplexing pest. Everybody in the immediate area went from curious to nervous when the dog, named Carl after a golf-related movie character, sat on turf for the first time in a formal work setting.

In Carl's world, sitting is alerting. Carl is a mixed breed rescued dog trained in controlled Florida settings to find annual bluegrass weevil (ABW) via smell in an expansive places like Nemaconlin Country Club, a 97-year-old Southwestern Pennsylvania course.

On this early August day, scents mattered more to Carl than scenes. And there are plenty of odors on a golf course. Fresh-cut turf, halfway house hot dogs, club grips, diesel fuel, mulch, sewage, animals, chlorine from the pool. Could a dog who endured a dire situation block the others out and identify the odor produced by small sub-turf insects?

Carl performed well enough in Florida to convince Pepe Peruyero, the owner of Scent-

worx, a company that trains dogs to detect various odors, he was ready to head north. But, as any human in this business knows, practice success doesn't always translate to results on the course. "We all held our breaths," says Jason Webeck, one of Carl's handlers. "Everything up until that point had been training scenarios."

On that day, Carl alerted twice and the group observing him lifted a slice of Nemaconlin turf and found ABW.

Carl has returned to Nemaconlin multiple times since early August. His alerts are telling superintendents JD Saunders things he didn't know about his course.

"We were finding them in spots where we couldn't believe they were still at during that time of year," he says. "The initial response was kind of overwhelming... Obviously, everybody loves watching a dog work and hunt, but to see him give the signal and sit down, and we actually found the bugs, was pretty neat."

A mutual friend led Saunders to Webeck, a regional representative for Scentworx,

which was looking for new projects for its dogs following a slowdown in the bed bug market.

"If a dog can smell the odor of bed bugs, then why can't it smell the odor of ABW?" he adds. "If it's an issue JD and guys at other courses in other areas are going through, it's definitely something we can help with."

Superintendents are known for their patience when it comes to new products or techniques. Most wait for others to experience success before unveiling the product or technique at their own course. Saunders admits he falls into this group, yet images of abundant ABW damage factor into numerous turf decisions in Southwestern Pennsylvania. ABW damage "ranks right up there with anthracnose" among turf issues that arise in the region, he says.

Saunders uses every imaginable tool – pitfall traps, WeevilTrak, monitoring growing degree days, his own eyes – to determine the timing and location of each season's first ABW application. It's all part of what he calls a "guessing game" to limit potential damage caused by the pest. Memories of past damage convinced Saunders bringing Carl to Nemaconlin was a worthwhile pursuit.

"I was skeptical at first," Saunders says. "Once we saw the dog work and saw how he worked, we sat down and went over the cost benefits of this and what this could possibly lead to. We are always looking for other

tools to help us, and timing is everything when it comes to golf course management. All the issues we had with ABW... We are always looking for as much help as we can get."

Early signs at Nemaconlin suggest trained dogs could provide another tool to locate ABW. Carl returned to the course in September, and the pest was found further from wood lines and closer to fairways than Saunders expected. Carl's late summer and early fall work will make Saunders rethink his 2016 spray applications and budget.

More field work, academic research, trained dogs and skilled handlers are needed before widespread conclusions can be made about using canines as a reliable tool for locating ABW on golf courses. Carl, after all, has only been working at Nemaconlin for two months.

Penn State University associate professor of turfgrass management Dr. Ben McGraw, a leading ABW expert, has conducted multiple trials with Carl, first in controlled settings with test tubes and then on golf courses. Separating a specific pest on an expansive environment like a golf course represents a stark contrast to identifying bed bugs in hotel or dorm rooms, he says.

McGraw increased his work with Carl this past spring and recently conducted a trial at a Central Pennsylvania course. The timing of the trial wasn't ideal, though, because ABWs are moving from fairways to

roughs and tree lines. Full assessments of Carl's efficiency won't be determined until next spring, although McGraw says the dog "located a bunch of overwintering sites."

"We have proven the concept," McGraw adds. "He's gotten better from the first controlled study to the second controlled study. His efficiency went dramatically up. He was alerting to positives at a higher rate and his false positives went way down. It's a learning curve from both standpoints. For us, it's how to assess him in a trial because we typically don't work with animals. It's also a learning curve from their end. They are coming from a really defined system with bed



bugs in really closed environments. It's not as complex of a scent picture for a dog. But at the same time, they have to be super accurate in bed bug

detection, whereas in weevil detection it's not going to be the end of world if he misses a few locations."

Carl is currently the only dog trained by Scentworx working on golf courses. Two dogs are close to being ready to share Carl's workload and the company hopes to have five to 10 dogs and handlers trained to work in various parts of the ABW Belt by the end of the first quarter of 2016, according to Peruyero.

Trained rescued dogs have experienced success in commercial agriculture by detecting citrus canker and huanglongbing (HLB) in trees before it is noticed by humans. Citrus canker causes premature fruit and leaf drop, and the disease has spread from Florida to other citrus-producing states such as California, Texas and Arizona.

Peruyero envisions trained dogs making a "significant difference" in the golf industry by providing superintendents with the information they need to make more targeted spray applications. Dogs are covering vast areas in golf and commercial agriculture, but calculating the return on investment is different in each industry. Citrus

Nemacolin Country Club assistant superintendent Sean McCombs and superintendent JD Saunders with Carl, a dog trained to detect ABW scent.

canker and HLB damage can be easily quantified by assessing the amount of fruit destroyed. A trained dog could reduce the volume of chemicals sprayed if it finds ABW on fewer parts of a golf course than those being treated. Identifying ABW and treating the pest before it spreads also can prevent perception issues caused by poor turf. It takes a dog two full working days – a typical day for Carl lasts between five and six hours – to inspect a course.

McGraw sees trained dogs as a potential tool to determine whether the ABW exists in areas stretching beyond where it is typically found and its activity in the shoulder seasons of fall and spring. "What would happen if you take the dog west of Cleveland where they don't have the weevil?" he says. "It would be really interesting to know if the insect is there before it becomes a problem."

Saunders already knows the ABW is a problem in Southwestern Pennsylvania. He's hoping Carl will provide one more resource to control it.

"It's all about timing and putting out the best possible product you can for your membership," he says. "It's obviously not a fixall. It's not a quick fix. It's tool that needs to be established. As we continue to get greener in the industry down the road, if I can spray one less pesticide application, I think we have succeeded. In the end, it's about being as efficient as we possibly can and giving our membership the best product." **GCI**

Not your average mutt

Superintendents who think they can train their dog to detect turfgrass pest odors might want to devote time to other endeavors.

Preparing a dog to work on golf courses took some sophisticated work, including three months of scent identification and separation training, says Pepe Peruyero, owner of Scentworx, a company that trains dogs to detect various odors.

And that's assuming you have the right dog. Carl, who has scoured multiple Pennsylvania courses for the annual bluegrass weevil, is a mixed breed rescued dog selected from a wide pool of dogs living in Florida shelters. Carl's energy level, intelligence, hunting abilities and resiliency separated him from other dogs, according to Peruyero.

Dogs possess more than 220 million olfactory receptors in their noses, compared to 5 million for humans. Separating odors to find one specific scent can fluster many dogs. "If you think about it, this is the proverbial needle in a haystack," Peruyero says. "We are looking for one little insect in a very large area with a lot of odors around, so he has to basically sift through all of those odors, identify the one that he wants and then come back to it."

Scentworx works with the University of Florida on its training methods, and dogs are testing at rates between 98 and 99 percent in controlled studies. Handlers also must be trained to work with dogs such as Carl. Handler training could take two to three months, Peruyero says.

"One of the questions we get is, 'Can we get our own?'" he adds. "You could purchase a dog from us and be trained to handle it. But there is so much upkeep involved with a dog like this. To just have a dog like Carl hanging around your course all the time would be ineffective."



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THE CIRCLE OF LIFE



Paul F. Grayson is the Equipment Manager for the Crown Golf Club in Traverse City, Mich., a position he's held for the past decade. Previously, he spent 8½ years as the equipment manager at Grand Traverse Resort & Spa. Prior to that, he worked as a licensed ships engine officer sailing the Great Lakes and the oceans of the world.

It is all part of the circle of (equipment's) life (play "The Lion King" theme song as background here). To maintain the efficient operation of the golf course as a business, old equipment needs to be rotated out of the lineup and new equipment purchased to replace it. If equipment managers before you did not do this, your turf equipment would be horse drawn or steam powered. Now that you are your course's equipment manager, it is up to you to continue the tradition of weeding your motor pool collection each year. Machines that have become uneconomical to keep need culled from the herd.

If you track individual equipment expenses (productivity, operator, maintenance, repair, fuel, shop costs and shop time), the machine itself will tell you when it needs replaced. The time and money spent maintaining and repairing each machine rises each year and at some point, will actually exceed what the payments on a new machine would be or before that may exceed the shop hours available. In the case where shop hours have been maxed out, the overflow hours have to be made up by hiring more shop people or farming the work out to other shops.

Yes, I know it is hard to put any machine out to pasture when "all it needs is a few more parts and some more time in the shop to keep it going," but you have to draw the line somewhere. Are you running a golf course or are you restoring and maintaining antique machinery? Restoring antique machinery is a great personal joy, but does not make economic sense. At some point, the manufacturer will discontinue supplying parts for their old designs. When that happens you've kept that machine way too long.

THE JOY OF SPENDING COMPANY MONEY

Uneconomical equipment needs to be replaced with the newest and best that the course can afford. Someone has to do it. If you do it right, it is a game that is a lot of fun. The game is to shop for the equipment with features that your

course needs and get the best price you can, so you can buy more.

The more you know about the environment the equipment needs to fit into and the economics of it, the better you can do your job. For example, while the rough could be mowed with a \$100 18-inch walk behind gasoline rotary mower, when all things are considered, it makes economic sense to do it instead with a \$48,000 diesel fueled mower that cuts a 12-foot swath at about 9 mph.

Luckily, for those who play this game of buying for the course, the season for new product releases, conventions, and trade shows is just around the corner. This is where you kick the tires on all kinds of new equipment. Networking can do a lot to improve your game as a buyer. You have to learn it somewhere and continue to improve throughout your career.



The time and money spent maintaining and repairing each machine rises each year. At some point it will actually exceed what the payments on a new machine. Are you running a golf course or are you restoring and maintaining antique machinery?



Consider replacing 20 percent of your equipment list each year, or in the case of courses only open half the year, 10 percent of your equipment list each year. Some "low-mileage" equipment will last longer while high-usage equipment will need to be replaced more often. Some equipment ages by the calendar rather than by the engine hour meter. **GCI**



The Wish List

Is your agronomic operation up to snuff? GCI's Terry Buchen provides a rundown to benchmark against.

by Terry Buchen, CGCS, MG

The following golf course maintenance equipment list is comprised for an 18-hole golf course and practices areas, including putting green(s), chipping green(s), driving range and a short-game practice area. It's an updated version of the list I prepared for this magazine back in the 1990s that was updated again in 2007. This new-and-improved version reflects new types of maintenance equipment available. This list also is updated with equipment required to provide upgraded agronomic and playing-condition standards today's golfers demand.

Obviously, this list is for a high-end facility and should be used as a guideline only, adjusted accordingly, for private, semiprivate, public, municipal, resort, casino and military-type golf course maintenance operations. Adjustments depend on each venue's agronomic and playing-condition standards, goals and objectives, as well as available capital equipment and maintenance operating budget

funding. This listing has also been adjusted since, and because of, the economic downturn in 2008 to affect the economies of scale.

One equipment manager on staff on an 18 hole course is expected and required to maintain and repair all of today's sophisticated maintenance equipment, as an assistant mechanic also is required to help perform preventative maintenance practices/servicing, sharpening/lapping, ordering parts and supplies, record keeping, research, repairs, etc. Also, whenever possible and practical, there should be at least two of every piece of equipment in inventory so there is a backup machine in place so that maintenance practices can continue while waiting for servicing, repairs, parts orders deliveries, etc.

Not part of this listing: equipment manager's shop equipment and tools; maintenance building, lunch room, kitchen and office (FFE) equipment; golf course accessories; course setup equipment; tournament Preparation equipment; and hand tools.

GREENS AND PRACTICE AREAS

- 7 walk-behind greens mowers with groomer/brush attachments
- 5 turning mats
- 5 turf vehicles with trailers
- 2 triplex greens mowers with groomer/brush attachments
- 1 set of light verticut reels for triplex greens mower
- 1 set of spiker attachments for triplex greens mower
- 1 tow-type, or turf vehicle mounted, spinner-type greens topdressing machine
- 2 topdressing drag brushes
- 1 175-gallon sprayer mounted on a turf vehicle with a walk-behind hooded spray boom, hose reel and attachments (four-wheel drive where applicable)
- 2 rotary push-type fertilizer spreaders
- 2 drop-type push-type fertilizer spreaders
- 4 backpack blowers
- 2 tournament speed rollers with spiker/brush attachments with trailers
- 1 walk-behind, deep verticut machine with topdresser attachment
- 2 green's aerifiers with core collection/windrow system
- 1 deep-tine green's aerifier
- 1 green's sweeper
- 1 water-injection aerifier with optional head
- 1 aerifier core harvester
- 1 plug pusher
- 1 sand injection machine
- 1 portable, subsurface greens drainage portable blower/pump
- 1 dimple seeder (where applicable)
- 1 moisture meter
- 1 digital soil thermometer
- 1 surface tension meter
- 1 stimpmeter

FAIRWAYS*

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • 3 five-plex fairway mowers with one spare set of cutting units (four-wheel drive where applicable) (groomer attachments where applicable) • 1 set of light verticut reels for five-plex fairway mowers • 3 grass clipping collection trailers (where applicable) • 1 pull-type fairway topdresser with material handling system • 2 large fairway topdressing drag mats • 2 triplex greens/fairway | <ul style="list-style-type: none"> • mowers with one spare set of cutting units (all-wheel drive where applicable) • 1 large rotary PTO, pull-type or turf vehicle mounted fertilizer spreader • 1 combined rototiller/seed • 1 300-gallon sprayer mounted on maintenance vehicle with hooded spray booms, hose reels and attachments (four-wheel drive where applicable) • 1 pull-type sweeper/vacuum • 1 three-gang pull-type fairway/rough roller or 5 plex | <ul style="list-style-type: none"> • self-contained fairway roller • 1 fairway aerifier • 1 deep-tine fairway aerifier • 1 shatter/pulverizer/slicer type aerator • 1 plug pulverizer/sweeper • 1 deep fairway verticut 3 point hitch PTO unit • 1 PTO verticut/slit-seeder (where applicable) • 2 turbine blowers with a trailer or turf vehicle mounted • 1 grass clipping scattering/dispersal machine |
|---|--|--|

TEES, COLLARS/APPROACHES/ COLLECTION FAIRWAYS*

- 4 walk-behind 26-inch-wide tee/collar mowers
- 2 turf vehicles with trailers
- 2 triplex tee mowers with one spare set of cutting units (all-wheel drive where applicable)
- 2 walk-behind aerifiers with core collection/windrow system
- Use fairway mower if practice tees are large enough

BUNKERS

- 2 riding bunker rakes with front sand blades, spiker attachment and one landscape scraper box (all-wheel drive where applicable)
- 3 bunker/sidewalk powered reciprocator-type edgers
- 3 hovercraft-type rotary mowers
- 3 string-line trimmers

CLUBHOUSE

- 2 walk-behind, self-propelled rotary mowers with grass catchers
- 2 riding trim mowers (with optional sulkies)
- 2 turf vehicles with trailers
- 2 sidewalk edgers
- 2 string-line trimmers
- 2 backpack blowers
- 2 backpack sprayers
- 1 power brush to sweep parking lots, sidewalks, etc.

MAINTAINED ROUGHS, INTERMEDIATE ROUGHS AND WALK PATHS*

- 1 12-foot-wide and/or 16-foot-wide riding rotary mower (four-wheel drive where applicable)
- 1 72- to 88-inch-wide riding rotary mower (four-wheel drive where applicable with leaf mulch kits where applicable)
- 2 triplex rotary-type utility mowers (all-wheel drive where applicable)
- 2 triplex reel-type mowers (all-wheel drive where applicable)
- 5 string-line trimmers
- 3 hovercraft-type rotary mowers
- 1 PTO tractor-mounted blower
- 1 pull-type vacuum/sweeper
- 3 backpack blowers

*INCLUDES PRACTICE AREAS

MISCELLANEOUS

- 3 utility tractors with turf tires (four-wheel drive where applicable)
- 1 skid-steer loader with fork lift, power auger, brush and other attachments
- 1 mini-excavator trackhoe with rubber tracks
- 1 loader/backhoe tractor with turf tires (four-wheel drive where applicable)
- 1 300-gallon, self-contained hydro-mulcher (where applicable)
- 2 turf vehicles with hydraulic dump body (four-wheel drive where applicable)
- 1 one-ton dump truck (four-wheel drive with snow plow and salt spreader where applicable)
- 1 large dump trailer
- 1 three-quarter-ton pickup truck with power lift tail gate (four-wheel drive where applicable)
- 1 SUV, car or pickup truck for the superintendent (four-wheel drive where applicable)
- 1 18-inch sod cutter
- 1 portable, 6,000-12,000 watt electric generator (with trailer where applicable)
- 1 electric golf cart for the golf course superintendent
- 1 equipment transport trailer licensed for highway use
- 1 powered riding utility roller
- 1 three-point hitch tractor-mounted landscape scraper box with spring loaded teeth
- 1 three-point hitch tractor-mounted landscape rake
- 1 drag-type landscape harrow
- 1 rowboat with oars and electric/gasoline motor
- 3 chainsaws (different sizes) and climbing equipment
- 1 stump grinder
- 1 chipper
- 2 gasoline-engine-powered pole tree pruners
- 2 backpack sprayers
- 1 equipment manager's all-terrain turf vehicle with generator, air compressor, torches, welder and tool box (four-wheel drive where applicable)
- 1 gasoline-powered firewood splitter (where applicable)
- 1 irrigation technician's turf vehicle with generator, air compressor and tool box (four-wheel drive where applicable)
- 6 roller squeegees
- 1 500-gallon water wagon/tank trailer mounted.
- 2 topdressing silos/covered/enclosed topdressing bins
- 1 premixing tank for chemicals and fertilizers

IRRIGATION AND DRAINAGE

- 1 small loader/small backhoe compact tractor with turf tires (four-wheel drive where applicable)
- 1 four-wheel drive trencher with backfill blade with pipe or wire puller and attachments
- 1 electric wire locator
- 1 electric wire fault finder
- 1 metal detector
- 1 irrigation-system PVC pipe specialty locator
- 1 sprinkler-head-leveler devise
- 1 portable GPS location devise
- 1 portable, three-inch diameter trash pump with suction/discharge hoses and trailer
- 1 fertigation system
- 1 injection system

Author's note

Many thanks to the following golf course managers for reviewing this updated equipment list and for providing their input, comments, ideas and suggestions:

- **Brian Goleski**, Noyac Golf Club (NY)
- **Jim Hengel**, CGCS, Quail Ridge Country Club (FL)
- **Jeff Markow**, CGCS, Cypress Point Club (CA)
- **Todd Pollini**, Bald Peak Colony Club (NH)
- **Tom Rainey**, Heron Creek Golf & Country Club (FL)
- **Matt Shaffer**, Merion Golf Club (PA)

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Koch Turf & Ornamental, a brand supported by Koch Agonomic Services, LLC, is committed to providing our customers with solutions that optimize plant and turfgrass performance while using fewer resources. Through our corporate connections with Koch Industries, Inc., a privately held company with more than 100,000 employees operating in 60 countries across the globe, Koch Turf & Ornamental has access to a vast array of resources. By combining the right research capabilities, processes, systems and people, we're innovating new products designed to help superintendents maintain more beautiful, playable and profitable golf courses.

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The enhanced efficiency fertilizers (EEFs) in our portfolio have been specially developed to provide the nutrition that turfgrass and plants need to thrive. Each product has its own unique characteristics and valued advantages. By creating customized fertilizer programs that incorporate these advanced technologies, superintendents can optimize nutrient efficiency and minimize nitrogen (N) loss.

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Superintendents are under pressure to maintain their courses in the face of rising

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MINIMIZING LOSSES

Understanding the workings of enhanced efficiency fertilizers could help your course's bottom line.

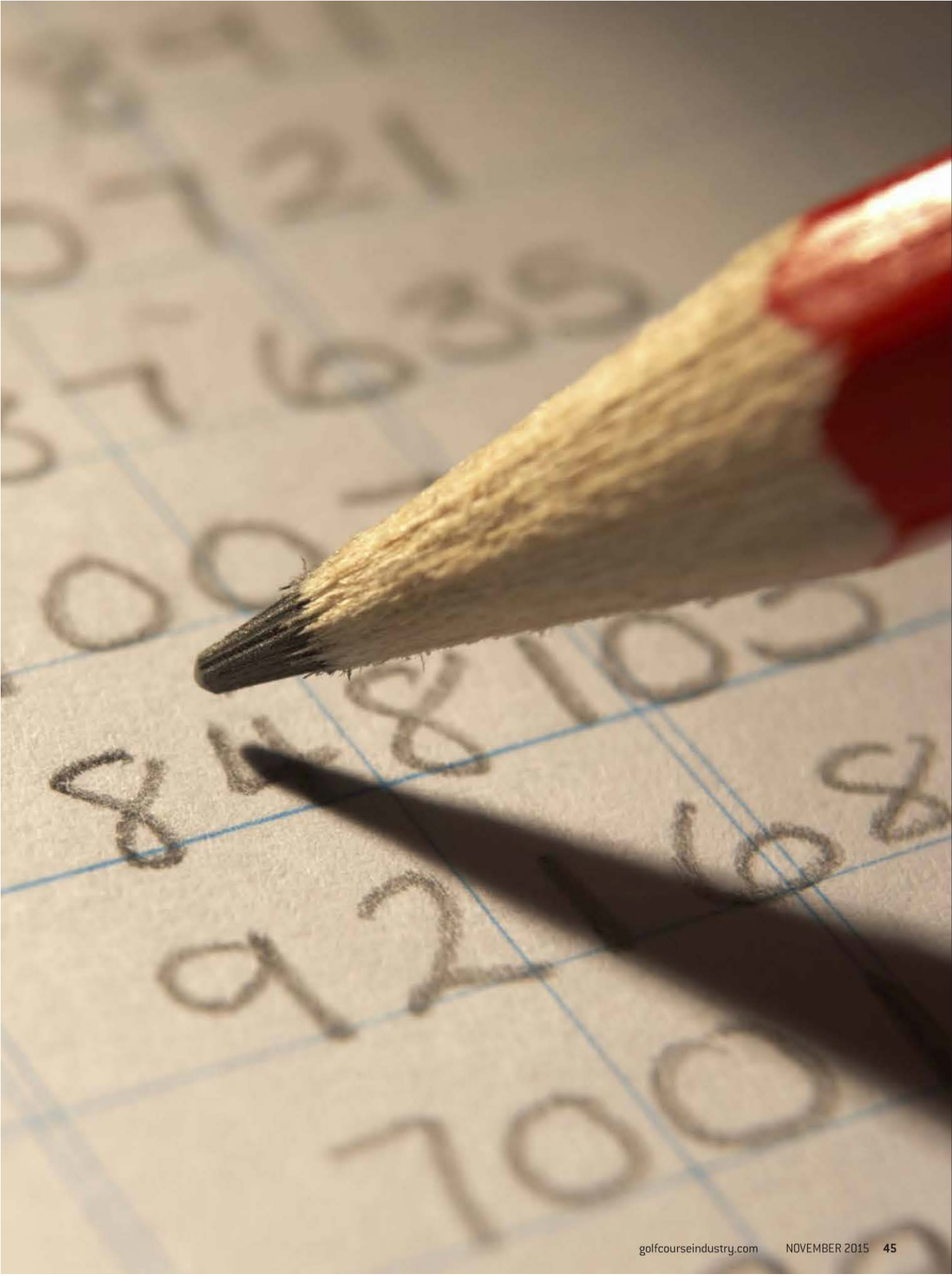
By
John Torsiello

The use of enhanced efficiency fertilizers can have a two-pronged impact by increasing the overall benefits of fertilizer application to turf and safeguarding the surrounding environment. In short, enhanced efficiency fertilizers (EEFs) minimize the potential of nutrient loss to the environment. Slow- and controlled-release fertilizers include absorbed, coated, occluded and reacted fertilizers. All four deliver an extended, consistent supply of nutrients to turf.

"From an environmental sustainability standpoint, EEFs can reduce nutrient loss due to volatilization, runoff, leaching and denitrification, which helps not only to protect natural resources, says Dr. Eric Miltner, agronomist for Koch Turf & Ornamental, "but also means that the nutrients that you apply are used more efficiently by the plants, which is the objective of applying fertilizers."

From a cost standpoint, EEFs can result in more efficient nitrogen uptake. More of the nitrogen that superintendents apply gets into the plants compared to non-EEFs. As a result, nitrogen application rates can be decreased accordingly, which helps offset the cost of the products. "With controlled release fertilizers (polymer coated), such as Polyon and Duration, application numbers and frequency can be greatly reduced," Miltner says. "This not only saves labor, he explains, but also fuel and equipment wear. There are other "ripple effects." Less time spent fertilizing means labor can be re-allocated for other uses. Employees handle fewer bags over time, which can impact injury potential, health and even morale. All of these factors contribute to the economic side of EEF use.

EEFs can reduce costs, says Dr. Travis Shaddox, postdoctoral research associate of environmental horticulture at the University of Florida. "If they do, they do so by either reducing the cost of labor, since fewer applications are required, or by reducing ton-



nage by increasing the efficient use of the applied nutrients,” Shaddox says. Slow-release nitrogen may reduce labor if high rates of very slowly released nitrogen sources are correctly applied. “For example, I know of a course in Florida that makes only one application of nitrogen per year,” he says. “The superintendent applies a high rate of a very slow-release polymer-coated urea in the fall. A sudden surge of nitrogen into the soil/turfgrass system may increase gaseous loss, leaching or runoff, which reduces plant uptake of the applied nitrogen. Slow-release nitrogen sources reduce this surge of nitrogen, thereby increasing plant uptake and nutrient use efficiency.”

Generally, superintendents and peer-reviewed literature report a more uniform, consistent turf quality and growth when using EEFs, Shaddox says. Gaseous loss of nitrogen can be reduced by as much as 50 percent, and leaching and runoff can be reduced by more than 50 percent in some cases.

EEFs also give superintendents enhanced flexibility by providing one product that addresses the right nutrition at the right rate and at the right time for turf. “We talk about the ‘4Rs’ of nutrient stewardship,” Miltner says. In other words, applying the right source, at the right rate, at the right time, in the right place. This implies there could be many “right” ways to achieve effective fertilization. Superintendents need flexibility because they have complex jobs with many demands and challenges,” Miltner says. “EEFs give them options to efficiently manage their resources, while providing healthy turf with great playability.”

Shaddox adds, “The value in such a program would be that the superintendent would only have to have one spreader setting and applicators would be less likely to make errors. In short, a simplified nutrient program would likely lead to a more efficient program via reduction in application error.”

Research has shown EEFs to reduce the loss of nutrients to the environment. “This has always been important, but has taken on increased significance in recent years with many states and local governments passing

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—Dr. Eric Miltner, Koch Turf & Ornamental

regulations based on reducing nutrient loading into surface waters,” Miltner says. “For decades, superintendents have used products like Nutralene, Nitroform, Polyon and Duration to build programs that use only a couple applications per year and result in healthy turf with consistent growth and clipping production. With as much time that is spent on mowing, the clipping management benefits from slow- and controlled-release fertilizers are important factors for labor and equipment management.”

A strong argument in favor of EEFs impacting sustainability and reducing overall costs of fertilization is related to the number of applications needed to be made. “For example, slow-release fertilizers may be applied at higher nitrogen rates (i.e. 1.5-pounds N/1000) for a

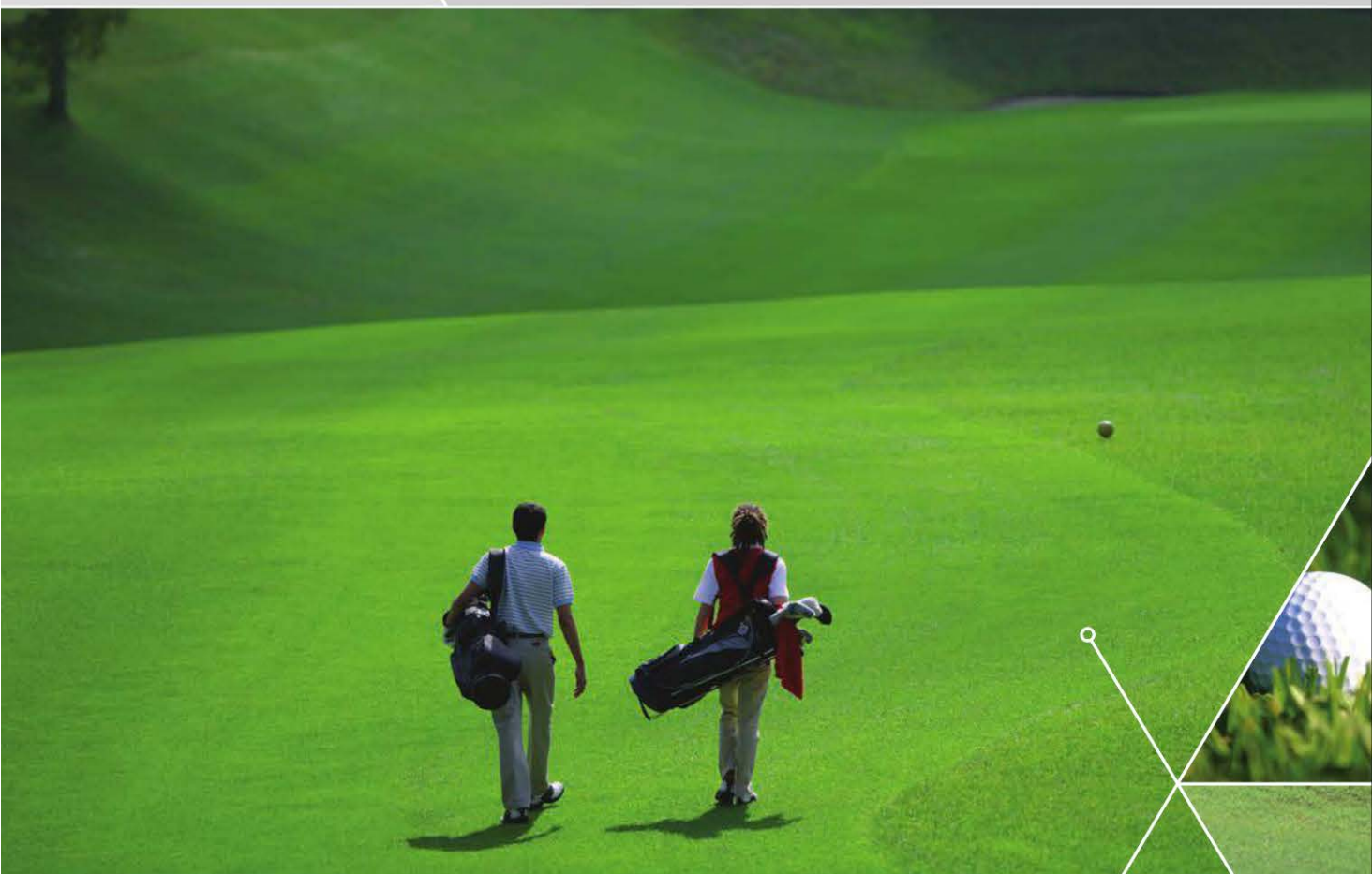
single application to a fairway compared to a program where water soluble nitrogen sources, such as urea, may be applied weekly at 0.1-pounds N/1000 or 0.2-pounds N every other week,” says Dr. Kevin Frank, associate professor and extension turf specialist at Michigan State University. “Certainly, the costs of application/labor and other issues could be calculated for frequent applications versus a one-time application.” However, many superintendents will argue they might already be spraying fungicides

bilized nitrogen products like UMAXX provide quick plant response because nitrogen availability is not temperature-dependent. “You get protection against volatilization, leaching, and denitrification,” he says. Fall is an excellent time to apply Polyon or Duration polymer-coated urea. Depending upon the specific product (longevity), there is release and uptake in the fall. Release then shuts down through the cold winter months, but resumes in the spring with warmer temperatures. “A single application in mid-fall can provide nutrients well into May or June, freeing up resources to do other things,” Miltner says.

Dr. Beth Guertal, alumni professor in Auburn’s College of Agriculture Agronomy and Soil, says EEFs work well when a consistent, long-term greening response or maintenance of growth is desired. “They are another option in a nitrogen fertilization program that can include foliar application, soluble or other slow-release sources, such as methylene ureas or coated nitrogen sources,” she adds.

Consider applying EEFs when labor is low but turf quality expectations are high, Shaddox says. “Speaking strictly agronomics, nearly all EEFs are dependent upon temperature leading to a reduction in effectiveness during extremely cold or hot times of the year. When I worked in the industry, I would ask the superintendent, ‘When do you need your course to look the best?’ I would then recommend a nutrient program based upon his or her answer.” GCI

John Torsiello is a writer based in Torrington, Conn., and is a frequent GCI contributor.



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TALKING

N, P AND K

Documenting fertilizer usage represents a proactive measure to let outsiders know how a golf course benefits its surroundings.

By
John Torsiello

Golf courses are valuable assets to the communities they are located in and beyond, providing open space, wildlife habitat, storm water infiltration and treatment, and healthy recreation. Providing supplemental nutrition through fertilization, including enhanced efficiency fertilizers, is almost always necessary in order to maintain healthy turf that functions at its best and can be accomplished using best management practices that protect natural resources.

Dr. Eric Miltner, agronomist for Koch Turf & Ornamental, says despite what seems to those in the industry the obvious benefits of golf courses, superintendents would be wise to quantify their fertilizer usage so they can explain exactly what is going on with their turf and the surrounding environment. Why? Having the right answers to potential questions from management, ownership, members, and the community at large can point out the financial benefits of fertilizer usage and allay fears of potential damage to the environment. "As with any maintenance operation, records can be a critical tool in evaluating your practices and measuring their effectiveness," Miltner says. "But be aware that the cost of inputs is only part of the equation. A premium product can result in savings in other operations, such as mowing or pest management."

Dr. Beth Guertal, Alumni Professor for the College of Agriculture Agronomy and Soil at Auburn University, says superintendents should be able to calculate the cost of their fertilizer per pound of nutrient, and not just for the product. "What does the nitrogen, phosphorus and potassium in that material cost you?" Guertal says. "Also,

use some type of soil testing (and there have been some excellent recent articles about soil testing strategies) to determine if nutrients other than nitrogen are ever necessary. Do not pay for nutrients that you may not need."

Basing a fertilization program on science in order to protect the bottom line of a

course and the environment can shield superintendents and courses from environmental backlash, according to Dr. Michael Richardson, Professor of Horticulture at the University of Arkansas. "I still hear too many superintendents say that their fertilization program is based on a long history of 'doing it a certain way' rather

than a constant refining of the program based on data collected," Richardson says. He adds that annual soil testing should be an integral part of every golf course management plan. Changes then can be made each year after asking what Richardson considers are some key questions:

- Are soil nutrients at a sufficient level?
- Are specific soil nutrients increasing or decreasing?
- Are growth responses to nutrients being observed?

The use of a non-treated control area is one of the best tools a superintendent has to determine if he is really getting a response to a nutrient application, Richardson says.

Years of detailed record-keeping from soil tests and documentation of fertilizer applications and responses can be a significant resource if the

golf course is ever accused of environmental contamination. Dr. Tamson Yeh, Pest Management and Turf Specialist at the Cornell University Cooperative Extension, says that keeping detailed records of fertilizer use also allows the superintendent to track success at reducing costs while documenting the nitrogen and phosphorus footprint if the course's water is sampled. It also provides a great public relations tool when it comes to application transparency. It can also help obtain Audubon International Certification, or allow the course to be nominated for awards.

Miltner adds that community outreach can be an important tool to ease concerns the public might have in regards to effects from fertilizer use on a golf course located near where they live. "We all know that there is a lot of misinformation out there regarding fertilization and other golf course maintenance practices," he says. "It's important for people to understand that superintendents are highly trained and knowledgeable, that they understand the risks and challenges, and that they make purposeful decisions to maintain healthy, playable turf while limiting the risk to the environment. As in many other areas, such as cars or electronics, technology has made things more efficient and effective. Enhanced efficiency fertilizers are no different. Some of these products have been around for decades (Nutralene, Nitroform, Polyon), others are newer (Duration,

UMAXX, HYDREXX), but they can all be used to maintain turf with decreased inputs, because they are more efficient in delivering nitrogen to the plant."

Dr. Travis Shaddox, Postdoctoral Research Associate of Environmental Horticulture at the University of Florida, says documentation and transparency are becoming increasingly important in the industry.

"We need to remember that our activities are governed by policies that often times are made by elected officials that may not be knowledgeable on these issues," Shaddox says. "Outreach and extension education are valuable methods of educating the general public. For example, in Florida, about 5 percent of the annual nitrogen applied is applied to golf courses, while 90 percent is applied to non-turf acres. Very few

people realize this, in large part because we are not communicating to the public as much as necessary."

Guertal urges superintendents to be proactive when it comes to explaining fertilizer usage, rather than waiting to be asked about it. "This may depend on the community," she says. "In some cases, it makes sense to stay ahead of the issue and provide sound, science-based information on your management practices. In other cases, it might make more sense not to invite attention, but to be ready to provide appropriate information at any time you are asked."

"I think a superintendent should be able to talk about their fertilizer use and use rates," Guertal adds. "It's important to remember that the vast amount of research data clearly shows that, when applied at the correct rates and

with the correct products, turfgrass is an excellent filter of nutrients. Superintendents should be able to talk about their use of slow-release or enhanced efficiency fertilizers, use of soil testing, and how they avoid environmentally sensitive areas, such as around water."

Yeh believes that because fertilizer use and its environmental impact is a "super-charged environmental platform for stakeholders and politicians," detailed information and the ability to explain fertilizer use is crucial. "There should be solid knowledge and ability to inventory and adjust potential hazard points for fertilizer pollution issues, such as runoff, leaching and a simple understanding of the pros and cons of practices and products," Yeh says. **GCI**

John Torsiello is a writer based in Torrington, Conn., and a frequent GCI contributor.

TRIO OF SPECIFICS

Dr. Michael Richardson, professor of horticulture at the University of Arkansas, offers three specific ways a superintendent can be environmentally proactive when it comes to explaining fertilization:

- **Demonstrate** how an annual fertility program is adjusted based on soil testing data.
- **Write** short communications for blogs and websites, explaining why the use of specific fertilizer sources can help protect the environment.
- **Document** water quality in and around the course.

LET'S NOT BE LAX

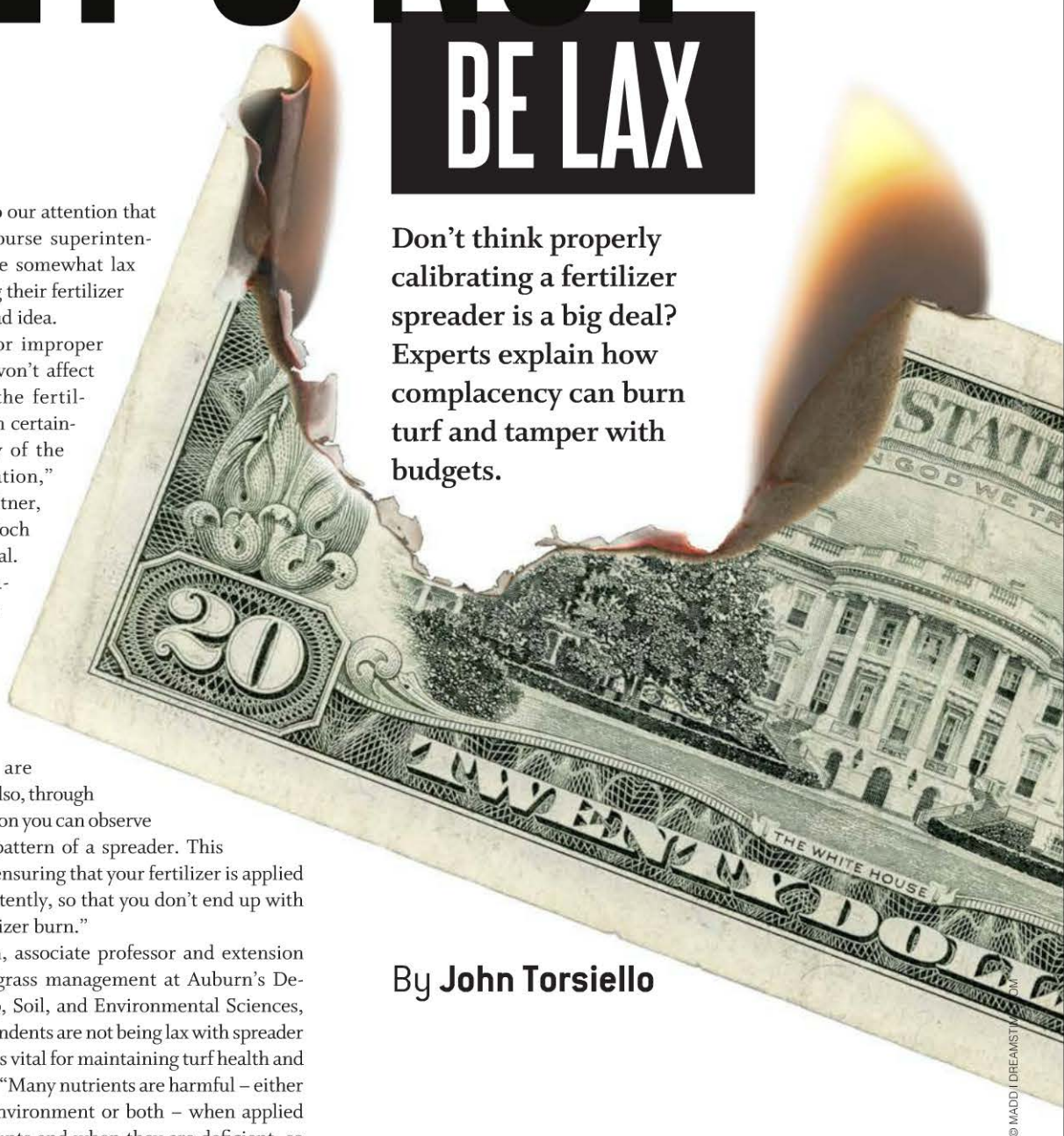
It has come to our attention that some golf course superintendents may be somewhat lax in calibrating their fertilizer spreaders. Bad idea.

"Lack of or improper calibration won't affect the efficacy of the fertilizer itself, but can certainly affect efficacy of the fertilizer application," says Dr. Eric Miltner, agronomist for Koch Turf & Ornamental. "Proper application depends in part on nutrient application rate, so without knowing the rate through calibration, you are taking a big risk. Also, through the act of calibration you can observe the distribution pattern of a spreader. This can be critical in ensuring that your fertilizer is applied evenly and consistently, so that you don't end up with streaking or fertilizer burn."

Dr. David Han, associate professor and extension specialist of turfgrass management at Auburn's Department of Crop, Soil, and Environmental Sciences, "hopes" superintendents are not being lax with spreader calibration, for it is vital for maintaining turf health and the environment. "Many nutrients are harmful – either to the turf, the environment or both – when applied in excessive amounts and when they are deficient, so

Don't think properly calibrating a fertilizer spreader is a big deal? Experts explain how complacency can burn turf and tamper with budgets.

By John Torsiello



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putting out the right amount is critical.” He adds applying unnecessary fertilizer wastes money and fertilizes weeds without benefitting the turf. Improperly calibrated spreaders can also cause unsightly cosmetic effects when they apply fertilizer unevenly, causing streaks or a checkerboard pattern of different color grass when different areas do not receive the same amount of nutrients.

Dr. Tamson Yeh, pest management and turf specialist at the Cornell University Cooperative Extension, cautions that failure to calibrate can result in over application and thus fertilizer burn if using a rapid release, high salts formulation or excess nitrogen that will result in juicy overgrowth and increased susceptibility to disease and insects. “Insufficient application due to poor calibration can also result in disease issues – like dollar spot,” Yeh says. “When fertility crashes, dollar spot moves in.”

Improper calibration leads to leaching when excess nitrogen is applied followed by rain or irrigation, and can lead to runoff when excess prills are applied and moved across compacted soil, hardscape or over irrigated turf, resulting in nitrate runoff into surface water bodies as it is attached to water, and phosphorous runoff because it is attached to sediment.

Han cites some scary numbers: “Fertilizer is expensive. If your calibration is over applying at 30 percent, for example, and a bag of greens grade fertilizer 30-0-15 is \$40 for a 50-pound bag ... If you need one pound of actual nitrogen/1000 square feet, then you need 3.3 pounds of product/1000 square feet. If you are

applying 30 percent more (3.3 X 0.3), you are essentially applying 0.9 pounds more, almost a pound. A 50-pound bag properly calibrated fertilizes 15,000 square feet. A 30 percent over delivery only covers about 12,000. That adds up quick. Plus, that means going from one pound of actual nitrogen to 1.3 pounds, which can also add a lot of environmental stress.”

Spreader calibration can be a pain in the neck, Miltner says, thus the lax attitude toward the task. “You have to have a good space and the right tools,” he says. “And it takes time and maybe a lot of trial and error. But having your equipment in tune is as important to good fertilization as having sharp mowers is to mowing – but you don’t have to do it as often.”

The task should be done at least annually for each product you use, Miltner says. If you have had to replace any of the critical parts on your spreader (impeller, drive gears, open/shut valves, etc.), then you should re-calibrate. In a nutshell, the person doing the calibrating needs to measure the amount of product spread over a known area, and adjust until the rate is right. Various online resources are available, often through the state’s extension service.

Calibration is only time consuming “when learning to do it the first time,” says Dr. Aaron J. Patton, associate professor of horticulture and turfgrass extension specialist at Purdue’s Department of Horticulture and Landscape Architecture. “After the first time and when organizing the resources needed to calibrate, calibration can be quick and easy.”

Every time a new product is used, the spreader should be

STEPS TO SUCCESS

Here is Dr. Eric Miltner’s “Seven Step Procedure to Properly Calibrate Fertilizer Rotary Spreaders.”

Step 1: Find the N-P-K ratio on your bag of fertilizer. The N number (Nitrogen) is the percentage of actual nitrogen your bag contains per pound of total fertilizer. Take the N number and divide 100 by that number (e.g. $100 \div 20$). The answer equals the correct number of pounds of your fertilizer product to apply per 1,000 square feet of your turf (as long as you want one pound of actual nitrogen per 1,000 square feet of your turf).

Step 2: Is your spreader actually delivering the desired amount? You need to find this out by checking the calibration, which is simple. Weigh out 10 pounds of your fertilizer product on a bathroom scale using a light weight container such as a cardboard box. Measure out a 25-foot long strip in the center of a hard surface such as a driveway.

Step 3: Set your fertilizer spreader at the recommended setting suggested on the product label. Place the 10 pounds of fertilizer product that you measured out in the hopper of the spreader. Operate the spreader along the 25-foot length you measured.

Step 4: Measure the width in feet that the fertilizer was scattered by the spreader. Multiply the width you measured by the 25-foot length. This answer is the area in square feet that your spreading effort has covered.

Step 5: Weigh the fertilizer left in the hopper using the bathroom scale. Subtract the amount you get from the original 10 pounds. The answer is the amount your spreading effort has applied.

Step 6: Divide the amount of fertilizer in pounds that you used by the square footage your spreader has applied to your test area. Now, divide the amount of fertilizer in pounds that you want to apply by 1,000 square feet. Both answers should be in decimals.

Step 7: Compare the two answers. If the answer for your test area is larger than the answer for the amount you want to apply, you will need to adjust your spreader to apply less fertilizer. But if the answer for your test area is smaller, you may want to adjust your spreader to apply more fertilizer.

calibrated because no two fertilizers have the same prill size and weight. This is especially true with rotary spreaders, because small, light granules will fly farther than bigger, heavier ones. The operator also affects calibration since no two people walk at exactly the same rate. Calibrate the spreader for each operator and each product, which can be time-consuming.

Practice makes perfect and a single individual will be able to quickly tell when something is “off” with the spreader. “Making calibration part of a routine for a single individual and even making it part of the job description insures that it does not get pushed to the back burner during multitasking as so often happens,” Miltner says. **GCI**



Just what they needed

By **Helen M. Stone**

Faced with a potty problem, Whippoorwill Club pursued a water-saving solution that made sense for their situation.

The Whippoorwill Club in Armonk, N.Y., has a long, rich history dating back to the 1920s. Envisioned as a sprawling "fine, dignified, proprietary club colony" encompassing 850 acres and catering to the wealthy during the Roaring 20s, it finally broke ground in the 1929 – just in time for the Great Depression.

The club stayed afloat and eventually prospered. Like most classic courses, it has been renovated and updated a number of times and regularly makes it on several "best" lists. However, there was one challenge that left architects, managers and players frustrated. And that had nothing to do with golf.

The course was built before there was a local sewer system. "We are not on the municipal

system in this part of Westchester County," says Jeffry Martocci, CCM, the club's general manager.

Because the course lies in a watershed for New York City, with updated laws and regulations it was impossible to expand sewer or septic services. When the course was initially designed and laid out, remote restrooms were unheard of.

"Our options were limited; there wasn't a lot we could do. We had a concrete vault with a toilet that we pumped out," says Paul Gonzalez, superintendent at the course since 2006. "It was awful."

The facility – or lack of – was a constant member complaint. "At our annual meeting in 2013, it was brought up as a formal issue and I agreed to do some further research and see what we could do," says Gonzalez. That year, the Golf Industry

Show was in San Diego, and Gonzalez was on a mission.

"I was looking into every option I could find," Gonzalez recalls. "Nothing would have satisfied the members. When I saw the Green Flush restrooms on the show floor, I thought they would be typical of what I had seen before. The company owners were talking to someone, so I went in and looked around the display model. And it ended up being exactly what I needed."

First of all, in spite of the fact that the restrooms are not plumbed, the toilets flush. Plus, they also offer sinks and separate urinals. However, they also use 90 percent less water than conventional restrooms and are easy to keep sparkling clean and odor free.

The prefabricated buildings have a unisex bathroom plus a mechanical room with a water

tank. Water for flushing the toilet can also be captured and recycled from the sink, which also offers a hot water option. In addition, there is an option for rainwater capture and storage for toilet flushing. Interior and exterior lights are another option, with solar or rechargeable batteries available where electrical power is not available.

The toilet flushes directly into a sealed tank beneath the floor, keeping odors nonexistent. Because it only takes about a quart of water per flush, pumping is only required every few weeks or even months.

Installation was no problem, as the units come completely assembled and ready to set. "We had a very large front-end loader," Gonzalez says. "You just pick them up off the truck, hook up the battery and start using them." There are larger,

multi-stall units that require a crane, but single units are easily installed without needing special labor or equipment.

Because Gonzalez simply replaced the existing vault toilets, the area was partially prepped. He laid an 8-inch base of gravel and did a bit of landscaping, including steps and a ramp to the small building.

"The biggest challenge was probably getting the members to learn how to use it," Martocci laughs. "But that was actually very easy – it's not that complicated!"

The cost was only a negligible amount more than typical vault toilets.

"When all was said and done, each unit cost us about \$35,000," Martocci says. The club was so pleased by the first unit on the fifth hole that they installed a second unit on the 13th hole shortly thereafter. **GCI**



Travels with Terry

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He shares helpful ideas relating to maintenance equipment from the golf course superintendents he visits – as well as a few ideas of his own – with timely photos and captions that explore the changing world of golf course management.



Terry Buchen, CGCS, MG, is president of Golf Agronomy International. He's a 41-year, life member of the GCSAA. He can be reached at 757-561-7777 or terrybuchen@earthlink.net.

CLIPPINGS CADDIE

This custom made all-aluminum clippings caddie measures 4 feet by 4 feet, with a 37-inch long tongue, 15-inch long riser and 5-inch long coupler mount with a class 1, 2-inch channel width coupler mounted on the end with a 2,000-pound capacity. Aluminum 1/8-inch sheet, 3 inch by 2 inch box channel tongue, 2 inch by 2 inch angle iron and 1 inch by 2 inch channel, all 1/4-inch thick, were used. Eighteen inch by 8 1/2 inch by 8 1/2 inch turf tires were mounted on 8 inch by 6 inch rims with a 2-inch axle. The angle of the box is slightly tilted forward when attached to most equipment, thus a tailgate is not required. A 6 inch by 4 inch by 1/4-inch thick steel plate, with a 1 7/8-inch trailer hitch ball bolted to it, was welded



onto the rear wheel frame of the 2006-14 Toro Greensmaster 3150 Triplex Mowers. Each of the four trailers cost approximately \$1,700 (in 2008) and it took about two days to design, cut, layout, set into the jig and weld into place. Michael R. Wallace is the superintendent at the Naples Lakes Country Club in Naples, Fla. Joe Julian, with Turf Iron LLC, designed and built them.

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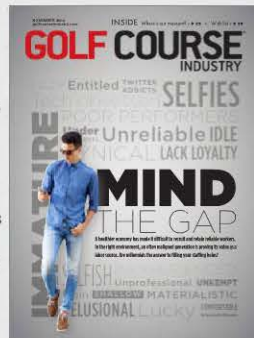
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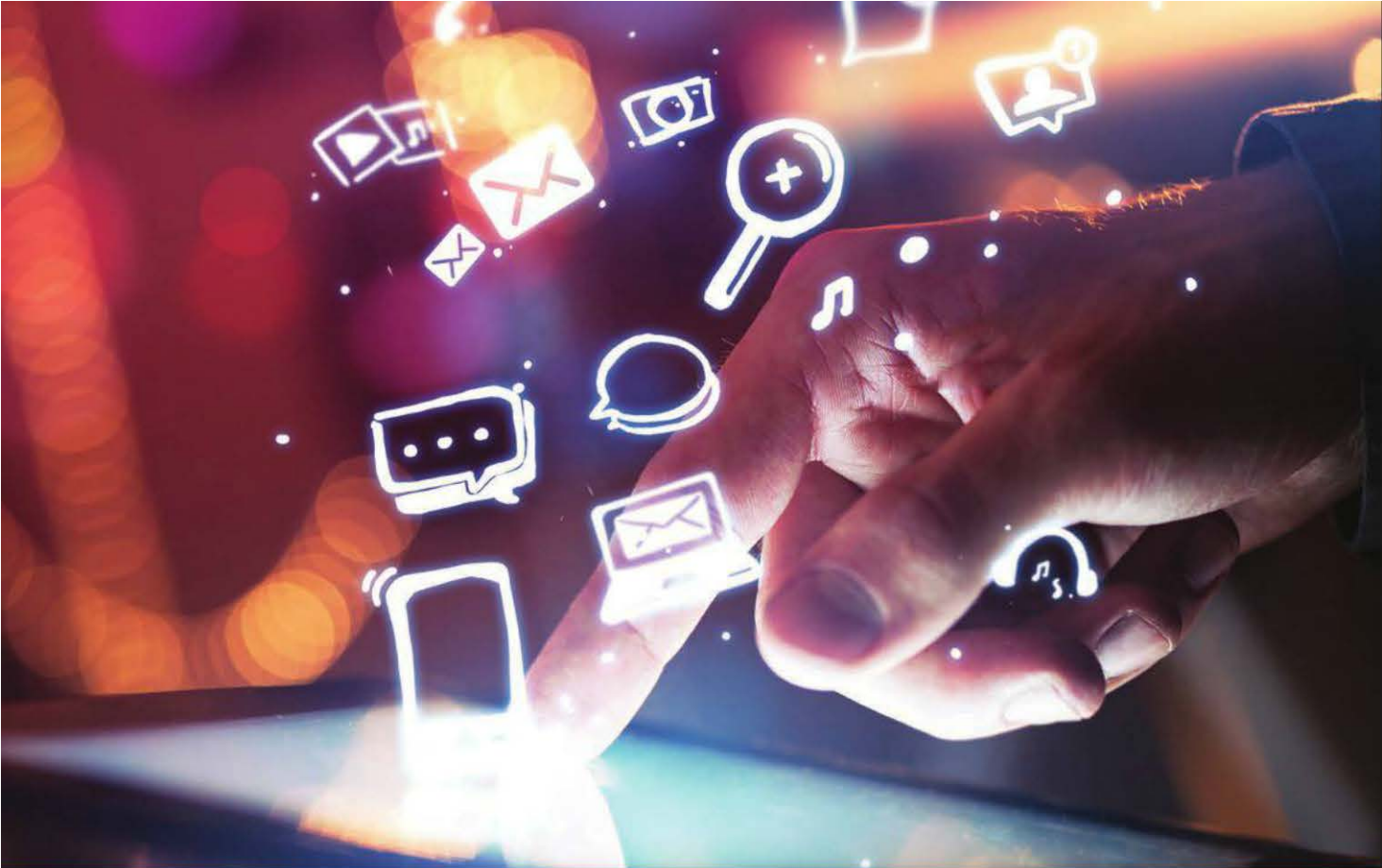
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REEL GRINDER VACUUM ATTACHMENT

This 2008 SIP Peerless 1500 Automatic Reel Grinder was fitted in-house with a 2008 Marathon Electric 1 H.P. 3,450 RPM Vacuum Attachment to significantly help remove the airborne metal fillings during the grinding operation by discharging them outside the grinding room wall. A 6-inch diameter flexible plastic hose, with metal rings inside for support, about 4 feet long, was attached from the vacuum housing to a flange made out of old duct work that was mounted to the grinder. The hose moves back and forth nicely. The discharge pipe elbow placed outside the grinding room wall was turned downward to eliminate snow and rainfall from collecting inside. The materials cost about \$500 and it took about eight hours total for the installation and fabrications. Jim Zunker, equipment manager, and Mike Davies, superintendent, at the Superior National Golf Course in Lutsen, Minn., are very happy with their good efforts. **GCI**



United States Postal Service		(Requester Publications Only)	
Statement of Ownership, Management, and Circulation			
1. Publication Title: Golf Course Industry			
2. Publication Number: 5836			
3. Filing Date: 10/01/2015			
4. Issue of Frequency: Monthly			
5. Number of Issues Published Annually: 12			
6. Annual Subscription Price: Free to Qualified			
7. Complete Mailing Address of Known Office of Publication (Not Printer): GIE Media, Inc, 5811 Canal Rd Valley View, OH 44125			
8. Complete Mailing Address of Headquarters or General Business Office of Publication (Not Printer): GIE Media, Inc, 5811 Canal Rd Valley View, OH 44125			
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor - Publisher: Pat Jones, 5811 Canal Rd Valley View, OH 44125; Editor: Mike Zawacki, 5811 Canal Rd Valley View, OH 44125; Managing Editor: .			
10. Owner - Full name and complete mailing address: Christopher Foster & Richard J.W. Foster, Owner, 5811 Canal Rd, Valley View, OH 44125;			
11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None			
12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates) (Check one) The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes: N/A			
13. Publication Title: Golf Course Industry			
14. Issue Date for Circulation Data: Sept 2015		Average No. Copies Each Issue During Preceding 12 Months	
15. Extent and Nature of Circulation		No. Copies of Single Issue Published Nearest to Filing Date	
a. Total Number of Copies (Net press run)		18,107	
b. Legitimate Paid and/or Requested Distribution (By Mail and Outside the Mail)		13,207	
(1) Outside County Paid/Requested Mail Subscriptions stated on PS Form 3541. (Include direct written request from recipient, telemarketing and Internet requests from recipient, paid subscriptions including nominal rate subscriptions, employer requests, advertiser's proof copies, and exchange copies.)		12,983	
(2) In-County Paid/Requested Mail Subscriptions stated on PS Form 3541. (Include direct written request from recipient, telemarketing and Internet requests from recipient, paid subscriptions including nominal rate subscriptions, employer requests, advertiser's proof copies, and exchange copies.)		0	
(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid or Requested Distribution Outside USPS®		66	
(4) Requested Copies Distributed by Other Mail Classes Through the USPS (e.g. First-Class Mail®)		0	
c. Total Paid and/or Requested Distribution (Sum of 15b (1), (2), (3), and (4))		13,273	
d. Nonrequested Distribution (By Mail and Outside the Mail)		4,512	
(1) Outside County Nonrequested Copies Stated on PS Form 3541 (include Sample copies, Requests Over 3 years old, Requests induced by a Premium, Bulk Sales and Requests including Association Requests, Names obtained from Business Directories, Lists, and other sources)		4,658	
(2) In-County Nonrequested Copies Stated on PS Form 3541 (include Sample copies, Requests Over 3 years old, Requests induced by a Premium, Bulk Sales and Requests including Association Requests, Names obtained from Business Directories, Lists, and other sources)		0	
(3) Nonrequested Copies Distributed Through the USPS by Other Classes of Mail (e.g. First-Class Mail, Nonrequestor Copies mailed in excess of 10% Limit mailed at Standard Mail® or Package Services Rates)		0	
(4) Nonrequested Copies Distributed Outside the Mail (include Pickup Stands, Trade Shows, Showrooms and Other Sources)		177	
e. Total Nonrequested Distribution (Sum of 15d (1), (2), (3), and (4))		4,689	
f. Total Distribution (Sum of 15c and 15e)		17,962	
g. Copies not Distributed		145	
h. Total (Sum of 15f and g)		18,107	
i. Percent Paid and/or Requested Circulation (15c divided by 15f times 100)		73.89%	
16. Total circulation includes electronic copies. Report circulation on PS Form 3526-x worksheet		73.28%	
17. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the issue of this publication. November 2015			
18. Christina Warner, Audience Development Director Date 10/01/2015			
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GOLF COURSE INDUSTRY

Serving the Business of Golf Course Management

Vol. 27 No. 11

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MILLENNIAL ME



Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 216-393-0253.

Producing a brand-spanking-new issue of GCI every month (and cranking out a million words of online stuff in between editions) is obviously a team effort. I tend to get a lot of the credit but I actually do the least amount of work.

Mike Zawacki, Guy Cipriano, our awesome stable of columnists and a gaggle of expert freelancers do the heavy lifting on content, and then the fabulous Jim Blayney designs it all up into a beautiful package. Basically all I do is write a 700-word column, offer some opinions about story ideas and, of course, review the cover.

The cover of any magazine is essentially an advertisement for what's inside. It needs to demand the reader's attention and, in a handful of well-chosen words, give them a compelling reason to open it up and devour the whole thing. The cover has to answer the WIIFM question: *What's In It For Me* to read this?

You may not be able to judge a book by its cover but you sure as hell can judge a magazine by one. I'm proud of the way we do covers because they don't just help "tell and sell" the big story, they reflect our brand: edgy, fun and candid.

When I saw the early version of this month's "Millennials" cover, I thought it was pretty cool. We went back and forth a little about what picture to use and what the blurb would say, but I didn't see the final version with the "word cloud" that describes perceptions about millennials until the last minute. As I scanned it and read words like tech obsessed, cynical, immature, lazy and, of course, selfies, I came to a stunning realization:

I'm a 53-year-old millennial.

It actually explains a lot. For example, I have a relatively demanding job yet I'm constantly on social media. I tend to question everything anyone tries to tell me. Sarcasm is nearly always my first instinct (with narcissism coming in a close second). My iPhone, iPad and selfie stick are never out of reach. I have a chronic case of FOMO (fear of missing out) and I'm always on the lookout for the next trend. I also still dress like I'm 25 and continue to wear a '70s porn 'stache despite the fact that it looks goofy as hell. I'm a horrible procrastinator who will find any reason to avoid actual labor. Last, but not least, I carry around a stupid

e-cigarette/vaporizer thing despite the fact it makes me look like an aging hipster.

It's textbook Millennial stuff.

So, I feel qualified to offer you a little advice on how to manage millennials like me...

• *Don't think of us as lazy, think of us as "yet to be properly motivated."*

• *Remember that to us, being at work on time is merely a suggestion. We'll try but sometimes finishing binge-watching "Game of Thrones" is clearly more important than punching the clock.*

• *All that time we spend on Snapchat will actually benefit you because it improves the hand/eye coordination we need to cut cups.*

• *It's not that we don't like to work hard it's just that...wait, we actually don't like to work hard.*

• *Sure, we tend to give up and quit but we still get a participation trophy, right?*

“Create an environment that tells them WHY you're doing things but make it clear that the desired outcome is not optional even if they don't buy into the WHY.”

But seriously folks...the bottom line is that millennials need rules and consequences. Create an environment that tells them WHY you're doing things but make it clear that the desired outcome is not optional even if they don't buy into the WHY. Coach them around the edges and offer positive feedback constantly. That said, be quick and firm when you need to deal with problems. Give them a sense of ongoing achievement by charting what they accomplish (even if you can't increase their compensation) and rewarding them with attaboys. Finally, figure out their strengths and play to them. If you've got someone who can't handle running a crew, try moving them inside to set up your new software system.

We millennials are unquestionably a sharp pain in the caboose to manage. But, given the white-hot competition for good employees, we might be all you get. So deal with it, old dude, or you'll be doing it all yourself. **GCI**

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