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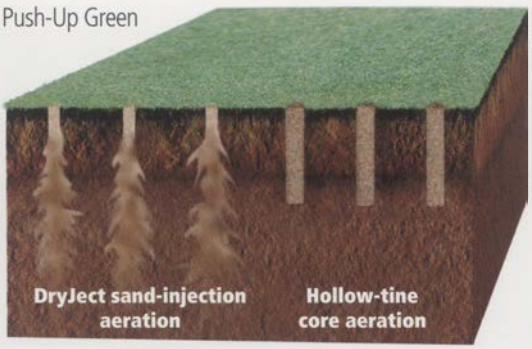
Study #1 Key Findings

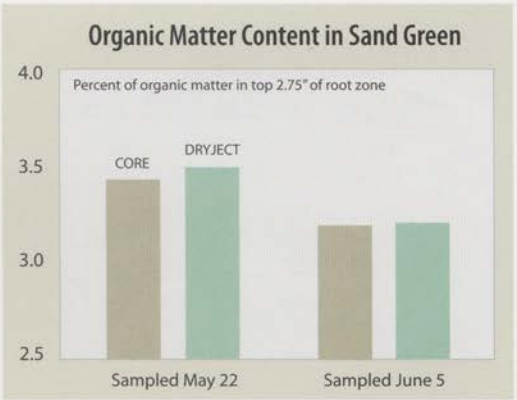
- **No significant difference in organic matter control between DryJect and core aeration**
- **Firmer surface with less root zone compaction below 2" depth**

Push-Up Green



3" x 2.5" spacing

2.5" x 2.5" spacing with standard .5" hollow tines



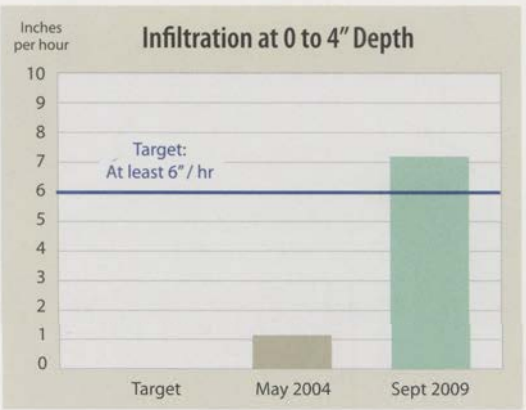
Organic Matter (report quote)

"There was no significant difference in organic matter control between DryJect and core aeration."

Research performed at North Olmsted Golf Club, North Olmsted, Ohio, Matt Welch Superintendent. Research conducted by Dr. Ed McCoy, Ohio State University.

Study #2 Key Findings

- **After a 5-year program, the DryJect-treated green shows greatly improved infiltration, air porosity and water retention**
- **A key variable in the improvements is the lower percentage of organic matter in the top 4"**



Infiltration Rate (report quote)

"Green #3's current infiltration rate at 7.04 in/hr, which has improved dramatically since 2004, is very good for a 1st tier (0-4 in.) of an older sand-based or push-up green."

Research performed from May 2004 to September 2009, at Philadelphia Country Club, Mike McNulty Superintendent. Research conducted by ISTRC.

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VOL. 28 NO. 4

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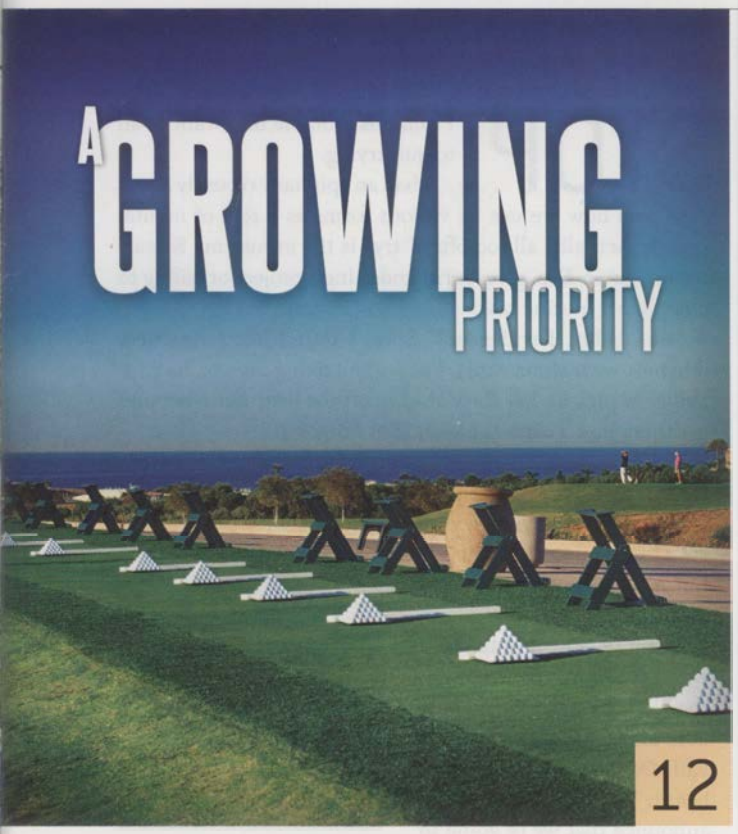
ON THE COVER
KemperSports provided this photo from The Crossings at Carlsbad (Calif.).



COLUMNS

DEPARTMENTS

FEATURES

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QUIT TRYING

STOP! From this moment on I want us all to quit trying.

I had an epiphany recently about "try" and how we use its various forms as a sort of mental crutch. Actually, all too often "try" is the excuse my 8-year-old daughter, Ella, gives for abandoning a project or failing to complete a routine task.

"But daddy, I triiieeeed!" Sure, I sound like a heartless (rhymes with shmastard), but we're talking about Ella's inability to pick up her dirty clothes off the bedroom floor and get them into a clothes basket. But I digress...

For a long time now I've been brewing some contempt for this word. It's so often used to placate anxiety, stress and fears: "Stop worrying, we've got a fifth option we can try..." But it's also a precursor to an eventual epic fail. For example, you're probably familiar with the phrase "gonna give it the old college try." And how does that ultimately work out? Fail. Or, how often have you heard: "Today, we're proud to announce that we're going to go in a different direction and try something new..." Let me enter this into the "BS-9000 phrase discombobulator.... "We've failed... Have no real idea what we're doing... and will most likely fail again."

Mike Zawacki
Editor

You see, that's the problem. Instead, I advocate a position with a wee bit more weight behind it... Let's not try. Let's be bold and unafraid and actually do something new.

So what does all of this have to do with providing optimal course conditions in a budget conscious, sustainable and environmentally responsible fashion? A lot, I'd argue. Let me explain.

Here's a great example. When a crisis rears its ugly head at your facility, who do people often turn to first? You, the superintendent. Why? Because the superintendent has all of the answers, or at least your colleagues and members believe that to be true. I'm certain this confidence stems from the fact that you've built a reputation as a professional troubleshooter. Give him a stick of chewing gum, a paperclip and 20 minutes, and he'll MacGyver a solution as to why the clubhouse fryer is broken. Heck, just look at those greens in this summer heat. That guy is a miracle worker... do whatever he says.

From a broader turf industry position, consider these three major issues facing golf that have consumed time and resources but, from all of the trying, produced few real results.

Water. How many times has "try" been associated with any number of proposed actions and programs bandied about as

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MESA METH-EX 40 expo

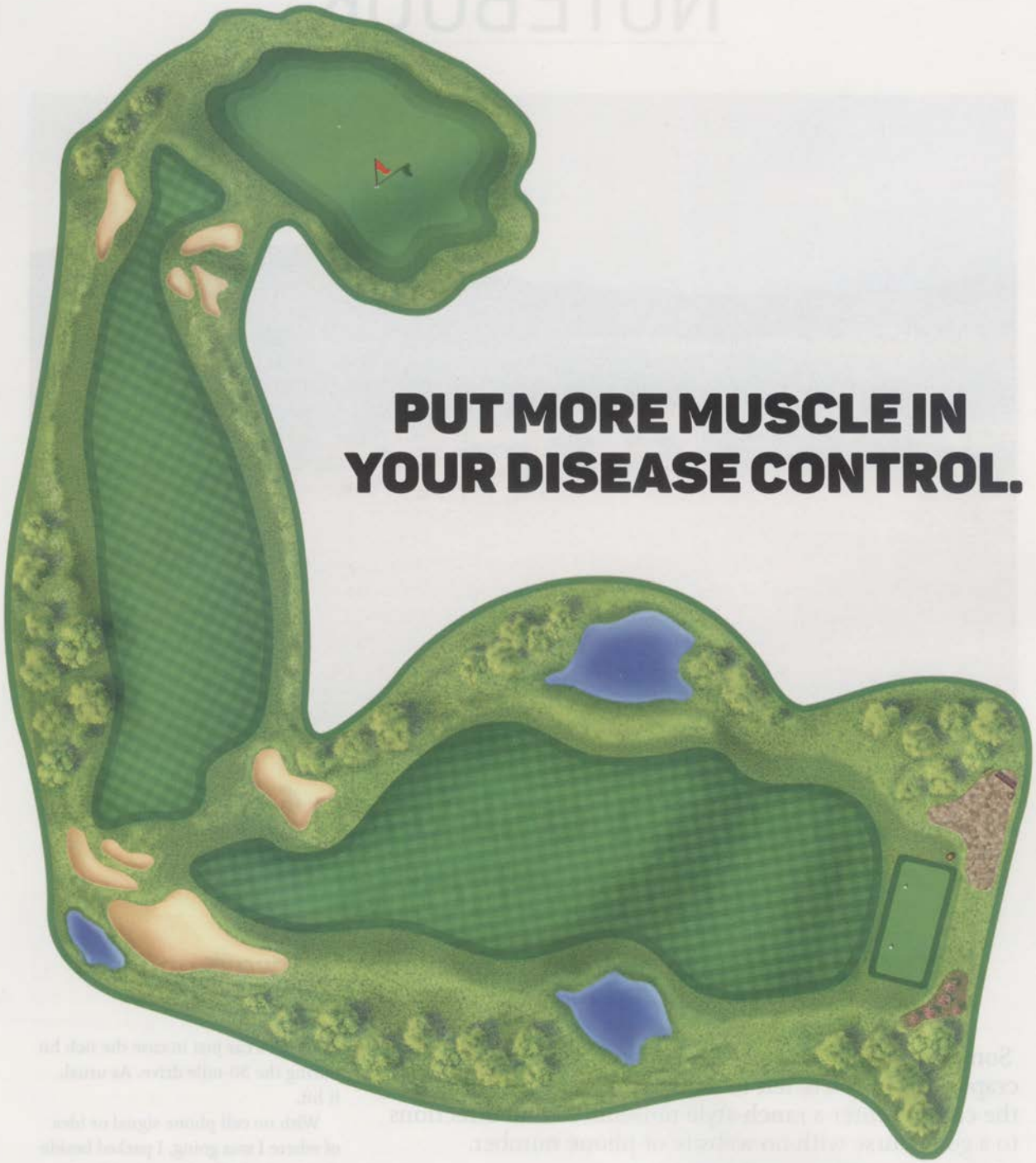
solutions to the water question that haunts the golf industry. Here's the sad but real truth: If the industry maintains its focus on trying to find a solution to the water question, and instead of better promoting the best practices already in play that show tangible results, then someone will legislate a remedy without regard to whether it's good for golf.

> "Let me enter this into the "BS-9000 phrase discombobulator: "We've failed... Have no real idea what we're doing... and will most likely fail again."

Labor. I often hear superintendents talk about how they're trying to better understand and relate to the generationals they work with, whether it's younger millennials or older Baby Boomers. Don't just try. Learn more about the topic of the multi-generational workforce. There are a number of great management books that provide clarity on this topic. Then engage your people one on one. Find out what their professional goals and expectations are, how they work best, and then match them up to the tasks that take advantage of their unique strengths. You can swap out "multi-generational" and easily apply this approach to "multi-cultural" and "new hires." Also, don't just try serving as a mentor to an up-and-comer. Do it, damn it.

Growing the game. We've really got to quit trying on this one. I'm talking about FootGolf, Frisbee golf and what have been touted as cure-alls for getting butts on greens. While these unique alt-golf programs get more people to use the golf course, they do nothing to put sticks into new hands. We need to quit trying to convince people that golf is a great way to spend four hours, and instead enact fundamental changes to foster the notion that there are two types of golf. One is traditional golf as we currently know it. The other is a game that is fundamentally golf, but isn't a stickler for all of the rules, embraces the forward tees, and provides an enjoyable and enriching group activity in less than four hours. If the industry achieves this simple philosophical shift, then there won't be people just trying golf. They'll embrace it.

Lastly, I'm not discouraging anyone from attempting to find new solutions to problems. Rather, I'm encouraging everyone in the noble pursuit of finding a better way to never give up on that mission. If we limit ourselves to trying, then we leave that window open to failure as a possible – and perhaps inevitable – outcome. **GCI**



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Worth asking for directions

GCI's Guy Cipriano explains why manicured fairways and tees aren't always required for a memorable golf experience.

Sometimes you visit a place where the cell phone signal craps out and you're left to do something crazy like park the car and enter a ranch-style museum to find directions to a golf course with no website or phone number.

Trona, Calif., qualifies as one of those places.

Never heard of Trona? You're in the majority.

Trona is a borax mining community about 30 miles southwest of Death Valley National Park. It surrounds a dry lake and boasts a restaurant, Family Dollar, post office, gas station, rail line and a high school that graduated 13 students last year yet still managed to field an eight-man football varsity team. The Trona Tornadoes compete on an all-dirt field.

Looking to squeeze in an outdoor experience during a niece and nephew's early afternoon naps, I left Ridgecrest, a High Desert community with a naval weapons station, and traveled along California State Route 178 toward Trona. A rigorous hike was the initial afternoon objective. But I remembered my brother-in-law telling me Trona might have a golf course. I threw the clubs in my sister's car just in case the itch hit during the 30-mile drive. As usual, it hit.

With no cell phone signal or idea of where I was going, I parked beside the Searles Valley Historical Society museum, studied the building and did something unusual: opened the door and asked actual people for directions. I was politely greeted by four women.

"Yes, there's a golf course here. It's past the high school three miles up the road" one said. *"But you need $5 to play it."*

I toured the nine-room museum, bought a sandstone coaster with a

© GUY CIPRIANO

The conditions and surroundings at Trona (Calif.) Golf Course offer stark contrasts to those found on the typical American course.

road sign reading "End of the World, 10 miles; Trona, 15 miles," thanked the ladies, two of whom were Midwest natives, and accelerated until seeing a faded sign for Trona Golf Course. A chain-linked fence with barbed wire across the top established a barrier between the course and parking lot. The doorknob on the front entrance was unlocked, and I gladly deposited $5 into a locked honor's box. It then took five minutes to find the first tee. Scorecards inside a mailbox beside the tee answered basic questions: Trona GC has 18 holes, plays to a par 72, and measures 6,217 yards from the back and 5,115 yards from the front tees.

The view from the first tee signified a golf experience as rugged – and unique – as the surrounding landscape. Teeing grounds are faded, synthetic mats. Fairways are a collection of rocks, dirt, sand, wildflowers, weeds and native plants. Spotting a green measuring no more than 10 yards by 10 yards when standing 349 yards away isn't easy and hitting driver isn't smart when a hole's routing is a bigger mystery than why 35-year-old men in Southern California brag about scoring tickets to a Justin Bieber concert.

A few notable sights rested to the left of the first tee, including maintenance equipment and a wire box with a Rain Bird logo. The equipment, which included a large tiller, tractor and push mower, looked museum-ready. The Rain Bird logo suggested some form of irrigation, something confirmed when I approached the first green and saw a mixture of grasses on the surface and a black hose off the side.

One hole down. So many questions to go. At this point, I was ready to end my vacation and start investigating. Yet I encountered a problem. I didn't see or hear one person in two hours on the grounds. I still can't find a phone number for the course.

California ranks second behind Florida in the U.S. with 902 golf facilities, according to the National Golf Foundation. It's a safe bet none of the other 901 facilities are like Trona GC. Tom Doak, Gil Hanse, and Bill Coore and Ben Crenshaw's "natural" creations are suburban compared to this place. Straight tee shots ricocheting off rocks, the threat of iron faces and shafts snapping on approach shots, putts rolling in myriad of directions, colorful weeds on collars and the "Caution Rattlesnakes" warning at the entrance are welcomed anomalies.

The ninth hole, which features an intimidating tee shot requiring a diagonal line to a narrow landing area, out of bounds on the left, a sandy depression filled with shrubs on the right, trees behind the green and mountain views, is the San Bernardino County version of The Road Hole. You exit the green and never forget what you experienced.

The back nine offered temptation, but family hours are commodities, especially when family lives 2,300 miles from your home. Golf courses like Trona GC are also commodities that provide recreational opportunities in unlikely places. The dry erase board on the clubhouse advertised a scramble with a potluck held in early March and urged customers to "Please, Please, Please" don't hit balls from the putting green.

Even people responsible for maintaining golf courses in remote places – whomever they might be in this case – must deal with knuckleheads.

From THE FEED

Practice facilities are the subject of our cover story (page 10). So where do these areas rank on superintendents' priority lists? And how much labor is devoted to maintaining them? Judging by our feed, providing quality practice surfaces is becoming an industry focus.

Bruce R. Williams
@brucewms1
The Practice Facility is the real 1st Tee. First impressions of a facility are lasting impressions!

Cody Beckley
@codyjbeckley
For public gc's it should be a high priority. My philosophy: good experience on my practice area = increase in casual rounds

John Gall
@GallJgall4
About 25 man hours per week including mowing, divots, bunker raking. Not including annual edging of bunkers.

Craig Watson
@cwatson323
Very important part of the day for members. Try to reflect the exact playing surfaces the members will see during their round.

Joe Hollis
@Turf_Joe32
High priority-besides walking to Club house it's a Member/Guests 1st impression for the day/17-24hrs/wk depending on season

Join the conversation on Twitter @GCIMagazine!

REPUTATION ENHANCING

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.

Superintendents are dedicated, selfless and smart. They're also sometimes misunderstood, not to mention underappreciated. Superintendents who want to improve the value and impact they have on their course or club can take four steps to increase their reputation and standing.

WORK FROM A PLAN THAT IS ALIGNED WITH THE CLUB'S STRATEGY

Whether your club is the fanciest private facility around or the most modest public course in the community, it must have a strategy for growth and success. And that strategy must be executed by following a plan. The strategy may be to invest in top agronomic practices to create the best-conditioned course in the area, or it may be to operate within a conservative budget to present above-average conditions and attract the value-conscious golfer. Both strategies are viable – the agronomic plan should be philosophically and financially aligned with the strategy.

Here are three examples for aligning your practices to plan:

- Cultural practices. Do your plans support the overall economic objective at your club for a break-even budget? If your course is an amenity at a resort or residential project, is it appealing to the untrained eye?
- Natural resource consumption. If the club's strategy is to grow membership by practicing environmental responsibility, is your agronomic plan clear on your methods and practices supporting consumption of natural resources? If your course is situated on property dedicated by strategic plan or zoning requirement to high environmental standards, use the Audubon International resource model as a guide for Audubon Sanctuary certification.
- High-volume rounds played. If your course seeks to accommodate high volume, explain how your practices maximize the number of playable days and hours for golfers.

ESTABLISH CLEAR-CUT AND MEASURABLE GOALS

Just as golfers know to post a score for each round, superintendents should tally their results for all to see. To do so, goals should be measurable – based on budgets, completion dates or rounds played. Set meaningful goals and post honest results. Most important, report to management how agronomic projects support its overall strategy.

EDUCATE YOUR STAFF AND YOUR GOLFERS

Typically, superintendents are the most educated scientists at their clubs and are experienced in formulating and executing scientific processes. The same rigor that goes into carefully evaluating new turf types and pesticide solutions is needed for educating and training staff about the importance of the goals and objectives that are driving your work.

Training should include the ability to answer FAQs in simple non-scientific terms that members and customers understand. Make sure staff and your golfers understand how deliberate your agronomic plan is and why it is critical to the long-term health of the course. Emphasize your conscientious use of water, pesticides and labor dollars. See that your golfers know that everything you do has a purpose.

COMMUNICATE THE BENEFITS

Communications is one of the toughest duties for golf course superintendents, but that doesn't mean you get a free pass on this critical responsibility. Bear in mind two important concepts used by communications experts:

Relationship marketing focuses on customer loyalty and long-term engagement rather than short-term goals, such as customer acquisition and individual sales. Develop meaningful relationships, so members and golfers understand how carefully you plan and how diligently your crew works. Conduct course walking tours, or host field days for interested members. Host "shop days" for children and let them sit on your maintenance equipment. You'll love the smiles.

Content marketing focuses on creating and using interesting, informative and relevant information to clearly defined audiences. For example, your target audience is golfers and, if you're successful, their friends. Your golfers want to know what you are doing to make the course better, more beautiful and more fun. Show them pictures of the course and your team at work, and help them understand how every task is designed to improve course conditions.

Plan, measure, educate and communicate. Then watch as your management, members and customers look at you and your staff with newfound appreciation. **GCI**

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AS GOLF EVOLVES, SMART FACILITIES ARE UPGRADING PRACTICE AREAS TO MEET NEW EXPECTATIONS AND STAY AHEAD OF THE CURVE.

Ground for practice in proximity to the clubhouse is one of the essentials of the modern golf course.

—*A.W. Tillinghast*

By **Guy Cipriano**

Not all Golden Age architects agreed with the designer of Baltusrol and Winged Foot.

Routings from America's first wave of notable golf course architects show holes bending in multiple directions with hazards and greens tucked in cozy locations. Even 90 years later, the plans click on numerous levels with one curious absence: many lack a practice facility or green beyond a sporadic "practice field" reference.

Longevity in the golf market requires giving customers what they want. Let's not snicker at the thought of golf courses without formal practice areas. Golfers who wanted to practice were once considered anomalies.

Today's golfers are different. Leaving work at 1 p.m. to play a five-hour round and then sipping on scotch in the grille room until 8 p.m. means missing 62 emails, neglecting two children who need rides to and from lacrosse practice, and making a sixth trip in three days to a food pickup curb.

When they do pull into the country club parking lot, 21st century golfers want to walk 30 seconds and hit 55 full shots and 22 bump-and-runs on surfaces resembling those on the course. And when they finally make it to the course, they are playing a format representing an afterthought for Golden Age architects.

"I read it as going from a match play game to a medal score," architect Tim Liddy says. "You go to the

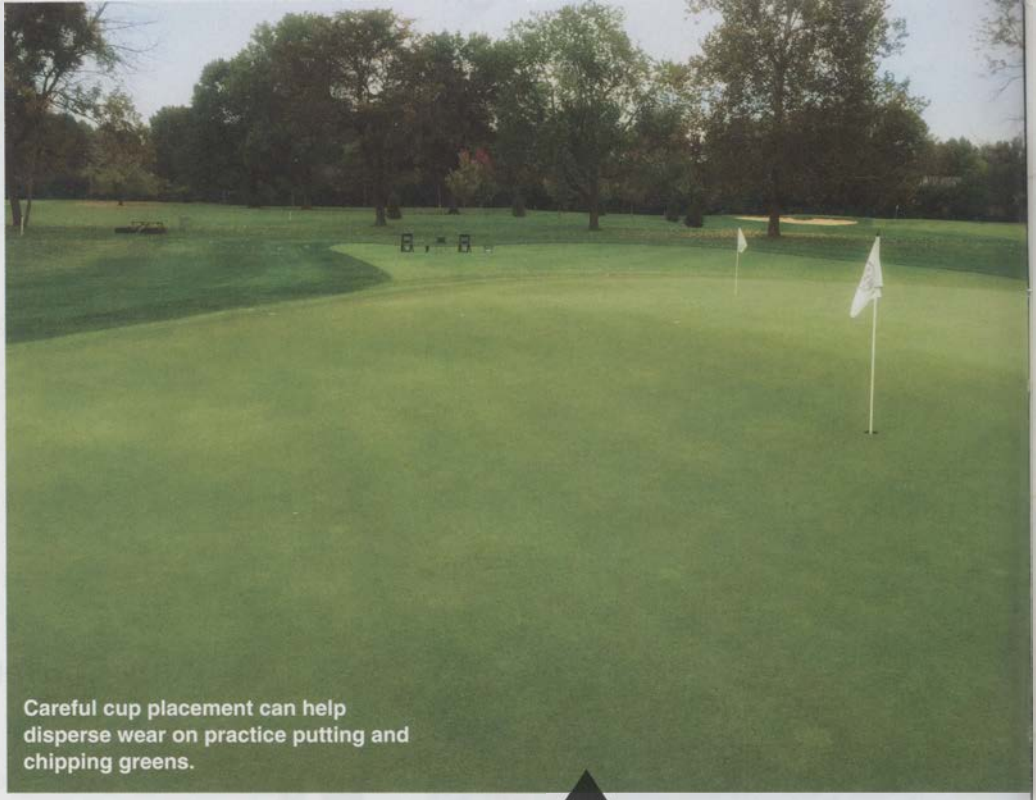
great, old classic courses ... the practice area was just a third of an old polo field because all they were doing was warming up. But now with the medal score, you have to be ready on the first tee. I would say if we were playing more match play golf, everybody would have more fun."

Unless the USGA, R&A and PGA combine to make the most sweeping philosophical changes in modern golf history, stroke play isn't going anywhere. Time-deficient golfers are also here to stay. This means people like Bluejack National director of agronomy Eric Bauer aren't outliers for suggesting the practice tee plays a bigger role than the first tee in shaping perceptions.

"Nobody plays the golf course first," he says. "Where do they walk? They walk from the golf shop to the practice tee. Unfortunately, it's just one of those things when resources are tough, I think everybody goes to that first and cuts back from there."

FINDING SPACE

After three decades in the business and stints growing in multiple Texas courses, Bauer has landed at a club creating a model for attracting new golfers. The owners of Bluejack National, a new development 50 miles northwest of Houston, are making practice areas a priority. In addition to a regulation course, Bluejack National includes a 10-hole course called "The Playgrounds" with holes ranging from 53 to 102 yards. "The Playgrounds" serves dual purposes, providing a genial environment for beginners, juniors and high-handicappers, and an area for low-handicappers to hone their short games.



Careful cup placement can help disperse wear on practice putting and chipping greens.

WHAT ABOUT THE PUTTING GREEN?

The tee isn't the only part of a practice facility where a lack of space can cause major problems. Practice putting greens also present high-use, low-space dilemmas for superintendents.

"We really try to emulate what's on the golf course," Bluejack National director of agronomy Eric Bauer says. "It's very hard to do because you are concentrating so much more traffic."

Bluejack National is still in its infant ages, but Bauer says he's protected practice putting greens at previous stops by reducing the amount of cups or even using stakes as location markers. The stakes can easily be moved throughout the day without compromising what Bauer considers the primary goal of a practice green.

"I look at the putting green not as a way to see the ball go in the hole, but for you to judge the trueness of the greens," he says. "I hope our members and guests really look at like, 'OK, I'm going on the putting green not to see how many putts go in a cup, but to judge and gauge how true the greens are rolling and how fast the greens are rolling that day. For me, it's more about trying to give somebody that and not an area where they are always going to walk to this cup or that cup or this, that and the other."

Double Eagle Golf Club superintendent Todd Voss closely monitors the play schedule to determine where to cut cups on the practice green. If Voss notices a slow week, the crew will cut cups on the outside of the green, dispersing traffic to areas that receive less wear.

The emphasis on practice facilities often depends on the architect, Bauer says. Bluejack National architect Tiger Woods has at least one design philosophy similar to Jack Nicklaus, the architect Bauer worked with at The Club at Carlton Woods and Spring Creek Ranch. Woods and Nicklaus aren't afraid to sacrifice land to craft elite practice facilities. Both legends made exhaustive practice staples of their routines during the primes of their respective careers. Golfers who want to emulate their favorite players pump millions into the golf economy.

But it's tough to practice like a pro without space. Meeting today's demands requires at least one acre of tee space per 18 holes, Liddy says. "That's kind of a minimum," he adds "Anything more than that everybody appreciates, from the superintendent to the membership to the golf pro."

Double Eagle Golf Club superintendent Todd Voss compares practice areas to storage space inside a house.

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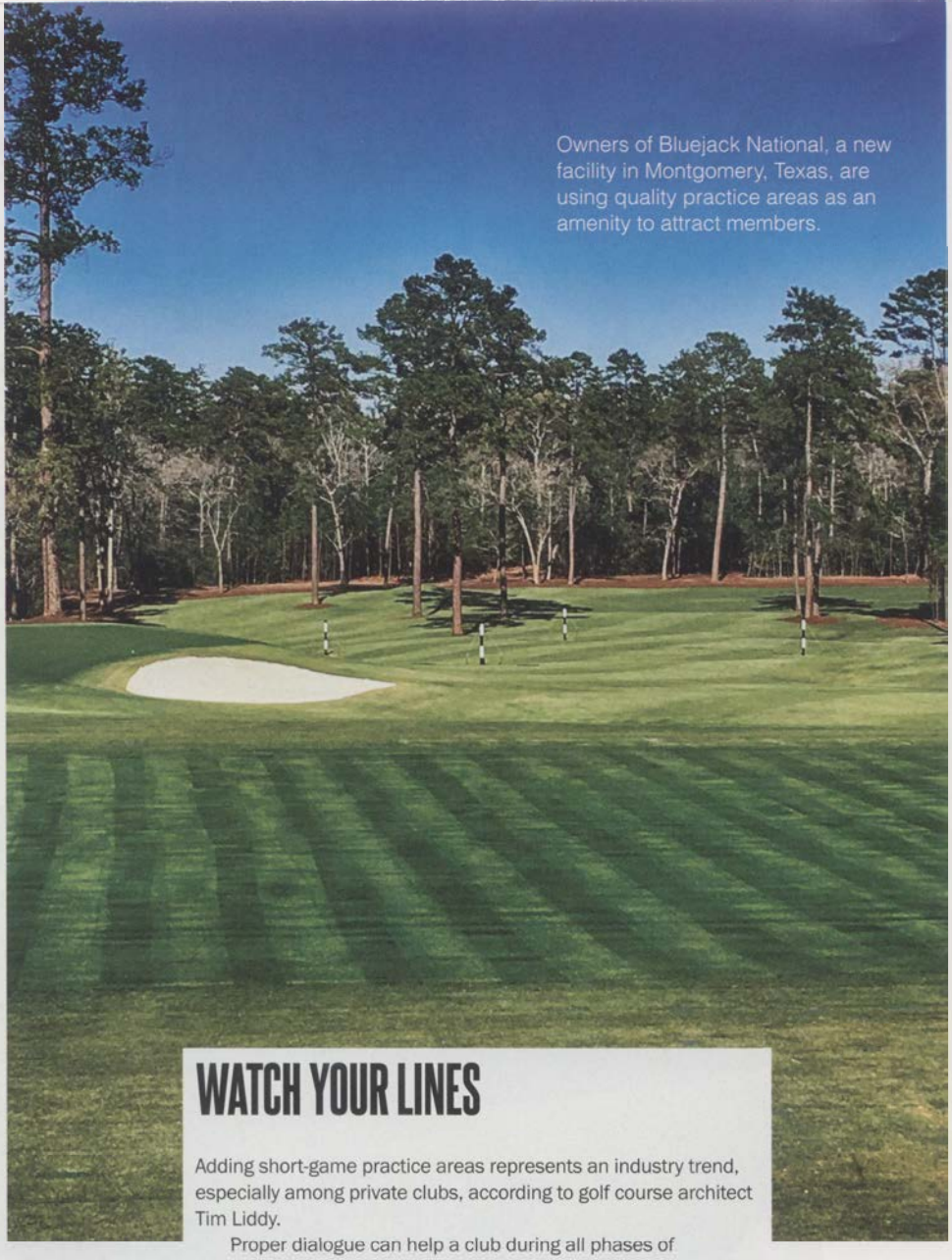

Owners of Bluejack National, a new facility in Montgomery, Texas, are using quality practice areas as an amenity to attract members.

No matter how much square footage you appear to have, it's never enough, albeit with one big difference – practice areas are the front lawn or foyer of a golf course.

"You used to go out and swing five times to get warmed up," Voss says. "People now swing for hours and they want to practice on the same type of conditions that are on the golf course. They don't want to hit off a beat-up area. They want to hit off a nice, clean area that they can beat up. We have in the golf industry beat our head against the wall with the PGA on the proper way of creating and filling divots. But the bottom line is that more space has to be dedicated to practice facilities. I'm not just talking about the practice tee itself, but the whole area."

Double Eagle, an elite private club 30 miles north Columbus, Ohio, has a three-tier practice tee, with the third deck being constructed a decade ago after the club determined it needed for space for members. Plans are being concocted for new short-game areas.

WATCH YOUR LINES

Adding short-game practice areas represents an industry trend, especially among private clubs, according to golf course architect Tim Liddy.

Proper dialogue can help a club during all phases of construction. Before construction, Liddy consults with the teaching pro. Practice areas, after all, are his or her office, and the pro understands the needs of a membership. Those needs are often shaped by the quality of short games members see on television. "I think what everyone sees is how good the top players are on Tour and the short game separates them from others," Liddy says.

If the budget permits, Liddy recommends constructing practice greens to USGA specifications and maintaining them with the same tactics on the course. Liddy adds it's important for the superintendent and crew to understand the role mowing lines play in a practice area.

"Visually, if I am doing these pitching greens, you want them to look like they are going right to left or left to right," he says. "The grassing lines really support that. They are turning one way or another. The superintendent has to understand that."

MAINTENANCE STRATEGIES

Double Eagle members expect to hit off the same surfaces as the ones on the course, so the practice tee features bentgrass, which is slower to recover from wear than ryegrass. A rotation has been established among the three tiers – a different tier is used each week – to aid recovery. Other recovery-boosting tactics include mowing the bentgrass at a height slightly higher than the cut on the course and an additional light fertilizer application to promote growth.

Budgeting for practice areas is completed on a per-acre basis "to make sure the range is getting the same type of maintenance as the rest of the golf course," Voss says. Double Eagle devotes four hours of labor per day to practice areas, according to Voss.

Some courses have established positions dedicated to practice facility maintenance, but Bauer determines his budget based on needs per acre. He considers the practice tee, which at Bluejack National means 1½ acres of zoysiagrass, and practice greens like a 19th hole for budget purposes.

"Everything I look at is always cost per acre or jobs per acre," he says. "So if you are going to give me 130 acres, including the practice area, I'm going to justify my staff based on that acreage. If you start separating out the practice facility, it's easy for management to go, 'You

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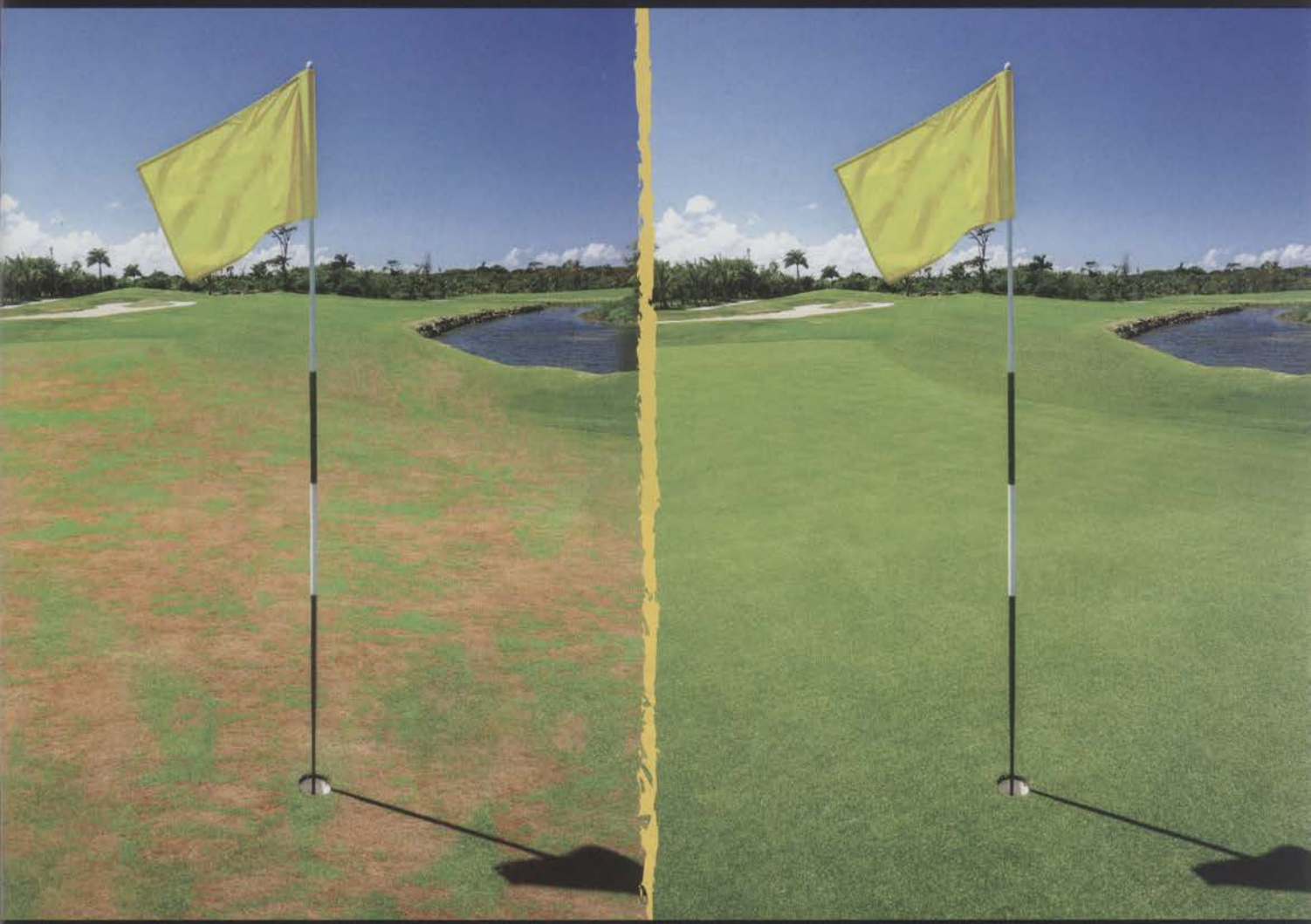

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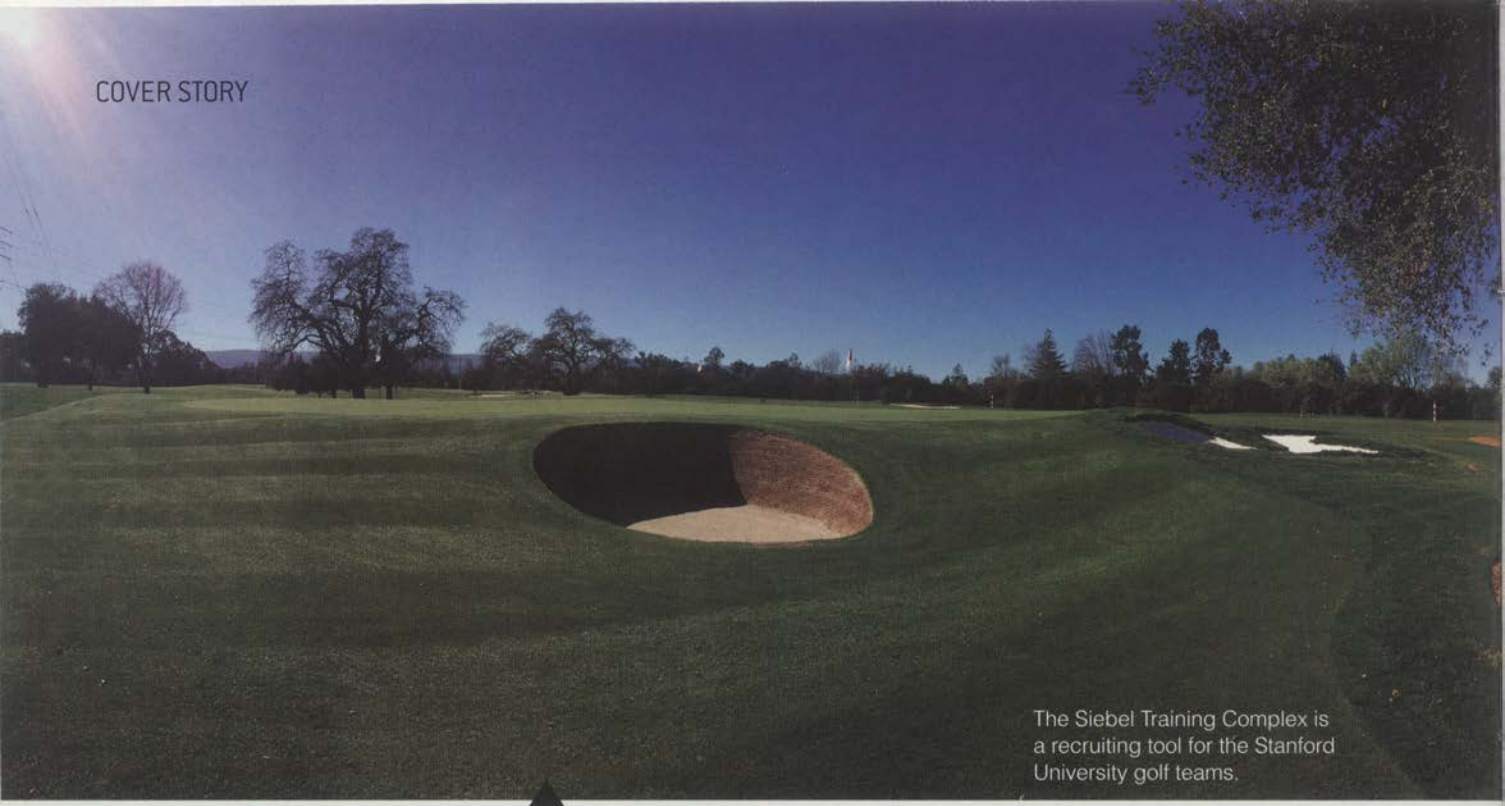

The Siebel Training Complex is a recruiting tool for the Stanford University golf teams.

SILICON VALLEY SERENITY

One of the most exclusive practice facilities in America caters to 18- to 22-year-olds – and it's shrinking.

Stanford University's Siebel Training Complex Opened in 2008 and members of the golf teams and project donors are the only people permitted to use the facility. The complex included 30 acres of pristine practice area, but that total has decreased because the university needed a third of the land to construct a state-of-the-art campus energy facility.

Enter Siebel 2.0. The renovation of the practice facility started in November 2014 and has entered the final phases. The facility includes north- and south-face hitting surfaces, six green complexes and a 18,000-square foot putting green. Robert Trent Jones II designed Siebel 1.0, while Jay Blasi created a plan for the updated version.

Siebel symbolizes the increasing emphasis major college athletic programs are placing on constructing elite facilities. Stanford golf coaches Conrad Ray and Anne Walker train golfers in a complex so specialized that right-to-left and left-to-right shots can be practiced around trees.

Creating optimal practice conditions requires meticulous maintenance, and Stanford University Golf Course assistant superintendent Dan James oversees the conditioning of Siebel 2.0. James arrived at Stanford last year and quickly learned his new job contrasted other industry positions because college golfers aren't on campus during the summer.

"I have worked on golf courses pretty much all my life," he says. "It's like you know summer is your high time with tons of tournaments. You get ready for a grind. Well, from about Father's Day until Labor Day we are dead, but you still have to make everything perfect. It's this weird feeling. It's probably how some of these guys who work at these ultra-exclusive courses feel. You still work hard. I have a three-man crew and they bust it every single day, and it's weird that you bust it and everything looks perfect and not one person visits the entire day."

The people who visit Siebel are some of the world's most talented non-professional golfers along with some of the world's richest people. But James doesn't encounter the same problems as many other superintendents because he says the golfers and donors are meticulous about repairing divots and fixing ballmarks.

Four new greens, though, could produce challenges because they support varieties of bentgrass developed to withstand frequent wear.

"I'm going to be doing a little more rolling," he says. "A lot of these bents are bred to be walked on by 30,000, 40,000 people a year. Some of these greens will get very little to no use and little to very little foot traffic besides my guys walking on them. I'm going to make sure to buy a heavier roller to give the thatch a little bit of beating because that's what these greens need and we're not an 18-hole facility."

James, who works closely with longtime Stanford University Golf Course superintendent Ken Williams, is creating an agronomic program based around the varsity golf schedule. When the teams are out of town, he will schedule aerification and venting. When the teams are preparing for events, he will delay cultural practice such as topdressing.

Eight inches of sand and what James describes as "miles of drainage" rest below the surface. In its pre-golf existence, the land served as a waystation for dirt hauled from various campus construction projects. Shaper Doug Ingram has moved land for both versions of Siebel.

"He made miracles with this dirt, creating and recreating this facility," James says. "When you are out there, you wouldn't believe what it was and what it has become."

know what, you don't need those two guys anymore. Make it work.'"

Turf conditions on the Bluejack National practice tee and greens mirror those on the regulation course, although Bauer makes adaptations to account for wear. "Whatever I'm doing to those fairways, I'm doing to the practice tee," he says. "I would be leaning toward more nitrogen or more nutrient input to kind of have recovery expedited rather than relying on my normal fertility program for say the fairways, where you are not beating up a specific area as much."

Filling divots daily is a labor-intensive process, but one that can extend the life of a range. "If you don't, probably in a year's time you are going to have a very unlevel and uneven tee," Bauer says. "You are probably going to be spending more dollars and taking the tee out of play if you don't do that simple practice of topdressing your old divots on a regular basis." Bauer also recommends adding organic material such as peat moss to a sand-divot mix to enhance the quality of the hitting surface.

Superintendent Scot Dey refers to the overseeded Bermudagrass practice tee at Mission Viejo (Calif.) Country Club as the "deck," and he learned a structural lesson when resurfacing the club's 1-acre surface last year. After the surface was stripped, Dey noticed large concentrations of sand gathered at the middle of the "deck," a sign he needed to work with the golf staff to improve traffic distribution on the tee.

"We developed a plan to go left to right, then back, then right to left and work it back and forth rather than allowing them to hit out of the middle the whole time," Dey says. "You really have to take control of it in a way. It's like the exit and entrance posts into a fairway. Not all golfers are going to follow them, but you can get a percentage of them to follow and they are going to go where you lead them. As a superintendent, it's the same as managing that surface."

Dey considers "flexibility" a critical element to properly managing practice surfaces. Part of the flexibility at Mission Viejo CC includes a synthetic strip across the back, which protects the tee from poor weather and the extra traffic generated by outside events.

The Mission Viejo CC crew mows the entire "deck" each Monday and returns Thursday to mow three strips. Dey says, "I could probably always want to devote more time to it, but there's a balance in what you are able to pull off."

More time, space and resources needed for practice areas. That's a 21st century problem few Golden Agers imagined. **GCI**

Guy Cipriano is GCI's assistant editor.

GOLF ANNOUNCERS – SUPER FRIENDS!

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.

About the last thing I remind my wife to do as I head out to the Masters Tournament each year (in my Ford F-150 pickup) is, "don't forget to set the DVR. I want to hear Jim Nantz's call of the Masters when I get home." So I drive to Augusta, watch the tournament on the most beautiful course in the world, drive home and watch the Masters from start to finish. The reason? There is nothing more soothing in sports than listening to Jim's deep and calm voice making the perfect call of a golf tournament.

"Hello, Friends. Welcome to the Masters." Thanks to the GCSAA, I had a chance to meet Jim and walk through the GIS equipment displays for a while with him. He would take two steps and somebody would want to shake his hand and offer a few words. Still, it was wonderful. I saw him after that at one of the majors, in the merchandise tent, signing his new book. I think I was the first in line.

I have had the pleasure and honor of meeting quite a number of golf announcers and commentators at GCSAA events. To a person, all have been supportive of superintendents, both on a personal basis and on the air during their broadcasts.

Two great announcers I didn't get to meet but was able to listen to "live" were Jim McKay and Chris Schenkel. They were speakers at a GCSAA conference and both were knowledgeable about golf. Schenkel had the better voice, but McKay's fame was wider because of his Olympic reporting over his career. They had what all other golf announcers seem to have – the ability to accurately report with a minimum of words.

It was probably in the mid-1980s when I had a 10-minute, one-on-one visit with Pat Summerall. GCSAA had started a competition among chapter publications and ours was a winner. The award was presented at an opening session, one that featured Summerall as the speaker. I reported to the "ready room" and was the first to arrive. Almost immediately Pat came in and greeted me, wondering if he was in the right place. We each poured a cup of coffee and chatted for about 10 minutes before anyone else arrived. A lot of the conversation was about Vince Lombardi; he had been an assistant coach for the New York Giants while Pat was a defensive back for Vince's defense. It was really fun, and he was as common as a man could be. He was an excellent golf announcer.

I talked to Peter Jacobsen a couple of times, again at conference. The first time was memorable because he donated his speaking fee – I seem to recall it was about $30,000 – back to the GCSAA for golf turf research. The second time was in another ready room a number of years later. He was the same friendly salt-of-the-earth guy. Cheryl was with me and we were both delighted he knew of our son-in-law who was playing the Nationwide Tour at the time. Peter continues even these days as a well-spoken golf commentator who we can call a strong supporter of golf course superintendents.

Andy North is one of the best golf observers on television today. He has spent most of his life in our town, and was a young junior golfer at the course in our city for the first three years I worked on that golf course. So I have watched him play for 50 years! He is another one who fully appreciates golf course superintendents and isn't bashful about saying so. He counts a number of our colleagues as friends. Andy was the luncheon speaker one year at our annual Wisconsin Golf Turf Symposium. That same year Ted Woehrle had come over to Milwaukee from Oakland Hills CC in Detroit. Andy spied Ted in the audience and after his talk. He went right over to Ted's table, shook hands and had a visit with him. North won the 1985 U.S. Open on OHCC's South Course.

Steve Mona did me a big favor one year and told me where to meet him after breakfast. He was hosting Johnny Miller as a keynote speaker and I was hoping to get my two books that Miller had authored signed by him. We met at the assigned time and place. Johnny found a place to sit and he spent a bit of time chatting with me about golf as he signed my books. He's another who announces golf with a lot of expertise and some brutal honesty and who has been at it for many years. I loved meeting and talking with him.

I got lucky at the 1997 GCSAA conference and show. An invitation came my way to attend a corporate reception with a special guest – the 1997 Old Tom Morris Award winner Ken Venturi. He was in his prime as a golf announcer, and we each received a copy of his newest book.

(MILLER *continues on page 63)*

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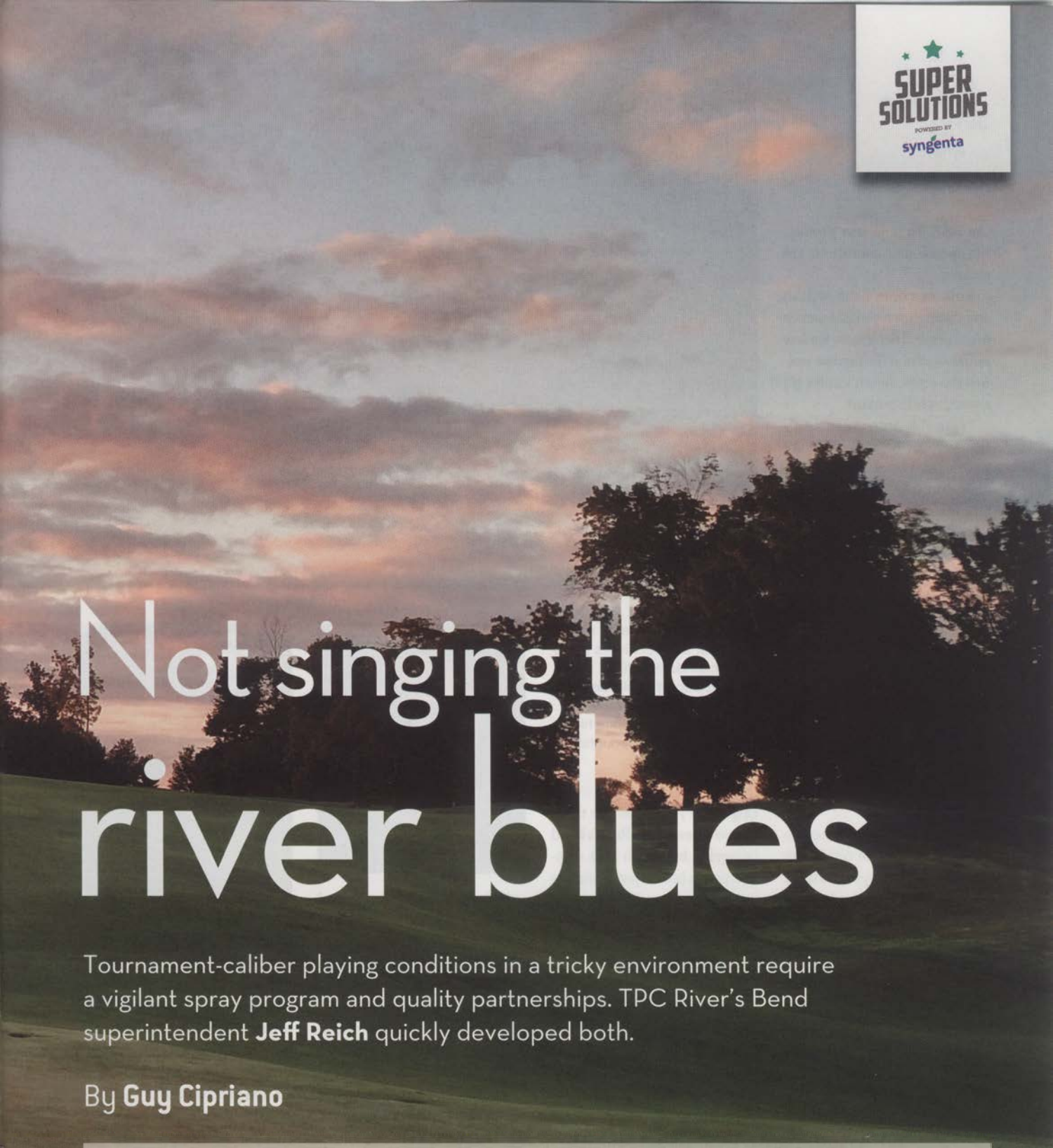

Not singing the river blues

Tournament-caliber playing conditions in a tricky environment require a vigilant spray program and quality partnerships. TPC River's Bend superintendent **Jeff Reich** quickly developed both.

By **Guy Cipriano**

Maintaining a golf course perched above a body of water in a notoriously sultry region is a taxing endeavor once summer arrives.

To let bodies and minds drift from their work at TPC River's Bend, superintendent Jeff Reich organizes a staff canoe trip each July on the Little Miami River, a scenic waterway flowing below the 200-acre Mainville, Ohio, property. The trip and ensuing cookout offers separation from the unavoidable.

Summer respites are rare at TPC River's Bend, a PGA Tour-owned facility 25 miles north of downtown Cincinnati. The course resides in a sweltering part of Ohio. Neither the turfgrass variety nor the facility's mission statement offer relief. The greens, tees and fairways are bentgrass; the association with

the PGA Tour means producing spectacular conditions are a must.

Solaces come from within and through savvy maintenance practices and decisions. If a few hours on the river further unifies the crew, Reich knows it's a worthwhile pursuit.

"Late July into August, it's heavy golf," he says. "We are not focused on things like getting drainage projects done. Our main focus is survival. The guys that have been here for a long time really help with new staff. They understand this is the go time. It's kind of built into them. We try to gear them up and keep them happy."

Turfgrass has been known to struggle for unexplainable reasons in southern Ohio, a far different climate than the one Reich experienced growing up in Minnesota. In fact, he defines it as "a petri dish" come summer.

"June and July you have a pretty good handle on it," he adds. "You feel good about yourself, everything looks good and then August hits, and it's oppressive heat and humidity. The nighttime temps can stay in the high-70s to low-80s overnight with the humidity. The disease pressure doesn't stop, whereas, in Minnesota and other northern areas you have those cooler nights. You can have a couple of days like that here, but [the disease pressure is] just constant from the middle of July to mid-August and early September. It's just unrelenting.'"

The diseases Reich encounters comprise a list of everything turfgrass pathologists warn superintendents to guard against. He considers dollar spot, fairy ring and *Pythium* as the three biggest threats TPC River's Bend bentgrass, but Reich adds summer patch, brown patch and anthracnose are capable of causing problems.

Jeff Reich, a Minnesota native, took over as TPC River's Bend superintendent in 2014. He has developed a reliable spray program to ensure turf remains healthy despite high disease pressure throughout the summer.

Providing TPC-level playing conditions requires a preventative approach to managing diseases using a spray program beginning in mid-March and ending in October. Applications to greens are made every seven days; tees and fairways every 14.

Syngenta products, including Secure and Daconil Action, are staples of Reich's rotation. Secure is a multi-site contact fungicide with fluazinam as its active ingredient. Daconil Action combines chlorothalonil with acibenzolar-S-methyl, which triggers a plant's natural defense response.

"We try to keep it simple and don't try to get too convoluted," Reich says. "We rotate Secure and Daconil Action. We will go with Secure a couple of times in the spring and then switch over to Daconil Action when the dollar spot pressure is high, and then rotate between Secure and Daconil Action and sometimes rotate those two for dollar spot and brown patch."

Staying ahead of dollar spot is critical because the disease causes gruesome sights. By using Secure and Daconil Action, Reich avoids the dollar spot resistance issues that can perplex Cincinnati-area superintendents. Cutting DMI fungicides from the rotation also allows

Reich to keep tidy bentgrass. Few superintendents in the region are managing as much bentgrass as Reich. TPC River's Bend fairways are 40 acres, tees six and greens four.

"The dollar spot we have here vs. what I have seen in Minnesota will rip through the crown and deplete the turf," he says. "If you let it get out of hand, you will be fighting it all summer, even all year long. It's hard to get control back if you have bentgrass in our area. Our scouting each day is huge and just knocking the dew off.

© TPC RIVER'S BEND

Preventatively we knock the dew off every day. The dew out here ... I don't even know what a dry mow is anymore."

Keeping *Poa annua* from encroaching into the bentgrass is another goal Reich has established, because he says the membership wants a "lean, mean and fast" golf course. Reich uses the Plant Growth Regulator (PGR) Trimmit to suppress *Poa annua* plants and encourage bentgrass to take over on key parts of the course.

Instead of dabbling with products from multiple manufacturers, Reich turns to a small group he trusts. His local Syngenta representative Gregg Schaner provides what Reich calls a "realistic approach" to solving problems. He also has worked with Syngenta's Walt Osborne, Dr. Lane Tredway and Dr. Mike Agnew.

"I think guys can get caught up in what they call, 'spreading the wealth around to different salesmen,'" Reich says. "But I think what you are doing is not only robbing yourself of time, but robbing the company of time and not focusing in on finding a central person who has great knowledge, such as a Gregg Schaner."

Establishing test plots for new products provides further opportunities for Reich to strengthen relationships with suppliers. Reich doesn't swtich to new products immediately, but he says he tries to "stay on top of the curve" because he wants to continue finding proactive ways to help TPC River's Bend maintain its reputation as one of Cincinnati's top clubs.

Osborne, Syngenta's Key Account Manager, works closely with the TPC network. Regular communication with superintendents like Reich helps Syngenta understand what concerns might be looming.

"When it comes to the new product development, we listen," Osborne says. "It's one of the advantages of our structure. With experienced territory managers and the strong support of our channel partners, we can make a difference. That communication flow helps us anticipate challenges and really focus our efforts on particular issues so we can come up with solutions."

Opened in 2002 and designed by Arnold Palmer, TPC River's Bend was created to service players on the PGA Tour and associated professional circuits. The club hosted the Champions Tour's Kroger Classic (2002-04) and the Web.com Tour's Chiquita Classic (2010-11), and Reich says the course is ready to host another professional tournament.

TPC River's Bend is one of 36 TPC facilities, and Reich exchanges information with other superintendents in the network, including TPC Potomac's Stephen Britton and TPC Jasna Polana's Tim Connolly, who maintain courses with similar growing conditions. PGA Tour agronomists Dennis Ingram and Collier Miller are also available to provide support.

"We are very proud we are the PGA Tour," Reich says. "I can't emphasize that enough. I'm proud to work with them. They do it the right way, they want to do it the right way and they support you. They give you the tools. It's not just a company trying to do it the cheapest way possible. They give us the resources to do it right. That's why I came here."

Osborne has conducted seminars with TPC superintendents and agronomists. Feedback from those seminars allows Syngenta to develop solutions to help facilities associated with the PGA Tour meet lofty expectations. "Expectations are high, but meeting expectations is part of the challenge and also the fulfillment of doing a good job," Osborne says. "People can come and play the course. Whether it's the public, a member or a guest, they get to enjoy tour-like conditions on a special golf course they get to play."

Managing a PGA Tour-owned golf course in southern Ohio wasn't on Reich's radar as a teenager. Unsure of the proper career path following high school, he took a series of tests proctored by a vocational psychologist. The tests revealed multiple careers matching Reich's interests – including groundskeeper. Once Reich started reflecting, the match made sense. Reich mowed lawns and enjoyed the interactions with homeowners who used his services. He earned a turf degree at nearby University of Minnesota and launched his career at the PGA Tour-designed course and The First Tee facility at the National Sports Center in Blaine, Minn.

Stints at TPC Treviso Bay and TPC Sawgrass, a pair of Florida facilities, entrenched Reich in the TPC Network. He was then brought to TPC River's Bend for a 1 ½ year of grooming under Dave Faucher, the respected superintendent he succeeded in 2014. Working with Faucher introduced Reich to a region unlike anything he has experienced. It's a region where providing tournament-caliber playing conditions throughout summer brings incredible satisfaction.

"I would say it's as fulfilling as getting your diploma," he says. "It's four years jammed into six months of non-stop running. It feels good when you are through that last aerification of the year and you can take a sigh of relief and say, 'We did it again.' It's all about we. There's no me in this at all. These guys make me look good and they appreciate it, and we really try to make it all about them." **GCI**

IF YOU COULD BUILD YOUR PERFECT MAINTENANCE FACILITY...

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

Rarely do discussions about upgrades at golf clubs touch on the maintenance facility. Members and committees are happy to talk about investing millions of dollars in the swimming pool, locker rooms, even the parking lot. But the "barn?"

Is the clubhouse more important than the maintenance building? Perhaps, if the club is mostly used for socializing and dining. But what brings members and guests to most clubs is the golf course. And numerous studies have shown conditioning is the most memorable aspect of a golf course.

If the clubhouse burns down, everyone likely can keep playing golf and the maintenance level won't drop. But if the barn burns down? The club's principal attribute – and money-maker – is sure to suffer.

Let's say you work for a club that takes the long view and understands the importance of you, your staff, your equipment and your dedication. And let's say the powers that be finally notice that the maintenance shed really is a shed and that it's time for an improvement. What should you ask for?

I'm not saying you want a facility like what they've got at Augusta National, Baltusrol, Merion, Oakmont and those other clubs that regard their course's conditioning as next to godliness. But there is a lot to take away from what those and others have done, and not every suggestion costs money. Even clubs with modest budgets can get more than they think with some planning and precision.

So if you ever get the opportunity to remodel your maintenance facility – or better yet, build a new one – here are a few ideas that will leave the "barn" to the cows.

LOCATION

Just as with any real estate, location is everything.

- The facility should be seen but not heard. Actually, it's better if it isn't visible from the clubhouse or anywhere on the course. It shouldn't affect play in any way.
- Of course, the compound needs to be easily accessible from major roads for staff, deliveries, equipment flow and member access, but without crossing the course.
- Locate the building on high ground and, if possible, not near a water feature.

CURB APPEAL

- The building and its surroundings should present a professional atmosphere: clean, welcoming, with appropriate and tasteful signage, and with ample parking clearly marked for guests and staff.
- A neat, clean reception area, with someone there to welcome guests. Ideally, that person would expect the guest's arrival and offer a refreshment.
- The artwork on the walls should relate to golf or your course.

FACILITY DESIGN

If your club has a unique design or other feature (say it really is/was a horse barn), use that to make the building more attractive and interesting. I've seen clubs refurbish or restore old barns, houses or other structures to create maintenance facilities and offices with character.

- Incorporate traditional features for offices, storage and housing.
- The facility is an office, so be sure it has good, smart routing to facilitate the comings and goings of people and equipment.
- Consider adding dormitory space to provide affordable housing for interns or second/third assistants who can't afford the cost of living in your area.
- It's a little more expensive, but consider heated floors. They keep the building warm and the feet comfortable.

ENVIRONMENT AND SUSTAINABILITY

- Be sure your facility complies with all permitting and restrictions and is environmentally friendly.
- From wash racks to chemical storage, low-watt lighting to pesticide loading and waste-product discharge, account for all these requirements in the planning process. That includes checking on applicable government regulations beforehand.
- Recycle.

ON-COURSE EQUIPMENT REPAIR AND TECHNICIAN SUPPORT

- Plan for an equipment work station and organization.
- There must be Internet access.

(MORAGHAN *continues on page 64)*

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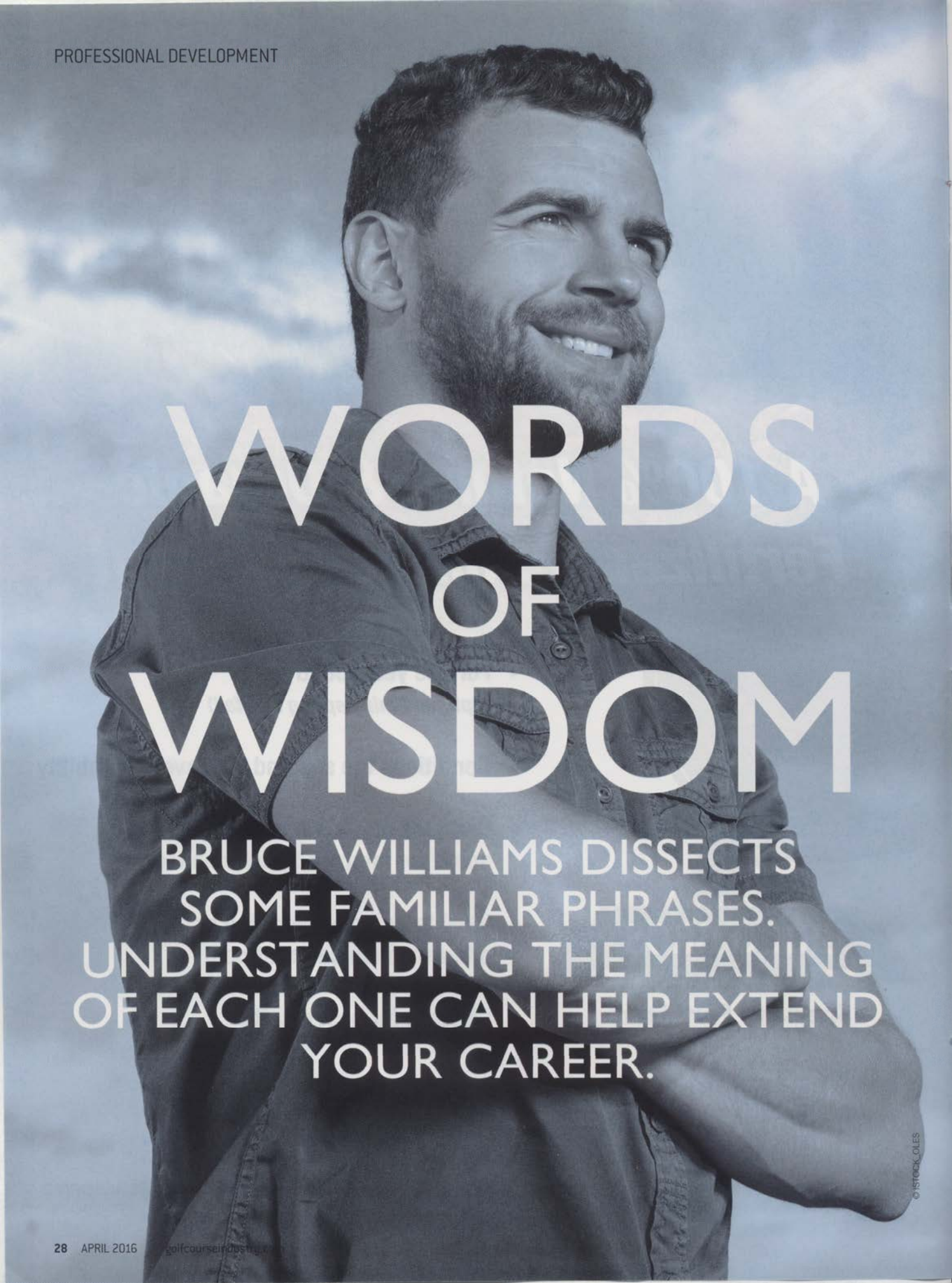

WORDS OF WISDOM

BRUCE WILLIAMS DISSECTS SOME FAMILIAR PHRASES. UNDERSTANDING THE MEANING OF EACH ONE CAN HELP EXTEND YOUR CAREER.

Over the years there has been a passing down of quips and phrases that have become this profession words to live by in. While some of the phrases may not be quotes that originated with people who shared them, they tend to be great words of wisdom that many in the golf course management industry should live by.

IF YOU CAN HOLD YOUR TONGUE, YOU CAN HOLD YOUR JOB

There is a lot of pressure and tension in the workplace. Often times things happen that can be upsetting. The first initial reaction is to defend one's self or lash out. My father taught me that when you find yourself in this situation it is best to absorb the situation/information and then react after having time to think through things logically rather than emotionally. Therefore, I often would tell my staff (after seeing damaged equipment or turf) to meet me in 10 minutes at a specific location. At that time my reaction and comments would always be much more logical than emotional. The same thing holds true for caustic comments from members or supervisors. Hold your tongue with the immediate reaction and take time to process the statement before responding. Superintendents with a long tenure at their jobs have this figured out

LEAD BY EXAMPLE

Leaders must earn their team's respect. One of the best ways to do that is to be an active part of your department. Yes, we must delegate things, but be in touch with your daily tasks, projects and people. Think of the good leaders you have worked for and mirror their style. Be on time for work and punctual for meetings. Take time to care about the people who make you shine. It is always nice to recognize their efforts and having a few celebrations a year to show your appreciation is a huge return on investment.

ATTITUDE IS MORE IMPORTANT THAN SKILLS

Early on I learned that I can teach people skills necessary to succeed in the workplace. However, it is rare that I can improve someone who has a bad attitude. During an interview, I try to ask questions that tell me as much about a person's attitude as I can. Do they have high energy? Do they seem focused? Are they pleasant? Asking why they left their former employer might give insight into how they relate to their former employers.

WE ARE IN THE SERVICE BUSINESS

There is an old adage that says "service with a smile." All the turf classes we take never seem to focus on how we should operate our facilities and impart the concept of service to our employees. Whether it is a private club or a public facility our golfers are our customers. In a competitive industry, we need to do all we can to bring golfers in, provide them a complete experience and, hopefully, they will come back.

Service means many things and the golfing experience includes much more than grass.

- Be sure your entry is clean and well maintained.
- The clubhouse grounds should be neat and tidy.
- The real first tee (as a part of the golfer's experience) is the practice tee ... make it inviting and practical.
- Signage is important.
- Superintendents can assist in pace of play through course setup, rough height of cut, etc.
- When the round is done, be sure there are shoe cleaning areas and a nice bag rack to store clubs until later they are picked up.

As far as the smile part is concerned, it is the cheapest, nicest and best way to treat people. Make it contagious and superintendents and their staff should always be kind, courteous and smiling to the patrons who ultimately pay their wage.

THE JUNIOR GOLFERS OF TODAY ARE THE GREEN COMMITTEE MEMBERS AND BOARD MEMBERS OF TOMORROW

While working at Glen View Club for Bruce Sering, I learned a fantastic lesson in my formative years. While doing course setup, I would always find a bunch of beer bottles thrown around on one of the tees on the golf course. Since I lived at the club, I figured out it was the son of a member who would come out at night with his buddies and make a mess on that tee. I made my case to Bruce and he quickly told me that the father of this young man was on the board of the club. It would be highly likely that the son would eventually become a member one day. Thus, is it really worth chastising someone who could eventually become your boss? Lesson learned was to pick your battles.

WORK HARD & THE HARDER YOU WORK, THE LUCKIER YOU WILL GET

More than a few times we hear someone say, "that guy is the luckiest person in the business ... he gets all the good jobs." Yes, there are situations of being in the right place at the right time. Yes, there are people who succeed because of their family lineage and such. But make no mistake getting a job is quite different than holding a job and prospering in that environment.

SUCCESSFUL PEOPLE WILL LEARN THE BUSINESS INSIDE AND OUT

When I worked for Frank Dobie in the early 1970s, he felt it was important for an aspiring superintendent to learn the business from all sides. He explained that a golf facility is much more than the turf. Many days I would work on the course from 6 a.m. until about 10 a.m. After that shift, I would go up and work in the clubhouse. It was a real eye-opener for me in many ways. I got to see how the food was prepared, how the members were serviced and, most importantly, I heard member conversations relative to the golf course. This gave me a greater appreciation for the other sides of the business. A good suggestion would be to have interns do a tour of work with the pro shop and the good service areas as it will give one a greater appreciation for our fellow department heads.

PEOPLE ARE YOUR MOST VALUABLE ASSET & TRAIN THEM WELL

One of the reasons companies like McDonalds are so successful is that they have a high quality training program for all of

their employees. Golf courses can learn a lot from that. Unfortunately, we tend to have employees train each other. There is rarely a formal training program so employees do things the way they think that they should be done rather than the way YOU want them done. None of us would ever send our kids to a school where they are taught by other kids rather than teachers. If that is true, then why do we have co-workers explaining tasks rather than supervisors like foremen, assistants and superintendents?

COMMUNICATION IS EVERY BIT AS IMPORTANT AS GRASS GROWING

Without healthy grass and good playing conditions, you will lose your job. As turf experts, it is expected that the golf course will look good and play well. Going beyond the turf, why is it some superintendents excel and either get higher compensation or longer tenure in their jobs? It is the individual's ability to manage and communicate effectively.

Superintendents must communicate on a variety of levels. One moment you're working with people who may have a different native language. At best, their education level may be at the high school level. Great communicators make their messages concise and clear. Remember, if you tell someone who speaks a different language to cut down the fourth tree next to the third tee, it is highly likely a mistake will happen.

In contrast, when dealing with boards, committees and upper management, be cognizant that using highly technical terms is confusing and does not impress people. Keep it straight forward and realize the most important communication is not always turfspeak but a common denominator they would understand, such as golf or business.

> **"As far as the smile part is concerned, it is the cheapest, nicest and best way to treat people. Make it contagious and superintendents and their staff should always be kind, courteous and smiling to the patrons who ultimately pay their wage."**

SERVING ON A BOARD OR A COMMITTEE MAY BE THE MOST ENLIGHTENING EXPERIENCE YOU CAN EVER IMAGINE

Every superintendent I've worked for shared the value of giving your time and talents to your professional associations. Step up and volunteer for committees, and strongly consider running for boards. You will learn how the process works and a variety of other skills will come your way:

- Leadership
- How to run a meeting
- Robert's Rules of Order
- Gaining consensus
- Managing events
- Facilitation
- Public speaking
- Networking
- Public relations
- Business and accounting

I'LL OWN A CADILLAC BUT THE MEMBERS WILL NEVER SEE ME DRIVE IT

This one definitely came from my dad. He cautioned me to keep a middle-class appearance no matter how successful a person would become. It is not a good thing when the people you work for see you living too well. Now this doesn't mean you should live in austerity. It does mean when sharing information with employers, often less is better.

There was a time when I would visit The Masters or the U.S. Open and shared that with members and fellow employees upon my return. Little did I know this could create petty jealousies. With the advent of social media, it is even more important to separate your personal and professional lives.

WORK HARD AND GOOD THINGS WILL HAPPEN!

Over the years I have asked those considered top superintendents the same question: What is the most important factor you can attribute to your success? Without a doubt, the response unanimously was a lot of hard work and always outworking the competition.

LESSONS LEARNED FROM THE MANY WORDS OF WISDOM

Many things are handed down from our mentors. Experience cannot happen quickly enough for those early in their careers. However, the learning curve can be reduced by listening carefully to mentors. Don't make the same mistakes they might have made. Capitalize on the successes they have achieved, and take heed to the tips they pass along. Do the same to people training under your leadership. It will only make the industry better as a whole. **GCI**

Bruce Williams is GCI's senior contributing editor.


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WINNING THE BERMUDAGRASS BATTLE

One Maryland superintendent needed a new way to finally gain control over Bermudagrass on his course.

by **Debbie Clayton**

Mother Nature may want to keep Bermudagrass growing in the fairways and roughs of a certain suburban Washington, D.C. golf course, but Dean Graves, wants it out. Lately, he's been winning the battle.

"Our course is almost 125 years old, so we have a lot of stuff growing on it," says Graves, CGCS of the Maryland course for the past 16 years. "We are quite close to the city and it gets very hot and humid in the summers. Years ago, course management promoted Bermudagrass in the summertime, followed by overseeded ryegrass in the fall, winter and spring."

When the course was rebuilt in 1998, greens, tees and fairways were replanted with Crenshaw, L-93 and Southshore creeping bentgrass. Roughs were planted in tall fescue, ryegrass and Kentucky bluegrass. Graves joined during grow-in, soon after the renovation was completed.

"All of that Bermudagrass was still in the ground and began growing through the desirable cool-season grasses," Graves says. "I've been fighting it since the beginning. We've used a variety of products with very little success. Sometimes they hurt the cool-season grasses just as much – if not more – than the Bermudagrass."

Four years ago, Graves tried a new product to control Bermudagrass on an experimental basis at the suggestion of his BASF field representative. He sprayed Pylex herbicide mixed with Turflon Ester as a spot treatment on 2,000 square feet of his rough. "It did an exceptionally good job and gave us the confidence we could use it as a wider, broadcast application," he adds.

In the three years he's been using the BASF selective postemergent herbicide, Graves has reduced Bermudagrass population in his 50 acres of roughs by 80 percent. "Pylex has made a huge difference for our golf course," he says. "Nothing has even come close to the results we've had with it. Pylex has turned our program around – not only is it highly effective but it's relatively low cost as well. I call that a win-win."

Through experimentation and comparing results with other area superintendents, Graves has devised the following program for Pylex use:

Roughs. Once Bermudagrass starts to green-up, Graves applies Pylex at the rate of one ounce per acre. He makes two applications 14 to 21 days apart, stretching it to three treatments if weather remains cool in June. He stops applying it during the heat of the summer, resuming again in late August. He continues with three applications at the same rate and timing through late fall.

Fairways. Graves reduces the Pylex application rate to .25 ounces per acre and makes one broadcast treatment at the beginning of May. "The application will turn Bermudagrass white against the green bentgrass," he explains. "So I can determine where the Bermudagrass is and go back to spot spray it." He then applies Pylex at a rate of 0.10 ounces per acre on a 14-day interval for two more applications. In late August or early September, he returns with two more treatments at .25 ounces per acre.

"If you walk the golf course today, you can see a line where we sprayed Pylex in the roughs – it's like night and day," Graves adds. "It can be a little sensitive in the fairways because there will be some bleaching, but as long as the golfers know what's going on, they don't mind. I send an e-mail out ahead of time letting them know when the applications will occur. Communication is the key."

In the past, when sections of the fairways turned brown from Bermudagrass going dormant, Graves sprayed Roundup to kill it. He then used sod cutters to surgically remove the dead areas and re-sod them. "We always called it the Patchwork Quilt Effect," he says. "It used to cost us thousands of dollars each year in sod and labor, not to mention disruption to the golfers – you can't put a price on that."

Graves' ultimate goal is to eliminate Bermudagrass on his golf course. But realistically, he just wants to keep it at a manageable level. "If I can reduce it by 90 percent in our roughs, I'll be happy," he adds. Pylex has slowed the encroachment of Bermudagrass in the fairways a great deal, too. "I'd say we've been able to hold the population to the same level for the past three years in fairways," he says. "I haven't had the reduction I've gotten with roughs, of course, because of the difference in grass types."

Pylex also controls goosegrass and crabgrass. Graves only cautions against using the product during high-temperature periods. "When it gets up around 85 degrees, you have to be careful with bentgrass," he says.

Maryland rests at Ground Zero for controlling Bermudagrass in cool-season grasses. Further south, it is considered a desirable grass. Further north, most golf courses don't worry about Bermudagrass.

"I know several other golf course managers using the Pylex program in this region," Graves adds. "It's great to be able to compare notes and help each other come up with a solution. After all, Bermudagrass has been an issue on this golf course for 100 years." **GCI**

© DEAN GRAVES

The WINNING Combination

By **John Torsiello**

Our experts explain how the proper fertilizer, the right amount, the correct type and the appropriate application time are all vital to the health and appearance of your turf.

We can't help but chuckle at the television commercial in which a gentleman with a Scottish-lilt to his voice implores a neighbor to "Feed Your Lawn, Feed It." But, as any superintendent knows, feeding turf is one of the most important tasks in any management program. And, it's vital to "get it right."

The amount, type, and timing of fertilizer applications is very important to achieve the desired plant response, says USGA agronomist Adam Moeller. "Applying the wrong product, at the wrong time, and/or with the wrong rate could have very negative impacts on turf health, playing conditions and plant carbohydrate reserves," he says.

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TORO. **Count on it.**

It is critical for the proper fertilizer, the proper amount, the proper type and the appropriate time of application be followed for a beneficial application, says Larry Lindsey, senior professional sales representative for Winfield Solutions. "To fully maximize your efforts of any fertilizer application many variables need to fit together as pieces of a puzzle do," he says. "When you're finished, the puzzle needs to be whole and complete."

It is very important to use the correct nutrients at the right time of the year and in the correct amounts, says Michael Pajolek, a senior professional sales representative for Winfield Solutions. It is equally important to understand what ingredients are in the bag to be sure that they will work at the time of the year the application is made. "Some ingredients, such as methylene ureas, release by a soil bacteria and will really not be effective under 55-degree soil temperature," he says. "Other ingredients release by a temperature-related breakdown and they can double their release rate with a 10-degree increase in soil temperature – probably not the best choice going into July and August." Still, other ingredients release by hydrolysis, meaning they require moisture to make the release happen. Often, these release characteristics are not taken into account at the time of purchase.

With the exception of managing greens, superintendents often adopt the "it's worked in the past" attitude and may not put a lot of thought into the fertilizer they're using, says Dr. Eric Miltner, agronomist for Koch Turf & Ornamental. "They spend more time thinking about things like diseases, insects, localized dry spot, irrigation, growth regulation, etc.," he says. "I would encourage all superintendents to critically evaluate their fertilization programs, and see if they can find ways to do it better. Maybe they can, maybe they can't, but don't just take it for granted."

Developing an overall fertilizer program and course management strategy based on efficiency will, in the final analysis, be cost effective, says Dr. Gordon Kaufman III, technical manager turf and ornamental for BRANDT/Grigg Brothers. Employing this sage strategy, superintendents will use the correct amount of fertilizer, thus conserving man-hours. "Complete and balanced fertilizer, both dry and liquid, will take less time to prepare, mix and apply," he says.

The best time of the year to fertilize depends on the variety of grass on the course and the weather conditions with respect to temperature and moisture. "For warm-season grasses, you should probably avoid the extremes, i.e. too hot, too cold, too wet, too dry," Lindsey says. "These conditions produce poor growing environments. They also interfere with how the minerals interact with the plant and the soil."

Foremost in any fertilization program is soil testing because it gives the superintendent a beginning picture of what levels of nutrients are present,

BEWARE!

Improper fertilization or bad timing of application can negatively affect turf health.

"It doesn't matter whether you're using liquid or granular fertilizer, unless the proper application equipment is used and it's properly calibrated for each specific application, achieving effective nutrition management is almost impossible, says Christopher Gray, senior golf marketing manager professional fertilizer for Lebanon Turf.

"This is really where `the rubber meets the road' in terms of the real world results," he adds. "Without these areas being accurately dialed in, all the development and planning put into the nutrition strategy plan means nothing. I always advocate on calibrating application equipment before every fertilizer application. The turf is pretty good at letting you know when something has gone awry."

Too little fertilizer application typically results in the plant losing its green color over time due to the lack of nitrogen. Too much fertilizer application can typically result in surge growth and, in extreme situations of over-application, turf death.

Grass variety and weather are two critical factors when determining the best time of year to fertilize.

© TURFEX

however, it doesn't necessarily mean they are available at this time. You can now build a nutritional program, says Al Czapski, Winfield Solutions' senior fertilizer product manager, professional products group

While nitrogen is not analyzed in a typical soil test, turf managers need to develop a nutritional program based on turfgrass requirements. Those are based on factors such as cultivars, intensity of play, mowing height, geographic location, weather and budget. "It is difficult to make a broad recommendation on fertilization, but the key element on any turfgrass nutritional program is nitrogen," Czapski says.

Because there are so many different grass types, climates, soils and use patterns in golf, it's nearly impossible to establish one set of fertilizing guidelines, says Dr. Doug Soldat, associate professor in the University of Wisconsin-Madison Department of Soli Science. "I'll take the classic professor route and say it depends," he says. "You need to understand those factors above to determine the best timing for your site and situation. In general, however, researchers have begun to question the utility of late fall nitrogen applications in the northern United States. These were once touted as the most important for turf health, but the research done by folks like Dr. [Karl] Guillard at UConn, Dr. [Marty] Petrovic at Cornell, and myself and Dr. [Brian] Horgan (University of Minnesota) has shown that nitrogen losses are much more likely during this time period and that the size of the application should be reduced or eliminated."

Soldat recommends not fertilizing once ET has dropped to negligible levels in the north. "Most of the nitrogen gets to the plant root via mass flow, which is the flow of water in the soil to the root driven by ET," he says. "Once ET stops – cold weather, short days – nitrogen uptake drops off substantially. It doesn't make sense to apply a soluble fertilizer at this time."

Pajolek, who does much of his work in the Northeast, recommends applications around May 15-June 15, Aug. 15-Sept. 15 and Oct. 15-Nov. 1. "Three, one-pound applications will provide a great base to work from," he says. "You can supplement from there with liquids and water solubles in conjunction with fungicide applications."

One of the common fertilization problems is not applying enough nitrogen, Soldat says. Turf needs nitrogen to replace the leaves lost by mowing and wear traffic. Sometimes thin and weak areas can be improved by increasing the

fertilization. "A lot of people are worried that increasing nitrogen will slow down green speeds, but an extra pound per thousand square feet will only decrease green speeds by four inches – less than a typical golfer can detect," he says. "A pound of nitrogen can really make a difference in terms of turf health."

Streaking, speckling or spotting, and burn are all signs of improper application, Miltner says. Each can indicate either application errors, or possibly fertilizer blends that don't fit the situation or were used improperly. Likewise, peaks and valleys in growth or color could indicate bad program timing, or maybe just the wrong product for that application.

Adjusting a fertilizer program is more appropriate than attempting to directly remedy a problem, Moeller says. "Superintendents should closely examine how the turf has performed and if any of the signs mentioned in the previous question have been a chronic problem," he adds.

Performing soil tests for nutrients combined with measuring clipping yields is helpful in determining where adjustments are necessary. It is also valuable to evaluate how PGR programs are used in conjunction with fertilizer applications. Superintendents must balance turf health with playing conditions so fertilizers and PGRs need to be used appropriately to ensure both turf health and playing conditions meet expectations, Moeller says.

There are many high quality slow- and controlled-release fertilizers that release nutrients over periods ranging from six weeks to six months. "Superintendents have a lot of choices

SPREADER TUNE-UP

Considering the amount of use your spreaders collect during the season, assuring they're properly maintained with a spring tune-up is of utmost importance. Now is the time to kick your spreader maintenance program into gear.

The Basics

One of the first steps of spreader maintenance is also the most basic. Start by washing the unit – even if it was cleaned before going into storage. Remove any new deposits, as well as anything that was missed previously.

Although some prefer to use chemicals, only water is necessary to give the spreader a good cleaning. Bear in mind that alkaline-based cleaners containing acetone, benzene, leaded gasoline or break cleaner can actually cause damage to polyethylene components. And proceed with caution if using a pressure washer on electric-powered spreaders. A good rule of thumb is to keep the end of the spray wand at least 36 inches away from all electrical items. If the wand gets too close, the high-pressure water could penetrate seals and lead to a short in the motor.

To help prevent corrosion on the spreader, touch up any bare metal spots with a coat of paint. This applies to both the hopper and the frame unless the hopper is constructed of polyethylene. This step should have been completed at the end of the previous season, but it's always good to double check. Otherwise, once subjected to the elements, uncoated metal is prone to rust.

For electrical components, apply a generous coat of dielectric grease to all terminals. This promotes easy reconnection of harnesses and ensures solid electrical connections. Additionally, dielectric grease helps prevent terminal corrosion.

Lubricate all bearings, chains, conveyors, rollers, augers and anything else with a grease fitting. How much time, effort and grease are needed will differ depending on the number of moving parts in the spreader. Since components can vary widely, it's important to check the owner's manual for a full maintenance checklist and the manufacturer's recommendations for the type of grease or oil to use.

For spreaders with belts, chains or conveyors, adjust the tension to avoid slippage or other performance issues. Make sure nothing is trapped beneath the belt, such as sand or other materials, before doing so. The owner's manual will specify the proper deflection, but do not to over tighten as this could lead to motor or gearbox damage.

Units with engines or hydraulic systems require more maintenance than electric-, ground- or PTO-driven models. In fact, engines and hydraulic systems generally have completely separate checklists, so review the routine maintenance schedule in the owner's manual and address any component that's due for service. This includes the oil, air filter, spark plugs, hydraulic fluid and more. It's also a good idea to inspect all hydraulic hoses and fittings for any signs of damage or leaks, so no hazardous fluids are spilled onto the turf.

Flow Rate Calibration

Now it's time to reestablish proper gate settings by calibrating the spreader. If gate settings go unchecked, an operator runs the risk of ruining the turf if he spreads too much of a certain material. And if too little material is spread, the application may be ineffective.

Manufacturers have various methods for calibrating their spreaders, but most are based on a number system. For instance, the owner's manual often contains a chart with a list of numbers that correspond with various feed rates given in pounds per 1,000 square feet. After deciding on a feed rate, the user manually adjusts the gate height to the appropriate number setting. Sometimes this number is marked on the spreader itself, but more accurate systems use a key to create the size of the opening. Once the gate is in place, the user locks in the setting, so the gate cannot open past that position.

Before taking the spreader to the fairway, the operator should also conduct a field test to verify the settings. Take the unit to a place where it can operate without risk of damaging valuable turf. Then, run some material through the machine to make sure it appears to be working properly and spreading accurately.

If the spreader contains an adjustable spinner, the field test is an ideal time for making modifications. Although this feature isn't found on all spreaders, being able to reposition the fins on some units can be a great help when fine-tuning the spread pattern to achieve a consistent application.

Before attempting to make adjustments to the spinner fins, run some material through the unit and take note of the spread pattern. Is the machine spreading heavier toward one side than the other? For instance, heavy materials oftentimes tend to spread heavier toward the left side. This type of lopsided delivery can be corrected, but it will take trial and error. There are no specific guidelines for creating the perfect spread pattern, so keep repositioning the fins and running the unit until it starts spreading evenly.

After undergoing the field test, the unit is finally ready to take on a full season of dispersing seed, fertilizer and whatever else your golf course needs.

Michael Frank is a TurfEx product manager.

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to design their programs for as many or as few applications as they want," Miltner says. "Programs with fewer applications obviously save time and labor, but there are other benefits that might not be as apparent."

Known as enhanced efficiency fertilizers (EEFs), these fertilizers are also more efficient at delivering nutrients to the plant than quick-release sources, such as urea or ammonium sulfate. In other words, a higher percentage of the nitrogen you apply actually gets into the plant when you use EEFs. Therefore, annual nitrogen rates can be reduced. This means less wear and tear on equipment, less fertilizer to transport, less time applying product, and fewer bags to lift and handle, Miltner says.

Enhanced sprayer technology will probably have the most significant improvement in fertilization application accuracy and cost savings, Moeller says. "This technology can ensure the most accurate applications and ultimately apply certain materials only in areas where deemed necessary via nutrient analysis," he adds.

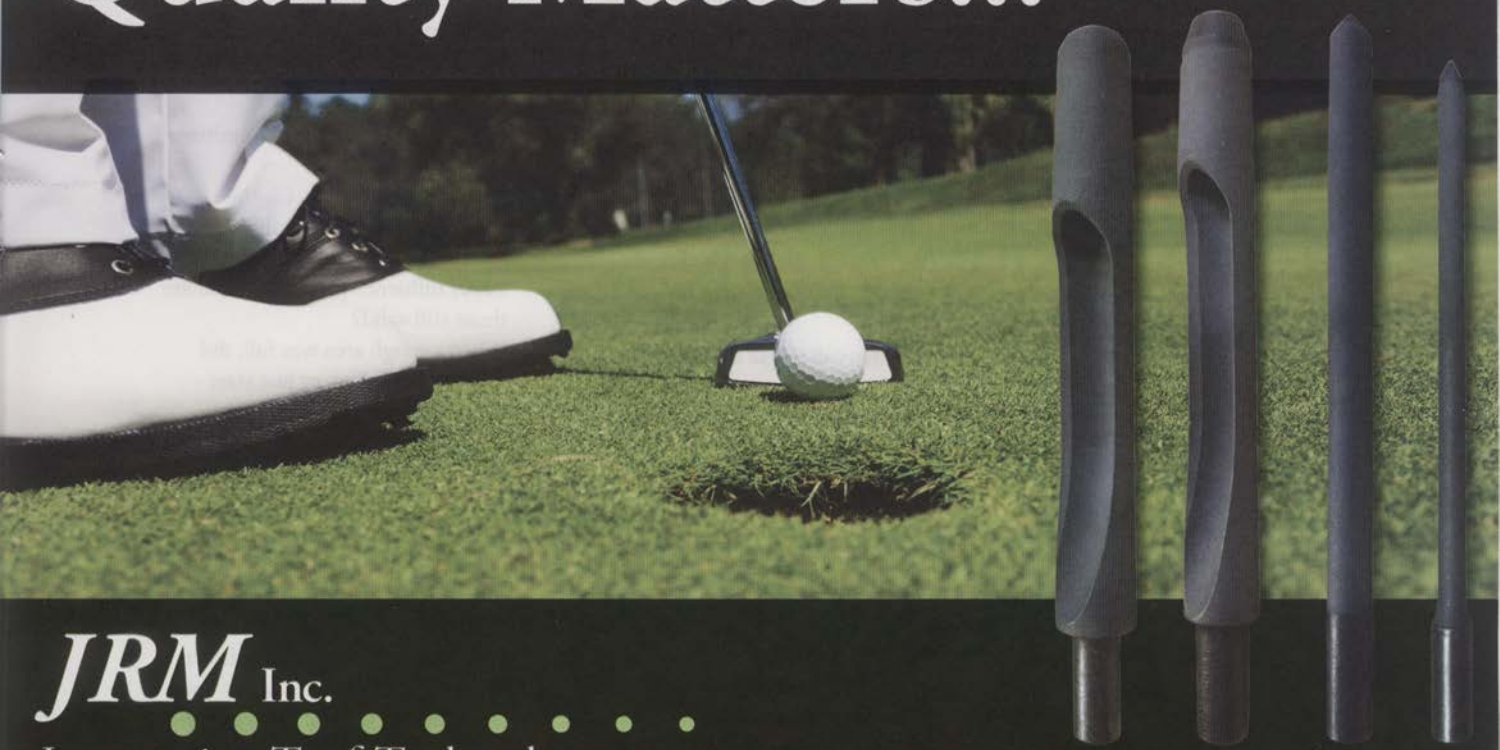
Environmental conditions "being equal," says Kaufman, formulations built for nutrient use efficiency, controlled release or those that are foliar targeted will increase efficiency, thus reducing costs. "Biologicals such as plant metabolites and plant growth-promoting rhizobacteria (PGPRs) have shown promise to improve nutrient use efficiency and promote plant health effectively during periods of abiotic stress, specifically drought and high salt conditions," Kauffman says.

Your turf is hungry. That you know. It's a matter of feeding it the right fertilizer at the proper rates and at the optimum times of the year to keep it satisfied and healthy. **GCI**

GET IT RIGHT

Over or under application is a major fertilizing mistake, which is often the product of poor calibration. This leads to higher cost, could increase disease, pest and weed pressure, and damage the general aesthetics of the turf."Properly calibrated equipment is essential to making a safe and accurate application," USGA agronomist Adam Moeller says. "If the application equipment is not in working order or not calibrated appropriately, fertilizer can easily be misapplied. This could have a very negative environmental impact through runoff, waste money, and result in poor turf performance and/or unacceptable playing conditions."

Quality Matters...



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TREE REMOVAL IS ALL IN THE PRESENTATION

Jeffrey D. Brauer is a veteran golf course architect responsible for more than 50 new courses and more than 100 renovations. A member and past president of the American Society of Golf Course Architects, he is president of Jeffrey D. Brauer/GolfScapes in Arlington, Texas. Reach him at jeff@jeffreydbrauer.com.

When asked for specific tips on "selling" tree removal programs, I usually agree selling is really what is necessary. As an architect, I long ago (and reluctantly) concluded that "architectural merit" doesn't convince them as well as more tangible and direct benefits to them. These may include agronomic reasons, couched in terms of a better playing experience over ease of maintenance by the superintendent. Score enhancement, aesthetic or playability reasons can also sell in smaller doses. Here are some compelling reasons for any specific tree removals:

1. They allow for more sunlight and air circulation, and less root competition, resulting in better grass coverage. If there is one thing golfers value more than trees, it's good turf. I use sun angle charts (found on the Internet) to show shade conditions in usually critical low spring, fall and (in the south) winter sun. But, the sales pitch is reducing early morning frost delays and lost tee times in spring and fall, when urgently trying to get in their last rounds of the year.

2. And, safety, highlighted by the famous Sergio Garcia "root shot" at Medinah in the 1999 PGA.

3. For those concerned with environmental issues, tree removal might improve:
- Overall tree health on the entire course. Sometimes, beloved older, larger trees are not as healthy as they appear.
- Assist creating a more sustainable environment.
- Reduce the water bill, because trees consume more soil moisture than turf... and, close to the fairways, tees and greens may interrupt the irrigation pattern

4. For those concerned about maintenance cost, tree removals are likely to increase:
- Cleanup costs associated with "trash trees" like willows, and Cottonwoods, cost many hours of maintenance work, and some golfer delays and lost balls.
- Add to re-seeding, sod and hand watering costs.

5. For those concerned with course history, examine earlier tree planting closely:
- Were trees planted as memorials over better golf?
- Did locations relate to architecture?
- Were species selected due to cost rather than suitability?
- Were any experts consulted?
- Were the tree planting committees in any way qualified?
- Did values of the day, i.e. the "Tough is Better" mentality of golf course ratings systems of the 1960-1990s influence placement, and are those still valid?
- When a rough area was full, did they stop planting, or just start encroaching on formerly wide fairways?

If your course is typical, many trees were selected for low cost or quick growth, then located without much detailed and long-term thought as to eventual size.

6. Of course, the ultimate direct benefit is how trees affect individual games in general or on specific holes. While many object to the idea of tree removal, everyone probably has a few select holes where tree removal would help them. You can ask:
- If recovery shots through scattered trees are more exciting than a forced sideways chip out from underneath the low branches?
- Do encroaching trees require you to play a forced fade/hook not in your bag?
- Do your wild tee shots need to negotiate a narrow chute of trees on every hole?
- Do you lay up on too many doglegs made too short by trees?
- Wouldn't it be fun on some holes to really "rip it" without fear of landing in trees?

7. For those concerned with making the course too easy:
- Find wider courses that are more difficult and have higher ratings.
- Use Augusta National as an example. Masters scores didn't go drastically up after they planted trees and narrowed fairways, suggesting that widening fairways and removing trees probably won't reduce scores.
- Besides Oakmont, Merion is a parkland course getting back in the U.S. Open rotation. **GCI**

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OBJECTIVE ANALYSIS

DIGITAL SOIL MOISTURE METERS OFFER CONCRETE DATA TO ASSIST IN IRRIGATION DECISIONS. NOW SUPERINTENDENTS ARE WONDERING WHERE THE TECHNOLOGY IS HEADED.

By **Rob Thomas**

Gone are the days of cassette tapes, pagers and golf course architects shaping the land with horse-drawn equipment. Also a thing of the past ... superintendents making their best guesses at the moisture level of the soil. Thanks to today's probes, estimation and speculation has been replaced with cold, hard numbers.

Mike Thurow, president and CEO of Spectrum Technologies, compared the historical gauging of soil moisture to an art form – often having to sense the moisture level of the soil by touch, inserting a pocket knife and feeling the moisture on the blade.

"Visually, experienced supers could see a silver sheen to the turf and know it was stressed for moisture," Thurow says. "All of these methods are subjective. Further, this skill is not easily transferred to hand watering personnel."

Phil Desbrow, golf course manager at Lakewood Country Club in Rockville, Md., used soil push probes before the advent of electronic devices.

"It was a feel thing that was difficult because one person could have a different opinion or different feel for the moisture," Desbrow says. "Basically, you took a soil sample and felt it in your hand, sometimes you could squeeze the moisture out ... other end of the spectrum it came out like dust."

Even with advances in technology, Desbrow and

Thanks to today's probes, estimation and speculation about soil moisture content has been replaced with cold, hard numbers.

his team have yet to completely jettison similar probes.

"Currently, we use the moisture meters in the morning where we take our time to set the green up for the day," he says. "Then, throughout the day, we use soil 'push' probes. When you are in a hurry watching greens, the last thing you want to carry around with you is an expensive moisture meter. This is where the soil probes come into play."

As for remembering the hazards before the widespread use of probes and handhelds, Desbrow looks more at the benefits of today's technology.

"There really are no dangers that I can think of," he says. "What I can say, that with the use of digital moisture meters, it has trained everyone to be on the same page. We can take a moisture meter reading and correlate that to a soil probe. It is a good teaching tool to get everyone on the same page."

Greg D'Antonio, superintendent and facilities manager at Concord Country Club in Chadds Ford, Pa., relied on early morning dew patterns to determine dry spots, as well as local knowledge of wind and shade patterns, prior to moisture meters. Consistency was the biggest issue with that method.

"It was very subjective, especially when more than one person was watering," he says. "It was all done off feel with no backup data, especially when coming back later in the day to check on things. A dry area from earlier may not bounce back right away and thus, areas that look stressed would be overwatered."

Thurow agrees.

"No superintendent wants to lose a green to wilt," he says. "As a result, the tendency was to overwater greens and have a peace of mind that moisture stress would not occur. This creates a problem not visible to the eye. A saturated root zone lacks oxygen and will quickly become anaerobic. The roots become unhealthy and turf quality can decline. Black layer can occur if the condition persists. Overwatering not only wastes this important resource, but involves more labor to address this key task."

In addition to the cost benefits, Thurow adds the use of portable soil moisture meters/

probes brings objectivity to watering/irrigating golf greens and other turf areas.

"The question of when and how much to water is greatly simplified," he says. "This benefits the superintendent in creating more consistent playability of the golf greens throughout the week. Golfers like consistent playability and supers can deliver this expectation with more consistency.

"Superintendents get a peace of mind that their folks are watering/irrigating properly and efficiently," Thurow adds. "Their lives are less stressful knowing the task is done properly."

D'Antonio likes concrete objectivity of today's technology, but doesn't rule out the importance of experience. "Intuition is still the number one factor used to decide to water, but the moisture meters allow multiple people to check greens and reduce the margin for error by having a set of numbers to help determine water needs," he says.

Having a tangible figure to look at when testing for soil moisture has not only helped the greens at Lakewood Country Club, but also Desbrow's bottom line.

"The benefit of physically seeing a number on a screen, this takes out the subjectivity part," he says. "I have seen our water use go down because we use the moisture meters. Depending on your grass type, you may be able to go longer without having to put water down."

To get the most out of his moisture meters, Desbrow starts early – before the droves of golfers inundate the course.

"In my opinion, the morning is the best time to use them," he says. "We are located in the Transition Zone and it can get real hectic, real fast during the months of July and August in the afternoons. You just don't have time to pick up the instrument and put it into the ground and wait for a number."

Thurow believes portable soil moisture meters are most effective – and commonly used – when hand watering greens.

"They're use aids in determining where and how much to water," he says. "In addition, the meters aid in quantifying how efficiently irrigation is delivering water to a zone. Often times, the meter validates that an irrigation event may be delayed or skipped when the soil moisture levels are known."

While Thurow says smartphones can be used to record measured values on an app and those values can be viewed on Google Earth, which aids in understanding the spatial variability of soil moisture, Desbrow is seeking additional veracity.

"I would say the units with the GPS options aren't as accurate as they should be ... you could take a coordinate and be as much as 10 yards off the original spot," Desbrow says. "I would think that this has a lot to do with how many satellites are being used to pinpoint the coordinate.

"To my knowledge military GPS or the expensive Trimble GPS hand held units can get as close as a centimeter," he adds. "If you can incorporate that technology, maybe they already I have, I would look into this. Currently we do not have the GPS options at my course."

As for the future of using these handheld devices to more accurately and efficiently water greens, D'Antonio would like the ability to sync with the irrigation system automatically and allow overheads to run based upon moisture meter readings taken that day. Thurow sees that and more.

"Performing a version of an 'irrigation audit' brings further value to using this technology," Thurow says. "It may possibly validate the need to change irrigation run times, replace nozzles or even validate the need for a new irrigation system to replace the old, antiquated system. The data from the soil moisture measurement empowers turf managers to make informed decisions."

Technology is great, but Desbrow hopes the market evens out to make the future more accessible. "More and more use of the electronic meters will be around for a while," he says. "There are the units that you can bury in the ground, but from a cost perspective, not everyone can afford these. When cost does go down, I believe that will be more of the trend."

Cost aside, the coming years are sure to hold impressive advancements in moisture management. **GCI**

The use of soil moisture meters is expected to expand as data becomes a bigger part of overall maintenance programs.

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John E. Kaminski, Ph.D. is an associate professor, Turfgrass Science, and director of the Golf Course Turfgrass Management Program at Penn State University. You can reach him at kaminski@psu.edu.

I can't tell you how many times I visit golf course superintendents during the summer and am amazed at the organizational capacity of some of them. On the other hand, there are those that have just about zero organizational skills and I wonder how they get anything done.

From a personal standpoint, I can clearly see defined times in my life where I have been both organized and disorganized. Depending on what phase I was in, my productivity and the quality of my work was definitely impacted. In some cases, it had to do with distractions and at other times it simply had to do with the fact that we're all expected to do more with less.

Since becoming a professor (and even before), I have made an attempt to be productive while trying to juggle many things at once. In some respect, the fact that I usually need only four to five hours of sleep per night and only eat a single meal per day has resulted in increased productivity. However, I noticed in 2015 that my productivity was falling off and that some things were starting to fall through the cracks. After some reflection, I could clearly see where things were working and where they weren't.

My time as an undergraduate at Penn State represents a slow progression of the impact of organization and time management on an individual's productivity. Despite being an A student in high school, my first semester at Penn State ended in something like a 2.33 GPA. After that, I purchased a day planner from FranklinCovey and started spending 30 minutes a day tracking my time and planning my day. Within a year, my GPA was in the high 3.8s.

As I moved on to graduate school, the hard copy day planner was replaced with a PalmPilot. I had trouble adapting to it and eventually my calendar system fell into disarray. Despite not using a day planner, I was successful in graduate school. I equate this to the fact that my entire focus was solely on my responsibility as a graduate student. This didn't really change when I took my first job at UConn, where I dedicated 100 percent of my focus on work.

I found having a single focus was my substitution for organization. It's not like I was totally disorganized, but dedicating my mind and time to one thing allowed me to accomplish a lot. As I moved on to Penn State and had what I felt like were more responsibilities, I knew something had to change.

By this time, using digital calendars like MS Outlook were the norm and I did my best to schedule my meetings so I didn't lose track of important events. I didn't, however, resort to the level of detail that I once had with my trusty FranklinCovey planner. I simply kept track of important calendar events like meetings, conferences and similar activities.

This was fine to keep me from missing a meeting or seminars, but it still didn't allow me to balance things as well as I would have liked and things again started falling through the cracks.

In January, I decided to get focused again on tracking my time. For the last few months, I have been tracking every 30-minute block of my day via Google Calendar. I color code things based on teaching, research and extension as well as meetings and personal time that I spend doing things outside of turf.

I was spending eight to 10 hours dealing with emsail each week. To combat this, I have scheduled two 30-minute blocks per day for email.

I was spending way too much time on social media for personal and work purposes. By using one hour per week to "schedule" posts, I have managed to maintain a presence without being on it 24 hours a day. Having said that, my iPhone makes it easier to check social media outside of normal work times.

Believe it or not, since being "more organized" I have probably five-plus hours of meetings per week than prior. This is because I have learned that instead of going back and forth on things for extended periods of time, I can run an efficient meeting and get more done in that one-hour block.

I have learned to better delegate tasks to my team and track their progress as well as hold them accountable by having weekly planning meetings. A lot of other things seem to be falling into place simply by tracking my time and designating every 30 minutes of my day to some task or assignment. I have been more productive in both work and play and find that by spending one hour per week planning the next week that I actually have more time to get things completed efficiently.

As part two of this series, I'm going to talk about technology, apps and resources I'm experimenting with to make even better use of my time. Tweet me any tools that you use and I will look into them. **GCI**

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So you don't have the funding to make major changes to your irrigation system due to the course's financial condition or other priorities. What can you still do to make your system perform better? I suggest analyzing the sprinkler/nozzle/spacing combinations for your greens, tees and fairways. This can quickly improve the system's overall performance.

Take sample sprinkler spacings (row to row and sprinkler to sprinkler, as well as across the green – not just around it) for each feature (greens, tees, fairways). Record the sprinkler manufacturer, model and nozzle at each location. Determine the pressure regulation setting for valve-in-head sprinklers (setting or spring color) or block electric valves if pressure regulated. Measure operating pressures with a pressure gauge installed in the closest quick coupling valve to the sprinkler(s) you are looking at. Locate the performance chart for the sprinklers on your course either on the Internet or in your files. Cannot find one? Call your distributor.

Armed with this data, look at the performance charts at the regulated pressures of the models and nozzles installed at each location. Look at the throw of the sprinkler and compare it to what you measured in the field – is it the same, shorter or longer than the sprinkler spacing? If the sprinkler is throwing water a few feet longer than the spacing, that's a good thing. If it's short by a few feet, that may not be good depending on the sprinkler model. Make sure there is water being applied right at the sprinkler by the overlapping sprinkler to ensure there are no dry spots that will cause you to overwater. If the sprinkler is throwing water short or long by more than 5 feet, then its performance can be improved. A smaller or larger nozzle could be installed, but keep in mind that having lots of different sprinkler model/nozzle combinations makes it harder to manage your irrigation schedule and system. A better solution is to fix the spacings so the sprinklers are throwing within the zero to 5-foot range of head-to-head coverage.

Today's sprinklers do a great job of putting down water uniformly. The same cannot be said for older sprinklers. If you look at the history of golf sprinklers – we will only go back to the 1960s – putting down water uniformly was not the priority. The priority was throwing the most water as far as possible. Think back to Rain Bird 81B's or Toro 690's – high pressure, lots of distance, lots of water (100 psi, 108 foot radius, and 82.2 gpm). Through the '70s, '80s and '90s, sprinklers were improved by the major manufacturers (Hunter entered golf in 1989) on a regular basis. In the mid-1980s, you started to see uniformity become more of a design consideration. Cup tests to measure uniformity started around 1987. With each enhancement, sprinklers got better at uniformity.

If your sprinklers are decade old, changing the them alone will improve irrigation system performance. If you can adjust the sprinkler spacings, too, the performance will improve even more. However, replacing sprinklers and/or moving sprinklers are still expensive undertakings. An inexpensive option is to install third-party nozzles. These are custom-designed nozzles for the major manufacturers various sprinkler models and series to improve uniformity. These replacements are less than 10 percent of the cost of sprinkler replacement. If your system utilizes potable water, the nozzle replacement costs may be underwritten by the local water authority as part of a conservation rebate.

If all you have are labor hours, make sure your sprinklers are level and set to proper grade to enhance performance. This applies if you have money, too, and even if your sprinklers are relatively new. A sprinkler installed on a slope, or having the stream deflected, will lower uniformity much more than poor spacing or bad nozzles. Make sure the sprinkler's throw clears the turf when it pops up. Older sprinklers have short pop-up heights (Toro 690's, 2.25 inches) as compared to newer sprinklers (Toro 855S's, 3.25 inches), for example.

Getting a new irrigation system has many benefits, but new systems have become extremely expensive. Even just changing the sprinklers is an expensive undertaking. There are alternatives such as nozzle change outs available as long as your infrastructure is intact and not failing on a regular basis. **GCI**

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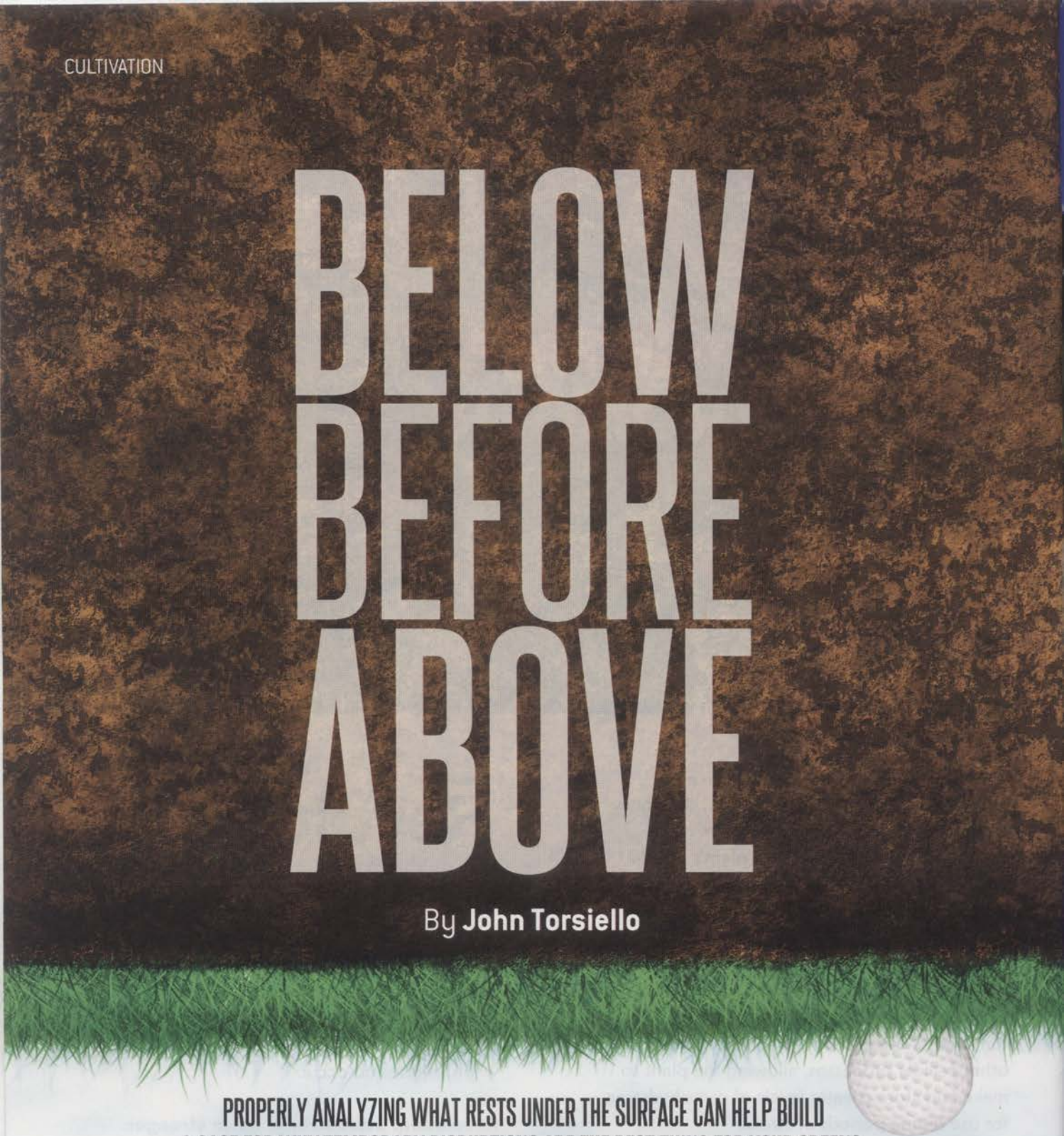
BELOW BEFORE ABOVE

By **John Torsiello**



PROPERLY ANALYZING WHAT RESTS UNDER THE SURFACE CAN HELP BUILD A CASE FOR WHY TEMPORARY DISRUPTIONS ARE THE BEST THING FOR YOUR GREENS.

This isn't breaking news, but it remains of paramount importance to have an effective cultivation and topdessing program in place to allow more water to penetrate through the soil profile.

After a superintendent conducts a soil profile, he or she can then "put pencil to paper" and set tangible, realistic goals for organic matter management, says Nelson Caron, director of golf course maintenance at The Ford Plantation in Georgia. "The program we use here at Ford Plantation is called the OMDP, or the organic matter dilution program," he says. "The term was coined by two USGA agronomists in the Southeast region several years ago and it's something our team here latched onto to help us communicate with our greens chairmen and general manager."

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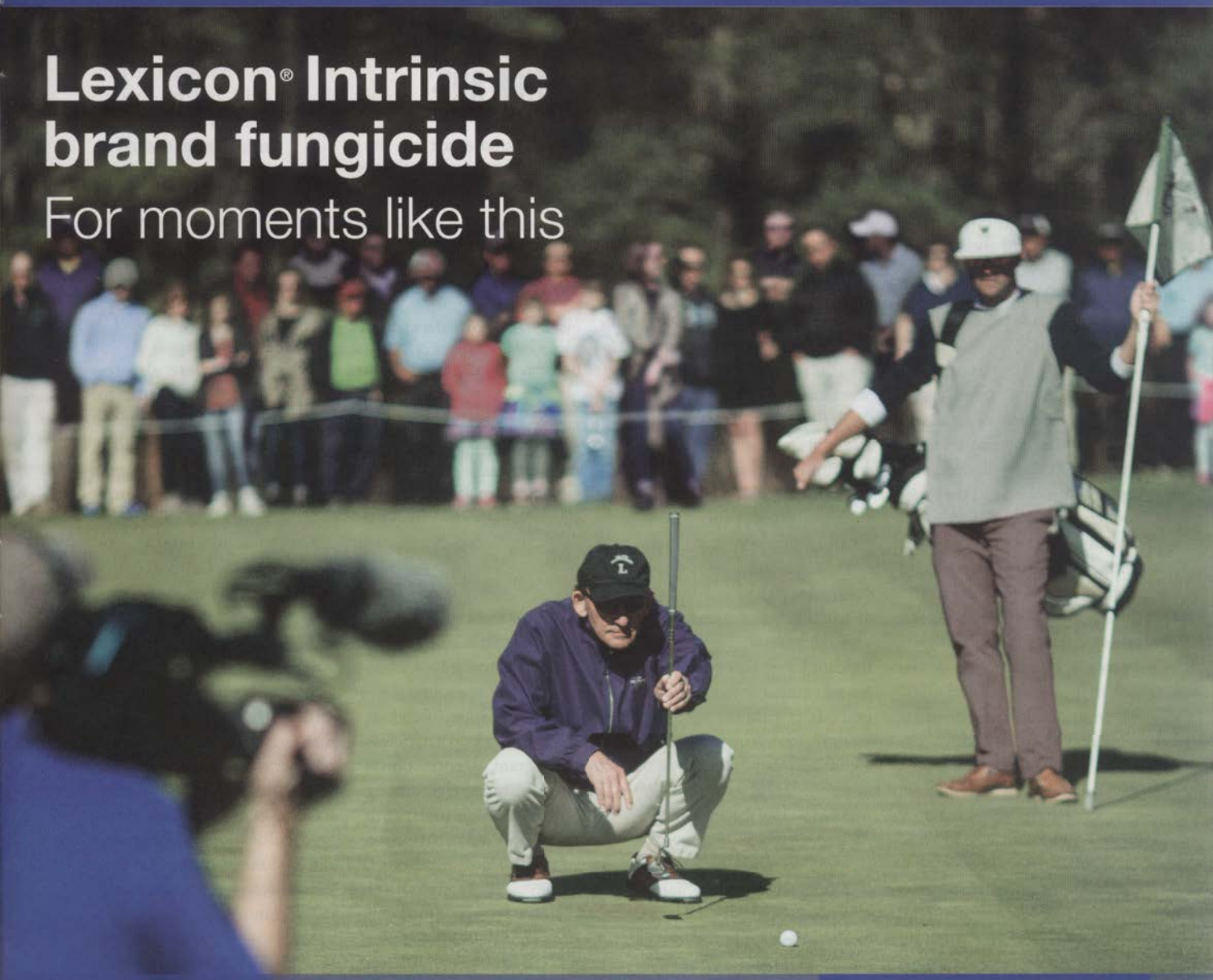

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The "power" behind an OMDP program is that Caron and his team use science to meet the membership's desired putting green quality. "Like many clubs, the expectations for green speeds at Ford are high," he says. "We know and have communicated with our membership that if we are to accomplish their desired results on top of the ground, we must first perfect our below ground management techniques to be able to exceed their expectations."

This entails disruption through coring, needle tining, and injection of sand and water. Once superintendents know what their physical soil testing numbers are, they can create an OMDP that demonstrates to their clients what cultural practices need to be accomplished to achieve the greens' desired results. "Once these data parameters have been set, in essence, they are not disputable," Caron says. Meaning, it takes a superintendent's opinion out of the equation. "The cultural practices stop becoming 'the greens were perfect then the super punched them again because he loves to do that.' It actually becomes the opposite. Committees become educated as a superintendent explains to them the numbers behind organic matter management. This is not to say one should be without opinion, because some of the greatest superintendents in this business have also been known to be great salesmen."

SIFTING THROUGH VARIABLES

"I have always expressed to turf managers what limits the amount and timing of soil cultivation is not the soil, but the stress that is applied to the turf," says Dr. James Crum, a professor in the department of plant, soil and microbial sciences at Michigan State University. Crum adds the variables a turf manager needs to integrate to accomplish the objectives of cultivation and the owner/manager/golfer wishes include time of year, recuperative potential of the turf, user demands, weather conditions, work force and budget. "I believe planning, flexibility and communication to all parties is important for the turf manager to be successful," Crum adds.

Dr. Paul Rieke, professor of turfgrass soils at Michigan State University, says ask yourself are there significant layers that restrict water movement through the soil or restrict gaseous exchange or limit root growth? Is there significant thatch that must be controlled, and what management practices have contributed to thatch development?

"A related question is whether a mat layer that is high in relatively decomposed organic matter limits oxygen in the root zone?" Rieke says. "What is the rooting pattern at various times of year that might indicate a soil problem? Does the green drain poorly and why? Does the subsoil limit drainage? Is the major problem caused by sealing of the surface layer? Has an effective sand topdressing program been practiced? How deep is that topdressed layer?"

Help in answering these questions is available from consultants, such as the USGA, other agronomists or by sending samples to a soil testing lab that conducts soil physical tests. With the appropriate information, the superintendent can then embark on a management program. "If correction is needed, one must select among various cultivation tools; core or solid-tine aerification or various injection methods," Rieke says. "More significant problems may require more aggressive techniques. Examples might be larger or deeper tines. Injection treatment could include injecting sand or other material. In some situations, a combination of treatments may be best."

Soil types play a role in the drainage of water. Native soils with significant clay content will hold water and not allow it to drain rapidly. Sandy soils, on the other hand, will drain quickly. "It's important in putting greens constructed on native soils to have an aggressive aeration plan with traditional aeration supplemented with deep tine and drill and fill operations to provide channels filled with sand to move water from the turf surface," says Dr. Nicholas Menchyk, assistant professor in the department of urban horticulture & design at Farmingdale (N.Y.) State College.

There are also regional differences to consider when undertaking soil cultivation. "The turf manager needs to consider soil conditions, recuperative potential of the turf, and demand and playability of the surface after cultivation," Rieke says. In general, cool-season grasses are under more stress when temperatures and humidity are high and warm-season grasses do not have the recuperative potential when temperatures are low. Where cool-season grasses are managed, cultivation should generally be done in spring and fall. Warm-season grasses generally in the summer.

ASSESSING TOPDRESSING AND TINING DECISIONS

Rieke says a program that applies topdressing two or three times per year typically will not result in a thatch layer that is evenly mixed with topdressing. Infrequent topdressing does not convert all the thatch into what is referred to as a mat layer (thatch evenly mixed with topdressing). Layers of thatch "sandwiched" between layers of mat and/or concentrated

IN GENERAL, THE OBJECTIVES OF SOIL CULTIVATION ARE:

- Modify (increase) soil pore size to allow more rapid water infiltration and movement through the soil.
- Bypass any pore-size discontinuities in the upper soil profile that hinder water movement through the soil profile.
- Increase oxygen in the upper soil root zone to increase organic matter decomposition (reduction of thatch).
- With topdressing, cultivation allows for the mixing and blending of topdressed material with initial soil. Distinct layers in soil leads to water movement problems. Cultivation allows for the gradual mixing of materials.

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layers of sand will not create a profile that is highly resistant to compaction, because the layers of thatch (regardless of how small/thin) become the limitation in the profile. Thin layers of thatch that become compacted will have an extremely fine pore system, which will retain enough water that it effectively "seals off" the profile at that depth. Water and, more importantly, air flow through that compacted thatch layers can become so slow that root growth below that depth will be limited. "The take-home message is topdressing must be applied at a frequency and quantity that continually dilutes the thatch with sand as it develops," Rieke says.

There have been philosophical changes to the practice of topdressing in the last two decades, Caron says. "The most recent change has been with the ultradwarf Bermudagrass and super fine sands like 55, 65 and 85 sands," he says. "These sands started hitting the marketplace about 10 years ago and became really popular five to six years ago. For the same reason, the bentgrass guys made shifts in their sand selections, so did the Bermudagrass managers with the increased popularity of the ultradwarfs."

Selecting topdressing sands for putting greens requires in-depth examination, Rieke says. What works for one club might not work for another. And, if you are applying a specific particle size, then try and have an idea if it will adversely affect your desired outcomes. "Know what particle size distribution you are putting out there," he says. "If you determine it might be a bad idea, try it anyway on a nursery or an out of the way spot. You might get surprised. It's safe to say that the super-fine sands have been used for several years now and don't show any signs of going away in the near future. The finer sands ability to penetrate dense canopies and reduce friction and drag on golf ball roll make this product nearly impossible for superintendents to ignore."

It is vital the rate and frequency of sand topdressing should be related to the growth rate of the grass, usually meaning more intensive topdressing during faster growth periods. "Most new greens grasses have high turf density, requiring special techniques to ensure the sand gets down into the turf," Rieke says. "Higher rates of sand will be needed when using hollow or solid tine aerification. Core aerification usually leaves the green surface in a very unpopular condition with golfers." He adds that keeping records of observations and conditions can be very helpful. The objective should be to manage the soil physical conditions so it does not limit the quality of the putting surface.

Menchyk believes it wise to use a combination of different types of tines (different diameters, lengths, hollow, solid) to achieve desired results. "In native soils or `push-up' greens it is probably a good idea to utilize traditional aeration (1/2 inch to $^{5}/_{8}$-inch diameter tines pulling cores) in fall and possibly spring if you have serious compaction/drainage issues," Menchyk says. He also suggests supplementing traditional aeration with drill and fill cultivation in the fall if budget and labor allow for it, and utilize solid tine "venting" during the summer. Additionally, it is also important to break up any "plowpan" that might develop in the soil (essentially compacted soil below the normal cultivation depth that might impede water movement) with large solid tine cultivation. VertiDrain or VertiQuake are two devices that can be used.

> "Like many clubs, the expectations for green speeds at Ford are high. We know and have communicated with our membership that if we are to accomplish their desired results on top of the ground, we must first perfect our below ground management techniques to be able to exceed their expectations."
>
> —*Nelson Caron, The Ford Plantation*

Thought must also be given to the potential damage with any cultivation practice, says Dr. James Murphy, extension specialist in turfgrass management in the Department of Plant Biology and Pathology, School of Environmental and Biological Sciences at Rutgers University. To varying degrees, all cultivation practices are disturbing the turf and soil. More aggressive and disruptive cultivation practices pose the greatest threat for undesirable effects on the turf or soil. "As an example of this, coring during August is often done on bentgrass putting greens to avoid opening up the green during September when the germination of annual bluegrass weed seed reaches its peak," Murphy says. "Unfortunately, combining August coring during very warm and dry weather can result in too many stresses on the turf if water isn't restored to the turf quickly enough after coring is complete. The initially dry soil conditions become even drier during coring, especially during very warm weather, and the root system of the turf is being disturbed/damaged, which reduces the ability of the turf to keep itself hydrated. Timely irrigation is essential to prevent this scenario from developing into severe stress."

Native soil greens may require deep-tine cultivation to improve internal drainage, although it's not always effective. "Deep tine cultivation should not be necessary on a properly built sand-based green," says Dr. Norman Hummel, president of Hummel and Co., a soils and turfgrass consultancy. "There is some debate that sand-based greens may not even need routine core cultivation because sands are not really prone to compaction, and that regular topdressing is all that is necessary. I have seen sand-based mixes compact.

"Therefore, until I see research suggesting otherwise, I still think some form of cultivation would be advised, Hummel says. **GCI**


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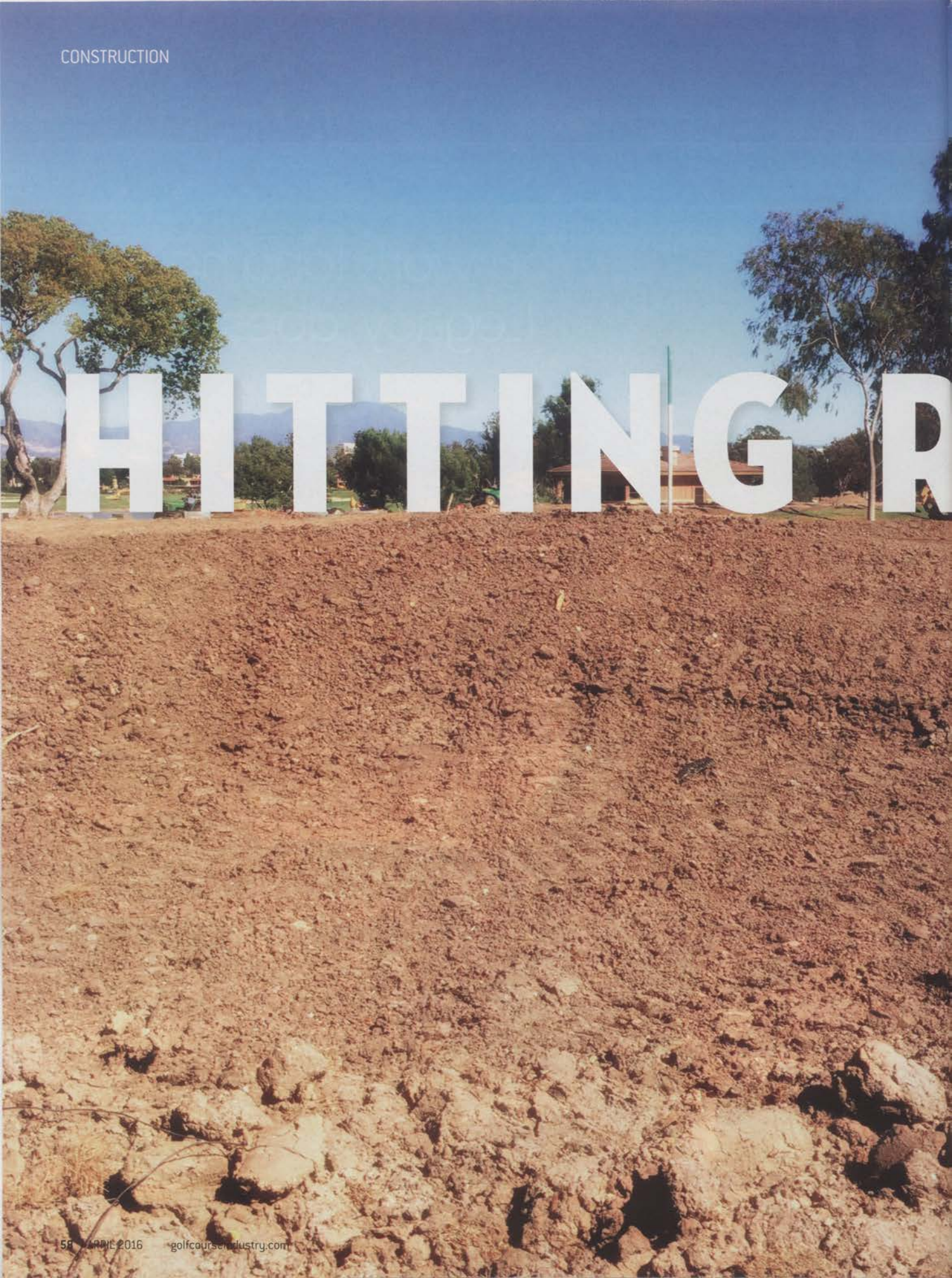
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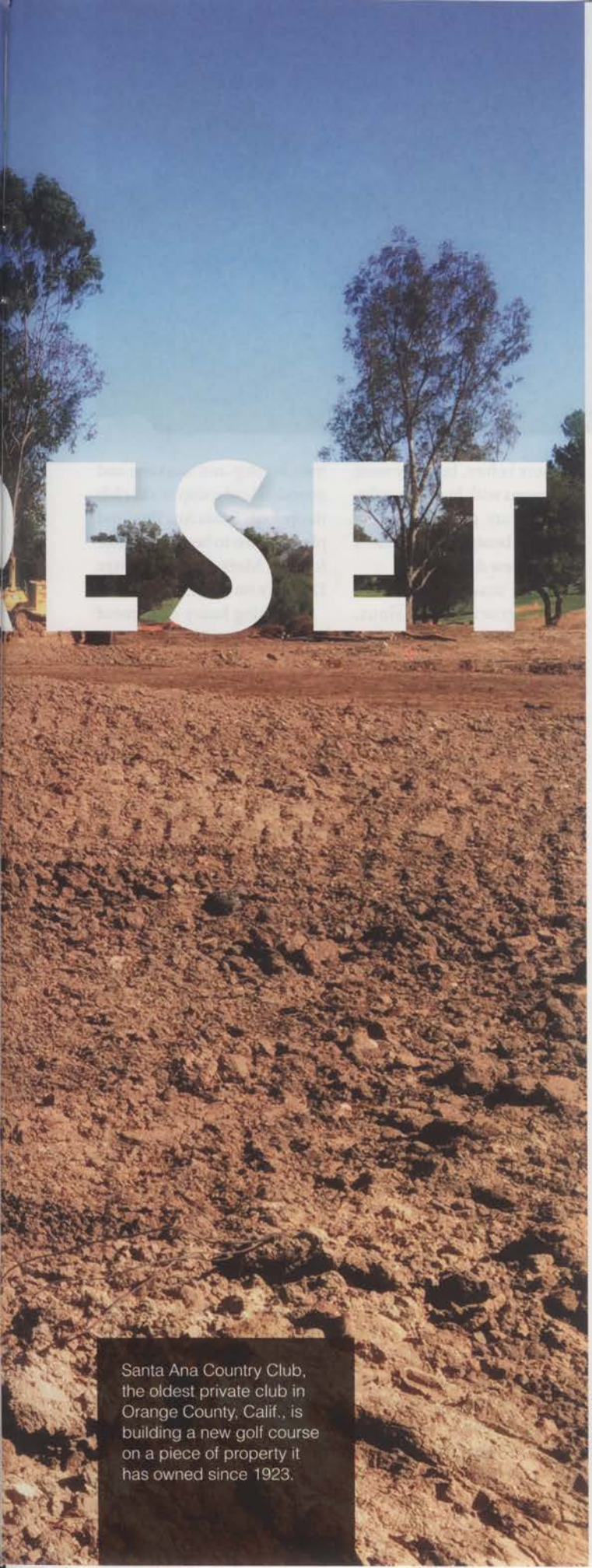

Santa Ana Country Club, the oldest private club in Orange County, Calif., is building a new golf course on a piece of property it has owned since 1923.

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Here one day, gone the next. A Southern California club is swiftly, yet carefully revamping its golf course to handle modern challenges.

By **Guy Cipriano**

Passengers on flights arriving and departing from John Wayne Airport are receiving unobstructed views of Southern California's changing golf mentality.

Santa Ana Country Club, established in 1901, is building a new golf course on the same property it has occupied since 1923. Club leaders are calling the ambitious project "Golden Age Golf for the 21st Century." Major construction started in late February immediately after members hit their final shots on a course with 105 acres of irrigated golf turf.

Failing infrastructure and anticipated future political wrangling over water convinced club leaders to pursue the project. Santa Ana is the oldest club in Orange County, and architect Jay Blasi says the club's age showed below the surface. Problems included irrigation leaks, small *Poa annua* greens with plenty of slope yet little room to place pins, and soil profiles ineffective at moving water. Clever work by director of agronomy Matt Marsh and his crew masked many of the issues.

"I give Matt a hard time because when we first got in and started talking about all of these things, it was a much harder sell," Blasi says. "Members were saying, 'What are you talking about? The golf course has been in the best shape it has ever been. We don't need to change anything.' But they weren't able to see what's going on below ground."

Modernizing the course infrastructure would have cost the club more than $5 million, according to Blasi, who started developing a master plan in 2014. Santa Ana receives water from a private well, although the quality of the water

Santa Ana Country Club is eliminating 36 acres of irrigated turf. The reduction and a reverse osmosis system purchased in 2011 could create a water management model other clubs emulate.

is poor (think the color of iced tea), and the club invested in a reverse osmosis system in 2011.

Water concerns loomed as the club explored options, and the plan approved by members includes replacing turf with drought-tolerant plants and grasses. The amount of irrigated turf on the course will be reduced by 36 acres, Marsh says.

"When you start looking at everything and think about how much water we are putting out on the golf course, do we really need 105 acres of wall-to-wall green turf?" he says. "No. We need to have really good turf in the high-play areas, but we can find areas with a new design where it's going to give some contrast and some pop, and it's going to save us a lot of money and water."

Marsh and his crew will be maintaining a course designed to provide contrasting conditions to the previous layout. Instead of lush, target golf, members will experience a course intended to play open and firm with one cut of kikuyugrass from tee to green.

The club has kept Marsh's entire crew employed throughout construction, which is scheduled to end June 30, followed by three months of grow-in. Blasi, who worked with Robert Trent Jones II at Chambers Bay, moved from Northern to Southern California to oversee the project. The construction team includes GCBAA member Landscapes Unlimited and irrigation consultant Brent Harvey. Shapers Derek Dirksen, Kye Goalby and Brett Hochstein are working closely with Blasi. Jeff Anderson is the project manager.

Industry relationships provide further assistance. In early March, California Golf Club superintendent Thomas Bastis visited Santa Ana to provide guidance on maintaining native grasses. Blasi visited The Valley Club of Montecito later in the month to observe the club's firm playing conditions. Marsh also exchanges ideas with USGA Green Section agronomist Pat Gross.

"We are asking Matt and his team to essentially do the opposite of what's been done for so long," Blasi says. "We are looking to craft a golf course that's firm and fast. We will have a lot of open-entranced greens where you can play the ball through the air or on the ground. That's very challenging with kikuyu. From a greens standpoint, Matt has done a great job with what was here before, but they were *Poa* greens with big ball marks. Now we are going to a new strand of bentgrass, and that's a whole new dilemma."

Director of agronomy Matt Marsh and architect Jay Blasi are working closely together at Santa Ana Country Club.

Marsh made methodical pre-construction decisions, including spending 14 months researching different turfgrass varieties before selecting Pure Distinction bentgrass for the putting surfaces. He spoke with other superintendents and Harvey when selecting the new irrigation system and pump station. Keeping regular employees involved in the process creates understanding of new systems as they are placed into the ground. Marsh has helped the club recycle existing assets, using industry contacts to find facilities that can use kikuyugrass and *Poa annua* sod stripped from the course. Benches and tee markers are being crafted using wood from removed trees.

Embracing the project helps Marsh handle the challenges associated with construction. Marsh and Blasi are posting enthusiastic construction updates on social media, and the club purchased a drone so Marsh can provide video updates. General manager JJ Wagner and pro Geoff Cochrane are also playing key roles in communicating messages to members. Mike Pettit, the club's board chairman for the project, serves as a liaison between the membership and workers, and provided leadership as the club its options. Santa Ana finalized plans in time to become eligible for the Metropolitan Water District's turf removal rebate.

Watching heavy equipment quickly storm into a course many members thoroughly enjoyed isn't for the meek. But with this past winter's El Niño providing little drought relief, and the threat of soaring potable and reclaimed water costs, decreasing water availability and increasing political interference, means other clubs will likely face similar decisions.

A stagnant golf market adds further challenges, and Santa Ana's new product also includes a modern practice facility with a double-ended range with 2 ½ acres of tee space. The range will convert into a short course for junior play and social events.

"For members who have been here for a number of years and have been playing wall-to-wall turf, it can be a bit of a shock," Blasi says. "But the reality is either we were going to do this or five years from now the state or the county was going to force you to do it. At that point, you are being reactive. You might not be able to take the turf out where you want to. This is one way where we can strategically do it in one fell swoop, and make sure what we are doing ties into with everything else." **GCI**

OUT OF THE DEEP FREEZE

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.

I have started machinery up for the beginning of the season so many times that it is more a habit than a conscious procedure and because of that, it is a challenge to explain or write down what it is I do.

Let's start by setting the scene. I am usually called back to work at the golf course sometime around April 15 depending on the temperature of the ground. The magic number is 54 degrees. The air may still be cold so I have low-temperature lights in cold storage that will light at 0. Normal florescent shop lights will not light at temperatures below 56.

The mowers have been in storage for six months. This is a good time to check under them and make notes if anything has leaked out or if the batteries have split open from having been frozen. Tire pressure needs to be checked because moving the mower with low or flat tires can ruin them. During the winter, the mowers may have been shuffled for one reason or another. So like a game of pick-up-sticks, there is usually the obvious one that needs to be moved first to get the process started.

To move a mower, it is important to check to see if there is any fuel in the tank, proper air pressure in the tires, oil in the engine crank case and oil in the hydraulic tank. The battery will be dead or low, so some time on the battery charger is a good idea. For the one you want to move first, a cranking amps battery charger is a real good idea. You want to make sure everything is right so you have your best chance at starting the engine the first time. You don't want to burn out a starter before the season has even begun.

> "Most of the tires carry 22 psi, same pressure as the golf car tires, so low range is good for most things. There are a few tires that go as high as 90 psi so to cover that wide a range a second tire gauge is needed.

Old machinery that is cold is best started using starting fluid. This is great for gasoline engines, but you need to be careful around diesel engines. Some diesel engine makers allow it, sometimes going as far as installing either injection systems, and others do not allow the use of either. It is important to know which engine is which because either in the wrong engine can cause an explosion. Speaking of explosions, you want to also do everything you can to minimize the chances of the batteries exploding.

To speed the startup process, I have an air hose reel with enough hose on it that I can reach everywhere in the shop, cold storage, and to the edges of the paved area outside the shop. To do that takes a hose about 150 feet long. I always have two air chucks in the tool box so that if someone has barrowed one, I still have one to use. In the same drawer are the tire pressure gauges, low range and high range. Most of the tires carry 22 psi, same pressure as the golf car tires, so low range is good for most things.

There are a few tires that go as high as 90 psi so to cover that wide a range a second tire gauge is needed.

Each mower needs to be brought into the shop to get its reels put back on. When I first arrive, there are 32 reels scattered on the shop floor. The reels have been away for the winter at a sub-contractor downstate for sharpening and truing. They are back now and the cans of bolts that go with them are usually somewhere on each mower.

Once the reels are installed, the mower needs to be put on the lift to check the cut and to set the starting height.

After the mowers engines have run for about 30 minutes, they are usually ready to be started once a day to be moved around before actual mowing starts. Any leaks on the floor from when the machine was stored need to be checked out. Some will re-seal themselves, others will not, checking to see which kind they are is important and any other needed maintenance should be noted.

After all the mowers have been through the shop once, priorities for repairs can be set, parts orders and repair work begun. This is a good time to do some of the modifications that drivers have been asking for that have not been done yet.

I am still putting off installing the heated steering wheels that people ask for at the start and end of the season because they are just under $300 each. I would rather give them all-weather cabs if I can come up with a light, inexpensive design. Maybe this is the year it will happen. **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.

SNOW PUSHER FOR GREENS

The winter of 2013–14 was one of the worst in Michigan's history. Sheets of ice were prevalent on surfaces of greens, with 20–30 inches of snow covering them. Snow blowers would not initially work to remove the snow, so David J. Pawluk, CGCS, golf and grounds superintendent, at The Inn at St. John's Golf & Conference Center in Plymouth, Mich., developed the snow pusher idea for the 2008 Bobcat T-190 with rubber tracks. A 6½-foot piece of 6-foot diameter PVC Schedule 40 pipe was used where a "gap" was cut from one end to the other and a "notch" was placed on each end for the pipe to slip over each side of the bucket. The pipe was then slipped over the bucket cutting edge and two Northern Tool double J-hook ratchet straps held it in place. There were no modifications to the bucket. It takes about 20–25 passes to clear a green, about 30–45 minutes total. There is about a 2-inch buffer from the bottom of the bucket edge to the bottom of the pipe so the turf is not scarred. Snow blowers were then used to clear the remaining snow. Black gypsum from The Anderson's was used to break down the ice. About five to six greens were done per day on the 27-hole layout. Each pipe would last about 10 greens. The pipe then broke apart because of the cold temperatures and it was replaced. Twenty feet of PVC pipe costs $75; and straps $35. It took two employees one hour to complete.

TRIPLEX BACKPACK BLOWER RACK

The four 2013 Toro Greensmasters 3150 Triplexes have been fitted with backpack blower racks for the Red Max blowers models EBZ 7001, 7500, 8500 (Husqvarna backpacks also fit). The roll bars were slightly modified so the racks could be bolted to them using the existing holes. Fifty-one inches of 1-inch angle iron; 18 inches of ⅛-inch by 3-inch channel iron; 30-inch by 4-inch of ⅛-inch steel; one 6-inch by 6-inch of ⅜-inch steel plate; one 24-inch bungee cord to secure the blower to the rack; and one 12-inch bungee cord secures the blower tube in place. It cost $30 in materials. Don Garrett, CGCS, is the instructor and academic advisor at The Walker Course at the Clemson University Turfgrass Program. Bobby Garrett is the equipment technician.

(MILLER *continued from page 20)*

I took four of his other books with me, and he signed them all, including my favorite: "Comeback." I felt really blessed to have yet another chance to meet with a man who was first a great player, followed by a rich career as one of the best golf announcers of all time.

Is there a golf course superintendent anywhere who doesn't love David Feherty? He attended four different GCSAA conferences that I attended, one for a corporate event and the other three as a GCSAA guest and speaker. Talk about an advocate for the superintendent. His open, effusive wit and enthusiasm for golf, and praise for superintendents has won us all over. It turns out that he is also one of the most entertaining people in golf. Again, thanks to some kind people, Cheryl and I were in the ready room before David was to speak at conference. He signed all of my books that he had written and was charming beyond belief. My wife enjoyed talking to him more than I did! He's become one of the most popular golf commentators of all time.

The year Judy Rankin was to receive the Old Tom Morris Award was at a time when her husband was very ill and she couldn't attend. She is a former great LPGA player who launched a second career as an excellent golf announcer after her playing days. If you want to learn more about Judy and her story, catch Feherty's show when she was his guest.

And then there is the best of them all, in my opinion, Jim Nantz. The timbre of his voice, the smooth delivery, the easily detectable friendliness and his thorough knowledge of the game (much of it gained as a collegiate golfer at the University of Houston) put his broadcasts on a pedestal. We are so fortunate he is in our corner and gives us credit for the work we do.

Golf announcers are in a class by themselves. The NFL and NBA are particularly bad in comparison; many of those announcers are shrill loudmouths, egomaniacs and blowhards. Too many lack even a basic command of grammar usage; they sound ignorant. A few have had criminal problems in the past. Many of us simply turn the sound off.

But golf has selected, consciously I assume, broadcasters and announcers who are generally low key, possess excellent voices, are knowledgeable about the game and are courteous. Too many announcers in other sports are exhibitionists whereas golf has true observers and communicators. They seem not to have the need to fill every second of airtime with their voices and opinions.

You could say golf's announcers are reflective of the game. Did you ever hear one of them talking as a player was about to hit a shot? And after a shot they are generally inclined to let that shot speak for itself. I think Fox learned how important good announcing is after the reviews of the U.S. Open last summer. It will be interesting to see if there are any changes in announcers at the U.S. Open this year.

Maybe they could bring Jim Nantz in! GCI

(MORAGHAN *continued from page 26)*

- Provide a separate office for the lead technician.
- Provide more than enough storage space.
- Large and small equipment will be coming in and going out at all times, so plan the flow carefully.
- Make allowances for parts, grinding, painting rooms and other task-specific areas.
- Minimize distractions.

EQUIPMENT AND STORAGE SPACE

- Absolutely critical: There must be a dry storage area to protect the sizable investment in equipment. Dry and covered.
- Keep topdressing covered to avoid contamination or heating of material, which could damage turf.
- You'll probably need a covered and ventilated fuel space.

OTHER SPACE

- Reception area
- Assistants' offices or area
- Library
- Pathology lab

STAFF FACILITIES

- Treat your staff well and they will want to stay.
- Provide adequate facilities, separate but equal for male and female – which means separate restrooms, showers, lockers and dormitory space.
- Staging areas to dry clothing and leave muddy shoes at the door.
- Refrigerators, microwave ovens, eating tables, snack machines.

AND DON'T FORGET

- Walkability. Think about walking from area to area in the maintenance building, being able to do so without bumping into equipment, people and supplies. You'll probably not get as much space as you want or need, so intelligent planning, layout and design are very important.
- Technology. Not just the latest course-monitoring equipment, but high-speed Internet throughout the compound (the next generation of workers are millennials), plus job boards, ideally electronic displays of daily assignments. And they probably should be multilingual.
- Meeting rooms. Not just for your crew, but nice enough that the greens committee can meet there, too. That means a white board, flat screen for PowerPoint presentations and a refrigerator for refreshments.

Every part of the maintenance area should be neat, clean, organized and efficient. Those first impressions say a great deal about the overall operation and especially the person leading it. **GCI**

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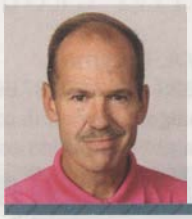
TALKIN' ABOUT PRACTICE



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

If you're an NBA fan, it's pretty hard to hear the word "practice" and not think about Allen Iverson's famed rant in 2002 where he dismissed the idea that he'd let down his team by not showing up for workouts: "I mean, listen, we're talking about ***practice***, not a game, not a game, not a game, we talking about ***practice***."

Iverson said the word "practice" more than 20 times in a short press conference. It was both hilarious and disturbing. He later admitted he was hammered at the time which makes it sadder and funnier all at once.

When superintendents hear the word "practice," they often flinch involuntarily because the range is a giant pain in the butt to maintain. There is no "fixing" turf on a driving range … it's just a constant battle to minimize the worst of the damage. And it costs a lot of money. Most supers we spoke with for our cover story were investing 12–25 hours of labor per week in practice areas. Higher-end courses were double or triple that figure.

Yet it's a very, very important investment.

Let's take a step back and consider where golf is in 2016. There are 15,200 facilities in the U.S. To put that in context, there are a thousand more courses than McDonald's franchises in this country. Makes you shudder a little, doesn't it?

Yes, we're closing a golf course every 48 hours in the U.S. Our bloated supply shrinks by about 150 facilities a year … or a whopping 1 percent of our inventory. The fact is even the worst operations rarely shut down. There's always somebody willing try to "save" courses that should be allowed to die because of lousy location, a bad business model, poor management or intense local competition.

(OK, I know every course that closes is theoretically a superintendent job loss and that stinks. But most of them are pretty crappy jobs, to be honest. Many of these workplaces are toxic and stressful. Any super who's managed a course in bankruptcy or receivership will back me up on this.)

In a decade, we'll be at 13,000 facilities which – assuming play doesn't go backwards and we backfill our aging customer base with women and younger folks – will get supply and demand somewhat equal. Hopefully. Maybe. Who knows?

So-called "grow the game" initiatives are wonderful. First Tee, Get Golf Ready, Golf 2.0, the Olympics – all of that is awesome. Every one of them is worth doing to promote the game generally. The NGF recently told us there is a receptive audience out there with millions of Americans saying they'd like to try golf but feel that it's not accessible to them or are too intimidated to try.

(By the way, a potential game-grower may be increasing concerns about kids getting concussions from traditional youth sports like football. I believe parents will look at golf as a kinder, gentler sport that won't scramble Junior's brains.)

But, smart facilities aren't just sitting around waiting for the game to grow and a rising tide that will lift all boats. Instead, they're acting strategically to grow their own business. And, in a crowded market where good customers can be choosy, the wisest clubs are investing in things to differentiate themselves from the pack.

And that brings us back to practice facilities. There are many clubs and good daily fees that offer a great experience on the course. It's the amenities that often differentiate them from two dozen other good golf courses within a 30-minute drive. Every golfer survey I've seen in recent years suggests practice facilities are high on that list of important amenities. And, as time compression grows in American life and carving out 5-plus hours to play 18 holes becomes harder for even the most dedicated golfer, the practice area rightfully becomes a focal point for choosing where they want to spend their time and money.

Upgrading practice areas has become an important trend in golf course operations everywhere. Many of my ASGCA and GCBAA friends are very busy creating enhanced practice environments that do more than just offer a place to hit a few balls before play. Ask yourself, how can you turn a range into a welcoming environment? Is it neat and attractive (despite 10 million divots)? How can you make it someplace people want to be even if they're not playing? Can the landscaping (fire pits, patios, viewing areas, etc.) create an "outdoor living" experience that transcends golf?

Read our cover story but do your own research. Set up some opportunities to go visit other clubs with great practice areas. Take your green chairman or owner along for the tours. Talk to architects and builders about what they're doing elsewhere. If the opportunity is right, put your case together, build a responsible plan and budget, and be the catalyst to help cement the future of your facility. **GCI**

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