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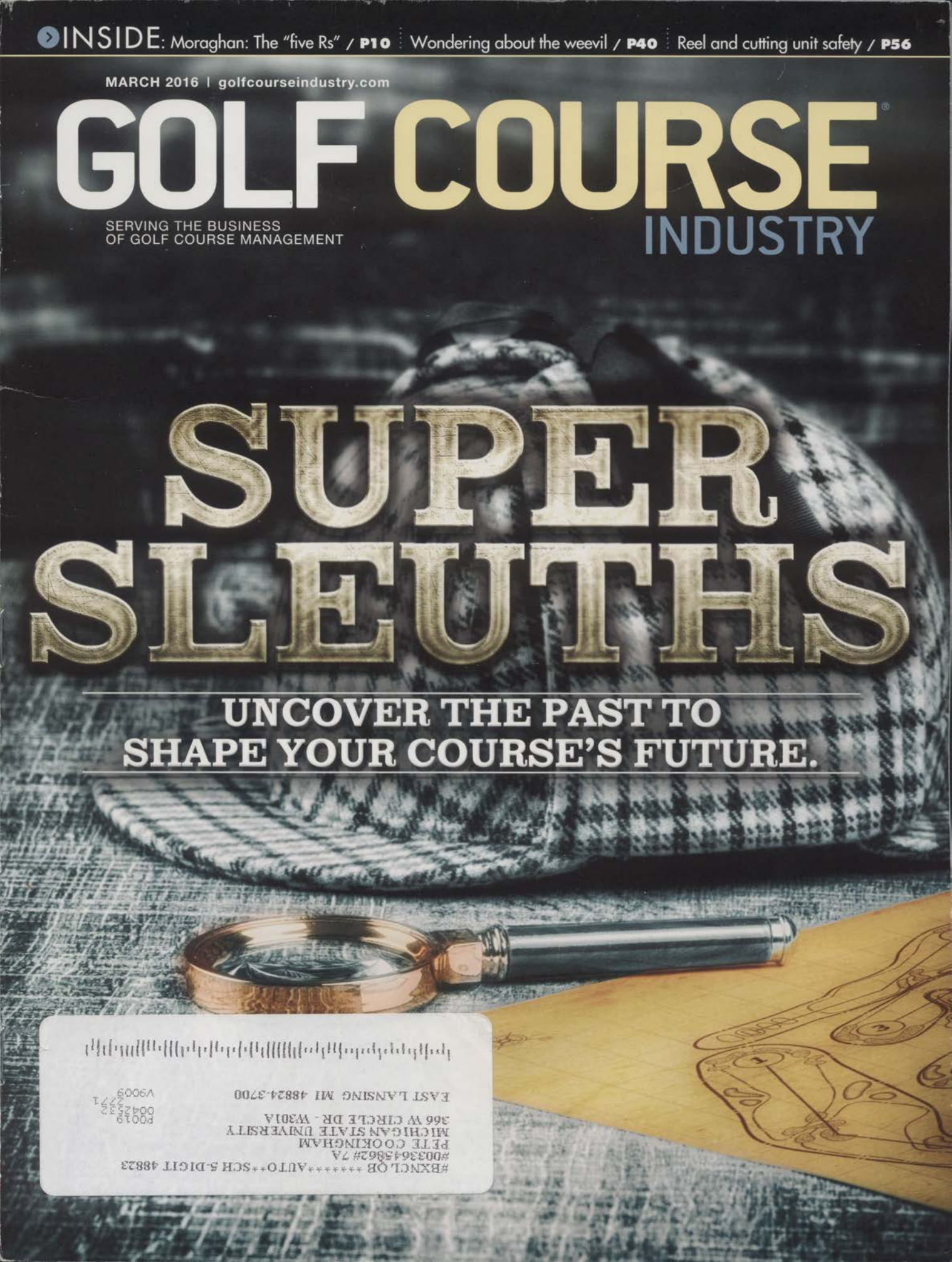

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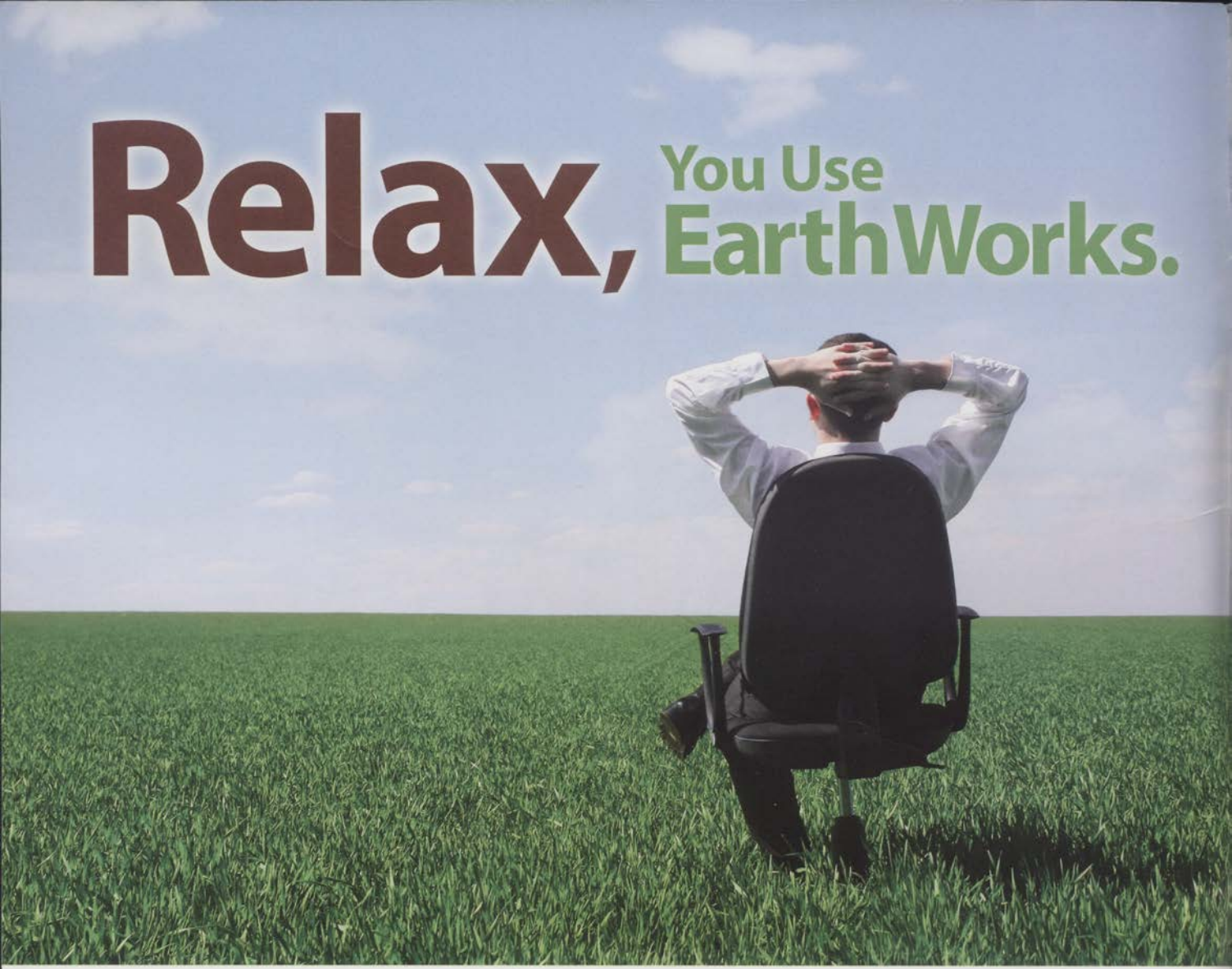

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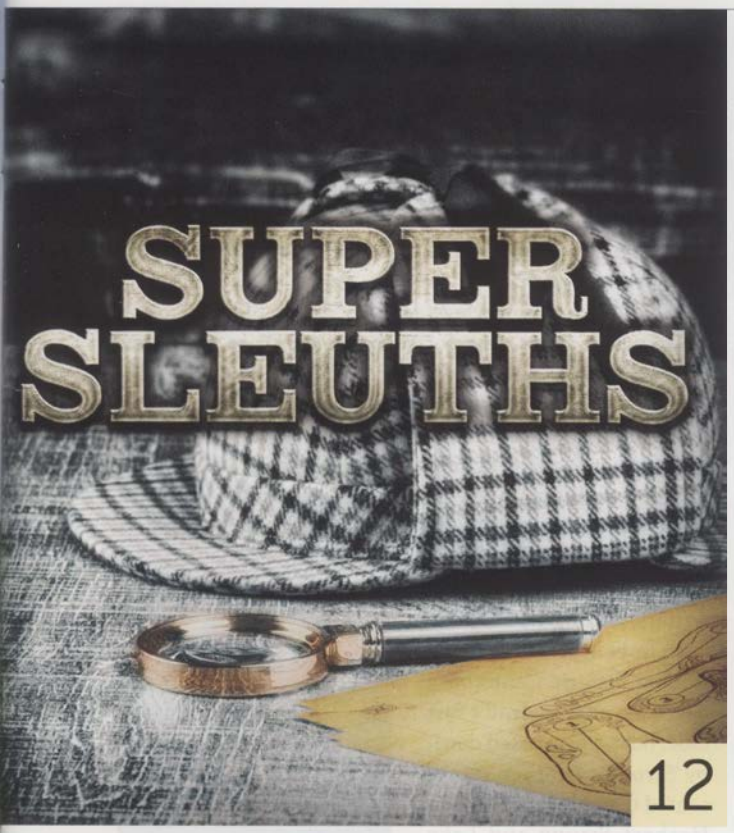

COLUMNS

DEPARTMENTS

FEATURES

2016 SPRING DISEASE GUIDE

RESPECT THE PAST

How much do you know about the golf course you manage?

Every superintendent can recite the turfgrass varieties, water source and agronomic practices. But do you know who originally designed the course and how that architect intended it to play?

In conducting interviews for the "Super Sleuths" cover story, which offers ways for superintendents to better understand their course's past, we found multiple examples where clubs spent decades operating under the assumption a particular architect designed their course.

Architect Richard Mandell tells the story of Lake Forest Country Club, an 18-hole private facility near GCI's Northeast Ohio headquarters. Herbert Strong is listed as Lake Forest's original architect in two books authored by respected writers. Strong had a presence in Northeast Ohio, designing historic Canterbury Golf Club on Cleveland's East Side, but a story passed down by Strong's brother represented the only link between Herbert Strong and Lake Forest, according to Mandell.

Guy Cipriano
Assistant Editor

Mandell's digging revealed something different. A local newspaper story mentioned another Golden Age architect, Tom Bendelow, being onsite for Lake Forest's opening match in 1930. Mandell found Bendelow's name mentioned again in connection with Lake Forest in an article published in a separate local newspaper. He then found a nameless drawing of Lake Forest from the 1920s. He compared the drawing to other Bendelow sketches, and Mandell says you could "clearly see it was a Tom Bendelow drawing."

"That sort of changed the course of that golf course's history," Mandell adds. "Moving forward we are not pushing the membership to pursue a restoration. We are pushing the membership to fix the course's problems, which they want to, and I say, 'If we are going to fix problems, let's do as much as we can to make it what it once was originally.'"

Old Elm Club in Highland Park, Ill., is another club where exploring the past altered its future. Donald Ross and Harry Colt, a pair of celebrated Scottish architects, were both involved at Old Elm, with Ross overseeing construction of the course. Architect Drew Rogers and superintendent Curtis James explored old plans, sketches and notes to better understand Colt's influence on the course.

The materials pointed to Ross leaving out some of Colt's original design, thus sparking the membership's desire to integrate Colt's original intentions into the course. "That

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was one case where a club really wanted to go back and reinstated what originally was intended," Rogers says. With the restoration came other improvements, including a new irrigation system, improved drainage and regrassed greens, signs of the maintenance enhancements possible through understanding a course's history.

Historical misinterpretations aren't anomalies, according to Meadow Club superintendent Sean Tully. "When you dig deep and really look, it's not always clear cut on who designed a course," he says.

Tully is one of those people you speak with for an hour and then realize after hanging up the phone you could have interviewed him for six straight hours. He balances the demands of maintaining a cool California course with fatherhood. He's also a golf course architecture savant who finds time to enlighten anybody with an interest in the subject.

Meadow Club superintendent Sean Tully, right, shares golf course architecture pictures with Jeff Mingay, left, and Sean McDonough last month.

© GUY CIPRIANO

An iPhone image taken on the Golf Industry Show floor of Tully sharing photos on his laptop with golf course architect Jeff Mingay and Broadmoor (Wash.) Golf Course superintendent Sean McDonough convinced us to pursue our cover story. And we'll give Tully the final word on why superintendents should want accurate information about the past.

"If you know what is out there, you need to see it to make sure your maintenance practices don't take away from the features or the direction your club or golf course is taking," he says. "I always think of Aldo Leopold in 'The Land Ethic.' If we aren't paying attention to it or respecting it, nobody else is to a degree." **GCI**

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Golf Course Industry and Aquatrols honored winners of the 2016 Super Social Media awards during #GCITweetUp16 at the Golf Industry Show in San Diego.

Pictured from left are Penn State University's **Dr. John Kaminski** (namesake of the Kaminski Award), The Bear Trace at Harrison Bay's **Paul Carter** (Kaminski Award), Turfgrass and Irrigation Services' **Mike Huck** (Megaphone Award for Outstanding Advocacy), Hillendale Country Club's **Brad Novotny** (Best Blog), Des Moines Golf and Country Club's **Rick Tegtmeier** (Best Overall Use of Social Media), Georgia Southern University Golf Course's **Patrick Reinhardt** (Best Twitter Feed), Glen Echo Country Club's **Joe Wachter** (Best Overall Use of Social Media), and the University of Wisconsin's **Paul Koch** (Best Twitter Feed). Not pictured are Bluejack National's **Eric Bauer** (Best Twitter Feed), Tacoma Country & Golf Club's **Joel Kachmarek** (Best Blog) and Camberley Heath Golf Club's **Graeme Roberts** (Best Video)

FOLLOWING THE ABW

Tracking the activity of the annual bluegrass weevil is an ongoing process, a point multiple experts make in the "Wondering about the weevil" feature beginning on page 40. Fortunately, superintendents have access to a tool designed to slow the pest. Syngenta has enhanced its WeevilTrak.com website for 2016 by adding an updated Optimum Control Strategy and naming Turfgrass Disease Solutions owner Steve McDonald as the program's new managing consultant. McDonald founded TDS in 2005 and currently consults with approximately 150 golf courses annually.

Other changes to WeevilTrak include the addition of CrowdTrak and a growing degree days model. CrowdTrak allows superintendents to report their own scouting data, while the GDD model calculates data for superintendents based on zip code.

From THE FEED

We saw GolfBoards all over the place at the PGA Show and Demo Day. We saw GolfBoards all over the place at the Golf Industry Show. After returning from San Diego, we asked superintendents whether this emerging form of golf course transportation has a place at their facilities and in their markets.

Josh Heptig
@Turfguy76
We demoed them and older golfers (former skaters and surfers) were intrigued. Did not get into price and willingness to pay.

Sean A. Hoolehan
@SeanAHoolehan
They cost more to rent than a cart. The younger crowd that finds them cool have less cash. I think it's a price point problem.

Guy Gurney
@GuyGurney
Tried one out this summer on my course. Took it down the nastiest path we had. No problem. I like the idea. Need some change.

Kevin Hicks
@golfsuper1992
Love 'em! Can't get my D.O.G on "board", so I've offered to lease them myself for the revenue. My only concern is liability?

Tom Kaplun
@nhccsuper
I can't imagine pushback golf carts got when 1st introduced so I'm sure there's resistance but if it gets peeps to play golf

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HOW TO HANDLE A RENOVATION PROJECT

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

Growing up, teachers referred to the "three Rs"– reading, 'riting and 'rithmetic. Now we're grown up and in the golf-course maintenance industry, there are "five Rs" we need to know – refine, renovate, restore, redesign and rebuild. And chances are, you either have or soon will encounter at least one of the Rs at your facility.

If you don't want to find yourself reassigned, run out of town or retired, I suggest you do some hard work – and hard thinking – before touching any part of your golf course. Because while it can be exciting and challenging to work on a course refinement of any kind, your actions can have significant ramifications on your club, your course, your members and, most important, your livelihood.

The first consideration is money. Ask yourself these questions about any R-related project:

- How will it be paid for?
- How much will it cost? Including what you're told it will cost and how much it really will cost. Figure an added 20 percent, possibly more.
- How well do you understand your club's financial situation: Where the money comes from, who has control over it, how big a reserve fund exists?
- How much more will you have to pay your staff, or others you have to bring in, to work on this job? Again, assume the estimates are going to be wrong and at least some of the work is going to fall on you and your crew.

Here's another important question to consider: If the project is only going to keep the course status quo, are you simply throwing good money after bad? Would it make sense in the long run to spend more now for greater savings, and payback, down the road? Or is the work being proposed doing nothing more than simply keeping the course viable and calling for little more than bubble gum and baling wire to keep things going? If that's what you think, it is your duty to tell the people you work for that the plans they're discussing are not sufficient to keep your course/club healthy and growing.

Consider another R, that is, a more robust project. If that's your recommendation, remember the people you have to convince are paying the bills and your salary. Do your homework before recommending they spend more money, and be prepared to answer a lot of questions. For example, how will this enhance the playing experience? How will this make the club money? Who will do the work? In the long run, your job will be easier and their club will be more playable. But getting there can be a long, windy road. So be prepared.

NEXT SUBJECT: PLANNING. Give everyone plenty of notice to plan, acquire the necessary funds, make other arrangements for play if necessary, and notify those affected and deal with the inevitable backlash.

The quicker you expect a project to be discussed, agreed upon and finished, the worse off you are going to be. Trust me, things are going to go wrong, and you are the one who is going to be blamed.

Identify and explain every step of the process. Be realistic about the potential lost revenue from not collecting green fees; selling apparel, clubs, and food; hosting outings, meetings, and catered events; even damage to the building, parking lot and other areas of the club.

Whenever you talk to committees, members or anyone else, be brief but be complete. State the facts, avoid getting emotional and cite comparable examples from similar projects. Whenever possible, point out long-term cost savings, depreciation and accomplishments, such as hosting a tournament or more outing business. Don't make things up, but don't be afraid to find a silver lining.

When something goes wrong – and it will – let everyone know how long it will realistically take to fix the problem. Identify the problem, determine why it occurred, figure out how long it will take to fix (time, process, labor, budget) and look for an in-house fix rather than having to spend more money by going outside.

In my consulting practice, the most renovation attention goes to greens. But I'm never surprised when the superintendent hasn't done his homework and hasn't evaluated all the agronomic options available for green maintenance. Investigate all of the costs outside the realm of green reconstruction. These include additional green perimeter work, amending green approaches, bunker expansion, tree reduction, irrigation add-ons, green expansions, course closing and re-opening dates, reciprocal playing options for members while the course is closed, and how long it will take to properly rebuild putting

surfaces. Evaluate and remedy all existing ancillary agronomic items to promote a successful rebuild.

SOMETHING ELSE TO CONSIDER. While it isn't sexy, like greens, infrastructure is vital. What golfers don't see – underground irrigation systems, architectural features that were once revolutionary but are now just expense to maintain – have to be addressed. Many older course have become outdated as equipment has improved: Does your club have the means, to say nothing of the courage, to undertake these changes? You may be convinced your course is behind the times, but getting the powers that be to agree can get you in big trouble.

Here's a fairly simple checklist of major areas and minor concerns whenever a renovation is being considered.

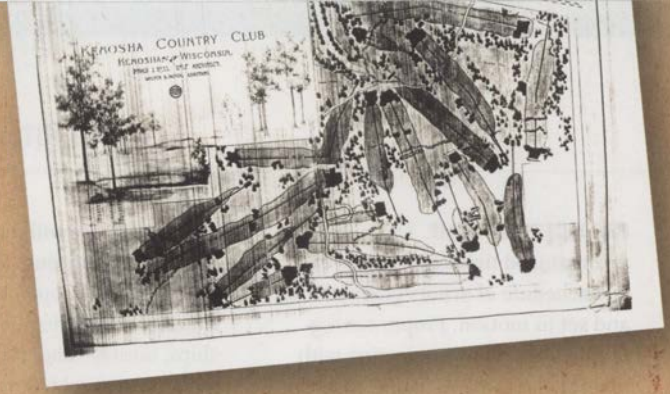
PROJECT TIME FRAME. There must be an organized time frame, flow chart and schedule of events planned for and set in motion. Proper timing is vital when communicating with members, as well as hiring an architect, builder or other vendors. The schedule must include all aspects of the effort from course shutdown to its reopening. Consider timing to ensure the new turf can grow in successfully.

COMMUNICATION AND MEMBERSHIP INPUT/OPINIONS. Planning, communication, budgeting and implementation are necessary when renovating even the smallest part of a course. Thorough, ongoing communication is vital, and should begin as soon as a project is approved if not before.

SCHEDULE OF EVENTS. Every club and every project is different, but you can be sure this list will include at minimum project timing, length of project, budget process, opening and closing times, rescheduling of club championships, outings, and any state and local golf events. Feel free to add your own particulars.

MEMBERSHIP IMPACT. Question No. 1 must be, "What are the costs of undertaking this effort?" And question No. 2? "What are the additional costs they can expect?"

CULTURAL MANAGEMENT. Even if you are very involved in the redo, your primary job is to protect the club's investment for the future. And once the project is done, there will be even more to do. Even if the course is closed and the members have agreed to stay away, you can't neglect proper turf management. **GCI**

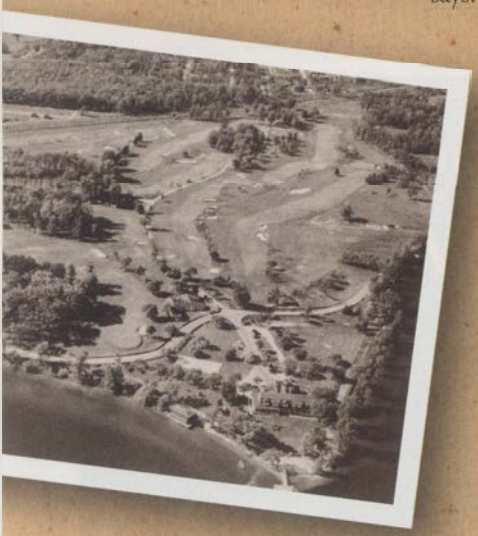


Paul Bastron imagined the possibilities the first time he toured Kenosha Country Club. Hidden, yet not desecrated, lurked key features from Donald Ross's original design.

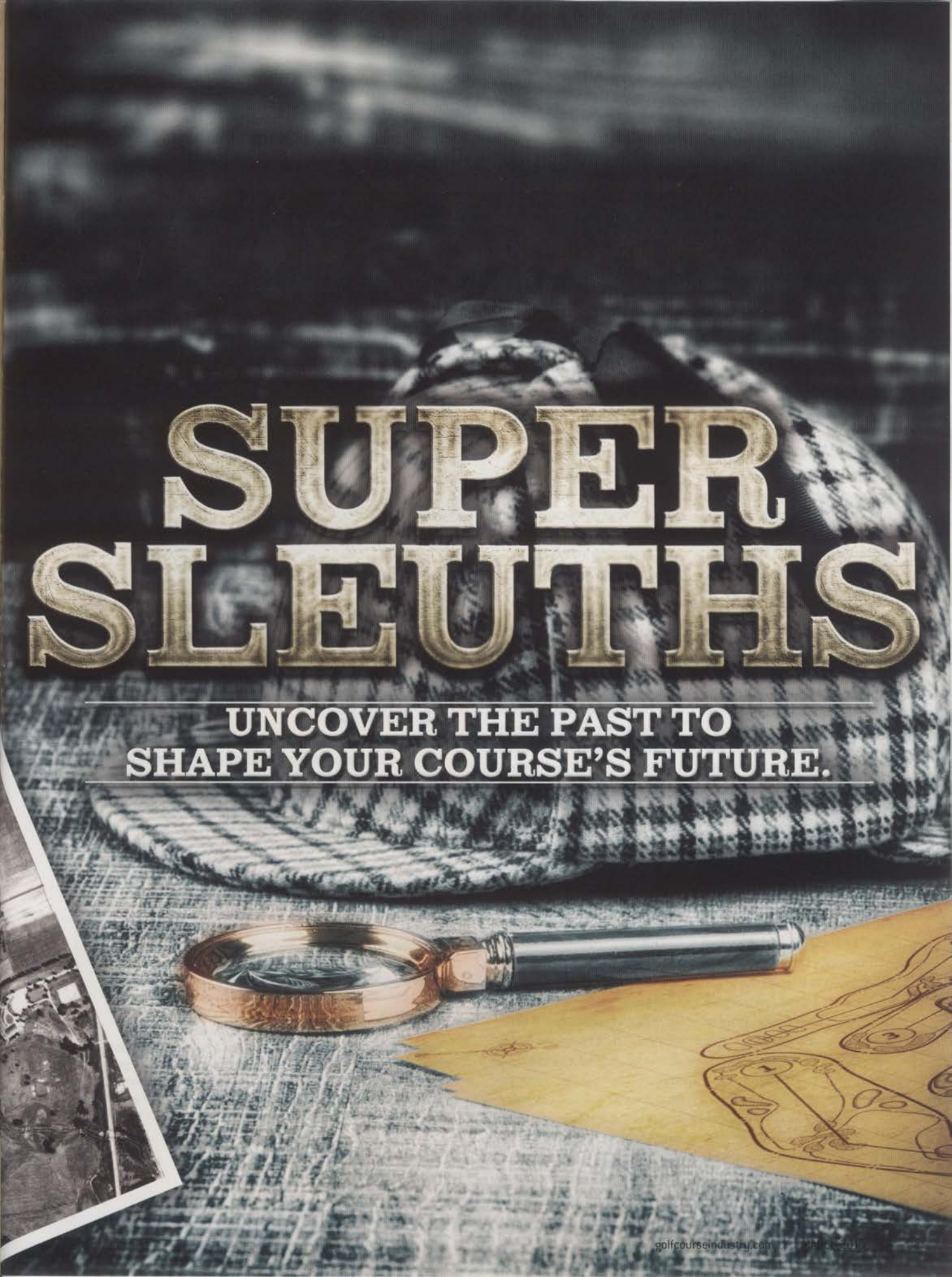
The remains of the features are allowing Bastron to envision a future with strong links to the Wisconsin's club's past. "That's what you think about," he says. "That's what drives you to do it. You see what it could be."

When he's not managing a crew or maintaining turf, Bastron studies golf course architecture, placing him into a small yet fascinating group of superintendents with sleuth-like qualities. Sometimes sleuthing has tangible benefits for a superintendent.

Kenosha Country Club has embarked on a multi-phase restoration that will not only unearth many of Ross's original features, but yield a new irrigation system design and permitting for several bridge relocations, and, yes, lead to the removal of trees. Bastron's primary partner in sleuthing is golf course architect Drew Rogers, who has extensive experience restoring classic courses like Kenosha, which moved to its current location near Lake Michigan 50 miles north of Chicago in 1920.



By **Guy Cipriano**


SUPER SLEUTHS
UNCOVER THE PAST TO SHAPE YOUR COURSE'S FUTURE.

Working with a superintendent interested in architecture helps with "every aspect of a project," including selling it to a membership, Rogers says. Toronto-based architect Jeff Mingay, who has restored features on multiple A.V. Macan-designed courses in the Pacific Northwest, considers an engaged superintendent "the key to every" project involving a course's past.

"A superintendent obviously has his agronomic responsibilities and course maintenance responsibilities, but when you get guys interested in architecture and interested in the history of it, they tend to be a little more open-minded, I guess you could say," Mingay says. "They know it wasn't always simple to maintain all of the cool features that they had and they start thinking a little bit outside the box because they are so passionate like we are as architects to put the stuff back, preserve it and maintain it. Those are fun projects that usually come out better than the rest when you have that kind of team put together and the architect and team on the same page."

Digging into a course's past isn't as time consuming as it appears on the surface. Bastron might "hang around a little bit longer at the end of the day," and adds he's not letting maintenance tasks slip because of his interest in golf course architecture. "I think [an interest in architecture] comes into play a lot when you do find a golf course like [Kenosha] that's primed for a restoration type project," he says.

Unlike their primary responsibilities, superintendents will reach an ending point when researching a particular course, according to golf course architect Richard Mandell. Even the world's most studied courses have a finite number of available materials associated with their origins. "It's not necessarily too time consuming," Mandell says. "If you have a passion for it, you will find time to do it."

Perhaps no agronomist finds more time for sleuthing than Sean Tully, the superintendent at the Meadow Club in Fairfax, Calif. Tully has parlayed an interest in golf course architecture and history that stems from working on the maintenance staff of a Wisconsin course he grew up playing into becoming an expert on the Meadow Club and its famed designer Alister Mackenzie. Approaching his 16th year at the Meadow Club, Tully participated in a multi-year restoration led by architect Mike DeVries that restored many of Mackenzie's original features. Expanded greens, fewer trees, restored bunkers and altered mowing lines were included in the changes, and Tully says the results of the project "floored" attendees of a 2015 Mackenzie Society event at the club. Many of the attendees were experiencing the course for the first time since the early 2000s.

The way Tully sees it, the time and effort spent researching his course and other Bay Area layouts designed by Golden Age architects is worthwhile. "The more you know about your golf course as a superintendent, the more job security you have to a degree," he says. "I still let the members have their say, but they will ask me, 'Sean, what is your opinion on this.' I give them two: one as a superintendent and one as a

© DREW ROGERS

ANNIVERSARY TIME

An explosion of golf course construction from 1920-29 means clubs in every part of the country are approaching 100th anniversaries. Architects are split on whether looming milestones will lead to major restorations.

"If you are approaching your 100th anniversary and you haven't redone your greens, you probably could have thought about it at your 50th anniversary too," Richard Mandell says. "I don't think that 100-year mark is going to change anything. I don't think [renovations] are going to increase because of that. They're going to increase because courses are getting older and older."

Jeff Mingay's travels and conversations are producing a different outlook. "To be honest, I have had a lot of discussions at both clubs I work with and clubs that I am familiar with who are aiming for that type of thing – to get that 100th year restoration completed by whatever date it is," he says.

If your club is approaching its 100th anniversary and could use some tweaking, Mingay adds don't delay exploring the past. "You might start planning five years before you get the shovel in the ground, getting the plan together, explaining it to the membership, getting the financing together," he says. "All that kind of stuff typically takes quite a bit of time."

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Ground level photography is considered a helpful element when golf courses are using old materials to sell or complete a restoration.

historian just to make sure we keep the story straight."

Tully's laptop contains 30 gigabytes of golf course architecture-related materials, and he's often sharing information other superintendents never knew about their own courses. Duplicating Tully's sleuthing triumphs might be extreme, but conversations with Tully and other experts provide guidelines for using the past to shape a course's future.

INSIDE THE CLUB GROUNDS

The best place to look for materials about a club's past might be the areas surrounding a superintendent's daily movements.

"The first thing I say is clean your shop, which is surprising," Tully says. "You will find stuff like routing plans." The only routing plan for the Meadow Club Tully has ever seen is a poorly drawn picture hanging in a hallway, but a routing and irrigation plan for San Francisco Golf Club from the 1960s was found during a tidying of the Meadow Club's maintenance shop.

Clubhouses and club archives are other logical places to search. "I have heard too many times it was sitting here in a box and nobody ever looked at it," Tully says. Mandell was recently involved in a restoration at Orangeburg (S.C.) Country Club where they had secured aerials of the Ellis Maples-designed course but struggled finding original drawings until a cleaning of the clubhouse attic. "You can be surprised by what you find," Mandell says.

Knowing the history of a facility's clubhouse can save time. If the clubhouse had been burned down or relocated, Rogers says it's unlikely a superintendent will find materials inside the new one that can assist in a restoration.

WHAT TO LOOK FOR

Golf courses are part of broader communities, and Mandell recommends visiting local government agencies such as planning and parks and recreation departments to obtain historical documents of a particular area. "Just investigate," he says. "You have to turn over every stone. That's kind of the way I operate. People stop at the first no, and I don't necessarily do that."

The historical document most likely to be found during outside-the-club searches are aerials. Rogers says "a high percentage" of clubs are featured in some form of aerials, whether they are course specific or include parts of the course in a shot of a municipality. Tully uses Google Earth for current and past overhead imagery of Bay Area golf courses while Mingay says www.historicaerials.com offers glimpses of golf courses in major metropolitan areas. Old aerials are often a superintendent's ally because they show landscapes devoid of large trees.

"So many times they were planted too tightly together, they were the wrong species, they were in the wrong spot and they were too close to play," Rogers says. "There's nothing wrong with planting trees on the golf course, but typically we want to see the right species planted in groups or clumps and in the right spots where they are really not going to impact play."

Aerials are helpful and they are becoming easier to obtain thanks to the Internet, but Mingay says it's challenging to restore intricate features solely by studying overhead shots. "If you are really interested in restoring things, you really need ground level photography," he adds.

Drawings and routing plans are challenging to find. When they are obtained, concepts rather than specifics are often on the sketches, according to Rogers.

Club minutes also should be examined because whomever read them previously might have scoured them for a purpose different than studying the history of the course, Tully says. On the other hand, Tully warns against overreliance on official club histories. "Club histories tend to be more of an oral history so you have to be really careful in what you read there," he says.

Still, it can't hurt superintendents to interview older members about how a course once looked and played, especially if physical documents are difficult to obtain, Roger says. The USGA and local and state golf associations are among the organizations that could have historic images or information about a course, especially if a notable architect was involved in the original design.

SOME ARCHITECTS ARE EASIER THAN OTHERS

Superintendents working at a Donald Ross course needing restored are in fortuitous spots. The Tufts Archives in Pinehurst, N.C., boasts more than 300 Ross-created field sketches and

(SLEUTHS *continues on page 64)*

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RESTORATION, RENOVATION, RESTORVATION?

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.

The restoration movement started at the 1979 U.S. Open at Inverness in Ohio, where three new holes clearly didn't match the original Donald Ross-designed holes. That and other character destroying Ross renovations led to the formation of the Donald Ross Society. Eventually, other Golden Age golf course architects got their own preservation societies. It was also a reaction to decades of modern design, culminating in the money fed, award- and rankings-centered style of the 1980s.

Since then, it's common for older courses to seek an architect specializing in restoring old courses. The specialized field of golf course architecture, with less 500 practitioners worldwide, has evolved into even more specialized subsectors, including restoration.

With restoration being trendy, most architects use that label as a sales pitch, but very loosely when concerning design intent. In building architecture, these terms are better defined, and could be in golf, too:

RESTORATION – In both golf course and building architecture, this means to use original designs from a particular era of history (Opening day, major changes to host a prominent event, etc.) to recreate the past as authentically as modern materials and construction allow.

REHABILITATION/REUSE – Keeping an old building's exterior as near its original form as possible, but adapting its interior to a modern use such as offices or shops. In golf renovations, "Rehabilitation" is a better term when improving infrastructure or design to bring back a course's former image, reputation or conditions, while not preserving its original design.

REMODEL/RENOVATE/RESTORVATE – Generally, the first two are interchangeable, used where golf course features are totally redesigned, using most of the existing routing as a starting point. Many tout "sympathetic renovations" – sometimes called "restorvations" – which allows more conceptual design latitude, while nominally respecting the original style and intent. However, it involves value judgements based on "Would the architect do this if alive today?" discussions, which are always interesting, but never conclusive. "Latitude" to change becomes "License to change," quickly turning restorations into total renovations with a restoration label.

REBUILD/TOTAL BLOW UP – "Blowing up" is a very literal term for buildings. In golf, it refers to building a new course of any style over an old one on the same site, including major or total re-routing.

Courses wanting a true restoration should select an architect on substance, and not nomenclature, finding one who respects design history and has experience in similar restorations. You might also bring in an independent historian/researcher with expertise in your original architect for additional perspective. You also need strong internal leadership to gain consensus for the concept of restoration.

True restorations are based on historical research, including original plans, early aerials and photos, newspaper articles, and knowledge of the original designer's philosophies. The goal is to determine the history of every hole, from its original design intent and initial execution, to all changes made later by others, and whether those changes are reversible.

SOMETIMES, IT'S EASY. Changes like new back tees are easily accepted, since they maintain original greens and landing zones while accommodating modern length. In other cases, tricky decisions must be made between keeping the original landing zone hazards and building similar ones further down the fairway, hopefully on similar topography as the original.

SOMETIMES, IT ISN'T. Most courses change substantially over time, making restoration impossible, or impossibly expensive, due to:

- Property boundary changes, earlier re-routing.
- Major design changes now embraced by golfers.
- Agronomic needs (poor water, etc.) require new solutions.
- Environmental areas and multiple/forward tees must be accommodated.
- Need for new practice areas not in original design. **GCI**

Editor's note:
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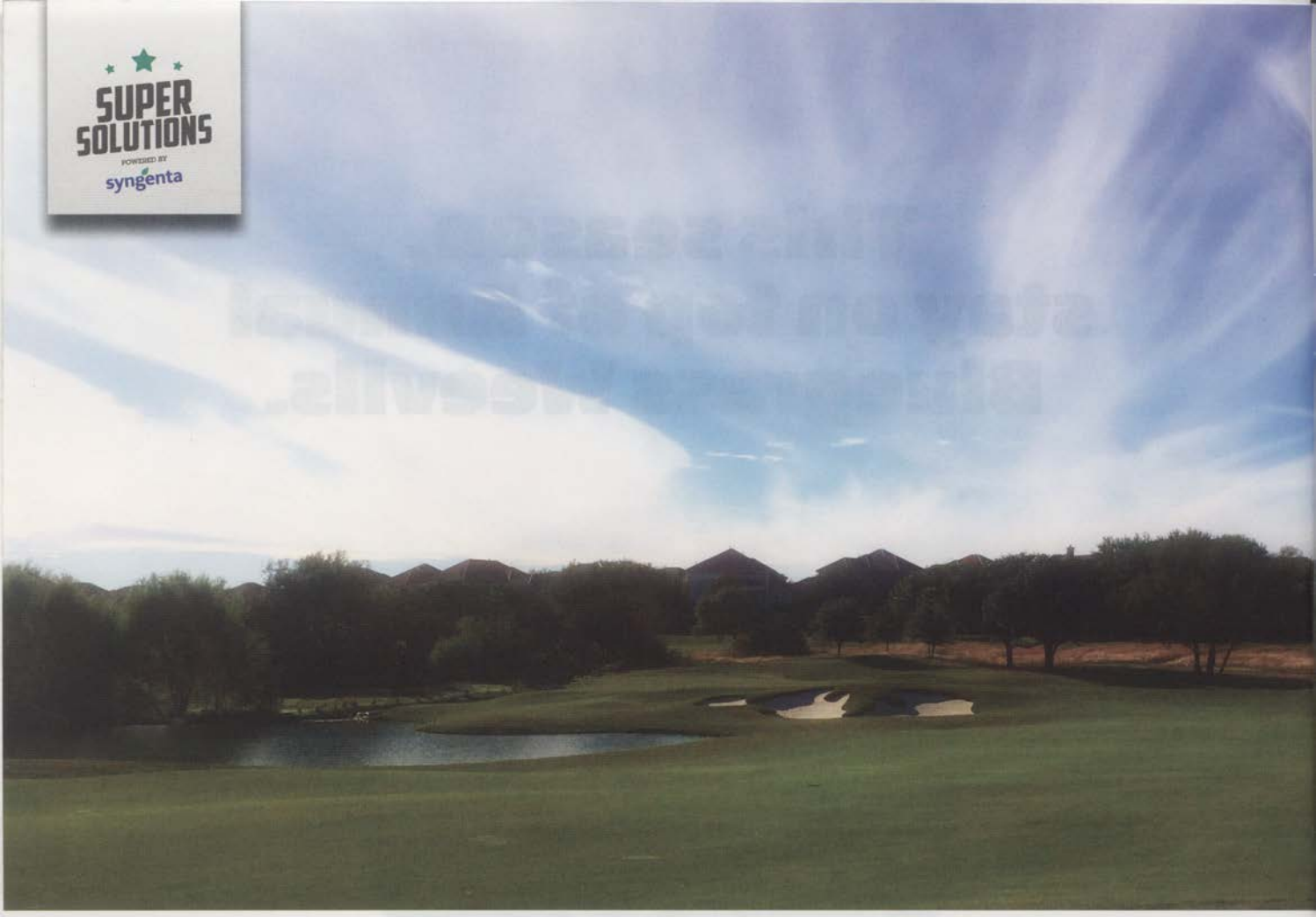

Texas-sized drive

Turning to the people and formulations he trusts enabled Tyler Andersen to settle into his first head superintendent job and meet ambitious agronomic deadlines.

By **Guy Cipriano**

SUPER SOLUTIONS
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Fair or not, scheduling decisions in Texas often revolve around football season. Tyler Andersen recognized this immediately after becoming the superintendent at the University of Texas Golf Club last May.

He even adjusted his agronomic calendar to align with the Longhorns' football schedule. Andersen wanted members to experience championship-caliber conditions by Sept. 1, four days before Texas opened its 2015 football season against Notre Dame.

The son of agronomist John Andersen and one of Ken Mangum's final Atlanta Athletic Club protégé's, Andersen created a list of objectives to complete within a 120-day stretch to meet the self-created deadline. The list could have stretched the entire length of Darrell K. Royal-Texas Memorial Stadium.

Andersen not only had to learn the quirks of Austin, a vibrant, growing community, he needed the crew to embrace what he calls an "intense" style of agronomics consisting of frequent grooming, topdressing, double mowing and brushing. The weather – as it often does – didn't cooperate, as Austin received 16 inches of rain in May followed by 100 days of no precipitation.

As rain pelted the Roy Bechtol-designed course which doubles as a private club and the home of UT's nationally ranked golf teams, Andersen evaluated the condition of the maintenance equipment. The club proved willing to invest in new equipment, and Andersen didn't take the opportunity to receive a new fleet lightly. His equipment evaluation lasted a month.

Understanding another part of the existing inventory took a bit longer. Andersen inherited what he describes as "hundreds of thousands of dollars" of chemicals he had either no experience or little comfort using. Andersen needed products he could trust to meet the Sept. 1 and other future deadlines, but he also understood the investment made by the club sitting in the room.

So Andersen took a hard took and asked himself what he needed right then to make his job effective, and how could he best utilize the older chemistries and fertilizers to assist his program. "I couldn't just allow them to sit there because they continue to age as well, and I needed to develop the room to store an inventory of prod-

LEFT: The University of Texas Golf Club opened in 2003.

RIGHT: Superintendent Tyler Andersen worked closely with trusted partners, including Syngenta, to determine what parts of the course to apply chemicals purchased before his arrival that he didn't feel comfortable using on greens, tees or fairways.

ucts that I need to continue the success for the future," he says. "That was a huge, huge challenge."

For the first time in his career, Andersen made the final call on all agronomic decisions, yet he relied on his past to wade through the chemical conundrum. Andersen's two biggest agronomic influences are his father John, a regional director of agronomy for Century Golf, and Mangum, the legendary former AAC director of golf course and grounds. Andersen started working at the AAC after graduating from the University of Florida and ascended to become one of Mangum's most trusted lieutenants. Andersen ended his AAC stint as the superintendent of the Highlands Course, which hosted the 2011 PGA Championship and 2014 U.S. Amateur.

Working for Mangum taught Andersen numerous lessons, including the importance of establishing relationships with manufacturers like Syngenta to solve problems and how to implement chemistries that deliver optimal results. Instead of looking within for a solution to the chemical room dilemma, Andersen sought outside advice, calling his father, regional agronomists, other Austin-area superintendents and representatives from companies he trusted.

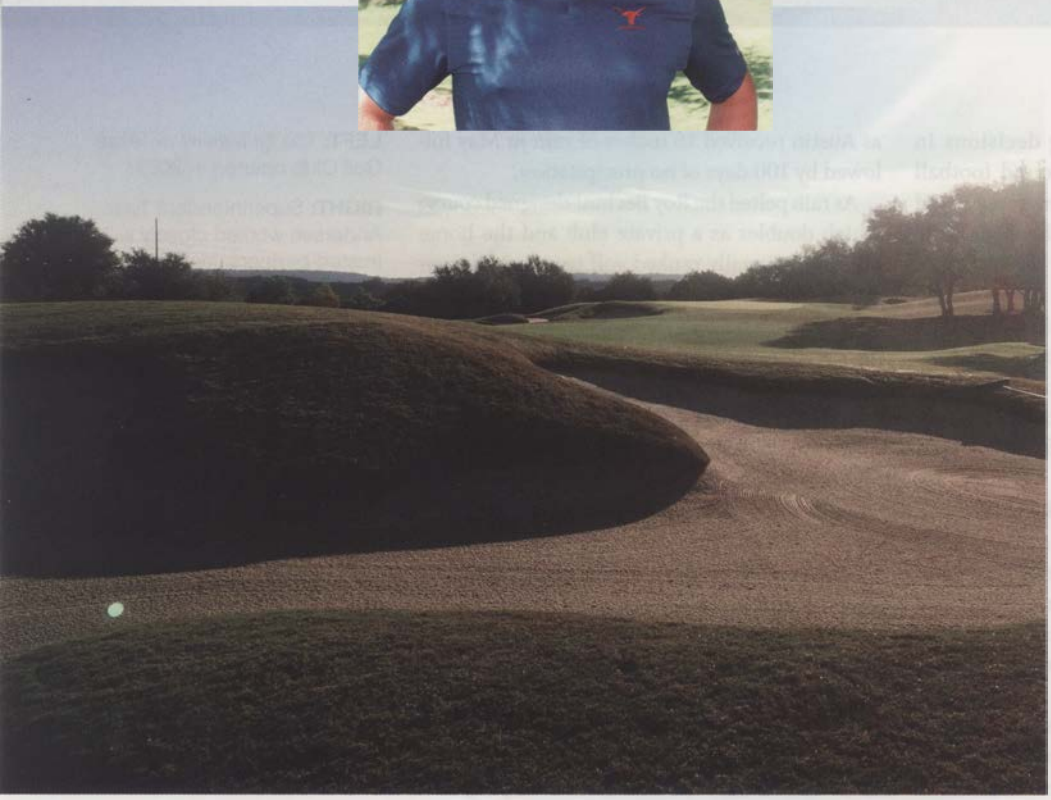
Andersen discovered what he learned at AAC – the collective best interests of the industry often supplant any competitive desires. Help came from numerous sources, including Syngenta territory manager Bart Fox. Andersen has worked with Syngenta throughout his career and considers fungicides Briskway, Daconil Action, Heritage Action and Secure, insecticides Acelepryn and Provaunt, the herbicide Monument, and Primo Maxx plant growth regulator among the product he's comfortable inserting into an agronomic plan.

"I knew what I had experience with," he says. "I knew what I trusted and I knew who I trusted, and when you are hired to come in and elevate a property to a condition you know it can go to, just instinctively I'm not going to put out a bunch of products that I don't know about."

Relaying the reason to upgrade the club's selection of chemicals provided another unique challenge. Decision makers, after all, notice when a piece of equipment is aging. Fungicides, insecticides, herbicides, fertilizers and wetting agents, while equally important, are invisible to the general membership.

"When I first got here and sat down with my general manager and owners, I went through everything with them on products and fertilizers that I need to turn this place into a daily conditioned championship-type facility," Andersen says. "I took them to the chemical room and I showed them firsthand the types of materials that were in there, and then I showed them what I needed and why I needed it. It was then almost like the equipment. It kind of sold itself. They hired me knowing that I had a completely different agronomic approach, so they were willing to invest it that."

Working under the premise improving the greens represented the most important part of hitting his Sept. 1 deadline,



Tyler Andersen took over as the superintendent of the University of Texas Golf Club in May 2015 and established a goal of providing championship-caliber conditions by Sept. 1, 2015. The club has around 400 members and serves as the home to the UT men's and women's golf teams.

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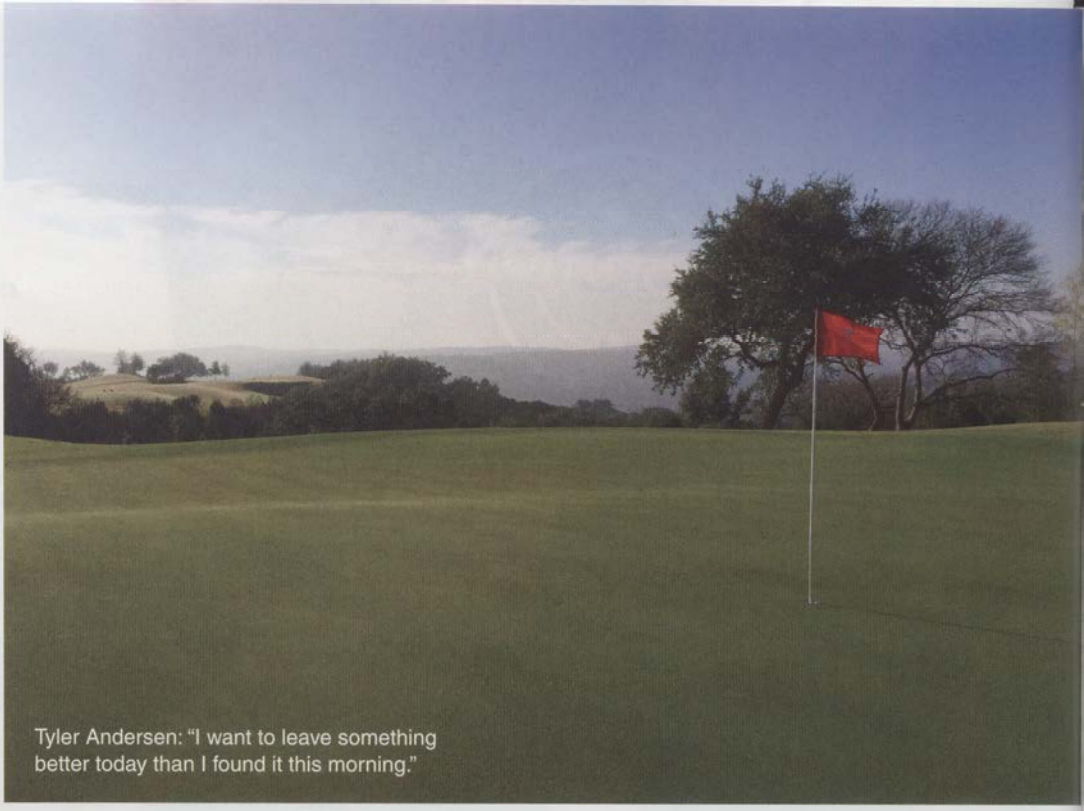

Tyler Andersen: "I want to leave something better today than I found it this morning."

Andersen stressed the need to make preventative fungicide and insecticide applications on the greens. Tees and fairways came next on the priority list followed by the primary rough. To protect the club's previous investments, Andersen constructed a plan where existing products are being used on the 25-acre practice facility for the UT men's and women's teams, the driving range, and wayward areas of rough.

"When Tyler showed me the products he inherited, I embraced the challenge of working with him to develop an agronomic program that would use up the assets he had, while integrating products that would deliver the agronomic results he was looking for," Fox says. "It was an honor that he trusted us to help him. When Tyler looks good, we look good."

The club borders a nature preserve and environmental tussles aren't uncommon in Austin – a proposed 36-hole facility involving recognizable golf names has met opposition partly because of water concerns – so Andersen knows he needs to use products supported by research and development. He adds having representatives such as Fox available to answer questions about usage offers further reassurance.

"When I sit down and do my EOP and my agronomic program, I'm calling Bart and asking, 'Bart, what environmental concerns do I have if any with this? Is it OK to spray or apply along these corridors? What type of movement can I expect?'" Andersen says. "All those BMPs are factored into everything we do because at any moment the Lower Colorado River Authority or the Texas Commission on Environmental Quality can come calling because there's rare bird in this preserve. It's one of those things you take into account because you want to be an environmental steward."

Understanding Austin's delicate environmental situation represents one of many adjustments Andersen is making. After learning the nuances of zoysiagrass fairways at the AAC, Andersen is maintaining a course with TifSport Bermudagrass fairways, tees and rough, and TifEagle greens. The weather represents a stark contrast to what Andersen experienced in Georgia. Precipitation goes from heavy to nonexistent in Austin; Atlanta's rainfall is typically dispersed throughout the year. Obtaining water can be a struggle in Texas, but the UT Golf Club receives abundant reclaimed water because it rests near a treatment facility.

The club has a strong association with the University of Texas. The majority of the members, many of whom are in their 30s and 40s, are connected to the university. And instead of just satisfying the needs of the membership, Andersen and his crew must cultivate championship practice conditions for collegiate teams with national title aspirations. Jordan Spieth called the club his collegiate home course in 2011-12, and it's entirely possible another future major champion occupies a spot on the Longhorns' current roster. The UT practice facility features every turfgrass variety the Longhorns encounter during the course of a season. The combination of a young membership and high-level golf team creates an energetic atmosphere, and forces Andersen to play the part of agronomic educator.

"People are really open to listening to new ideas and new ways of doing things," he says. "The communication is – and I'm not going to say easier – but maybe a little more direct because members are genuinely interested in what we have going on agronomically, and the changes we're making now and for the future. For a lot of our members, it's their first club. There's a lot more educational input on what we are doing agronomically, why we need to groom and topdress, and our water management practices."

The membership has noticed the change in playing conditions, as well, which happened to arrive by a certain day last September.

"We achieved our set goal of Sept. 1," Anderson says. "The place has really started to shine. Membership is ecstatic, ownership is ecstatic, the golf teams, are extremely happy to have a place to practice regularly in similar conditions to what they would see on a day-to-day basis at a tournament venue. But I have only been here 10 months and there's plenty of room for advancement. As I continue to learn the property ... I'm one of those guys that's pedal to metal. I want to leave something better today than I found it this morning. That's my mantra to the crew and that resonates with them." **GCI**


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2016 SPRING DISEASE GUIDE

Planning for a New Season

Our tees, fairways, and greens are waking up! The 2016 season will be kicking in to high gear before we know it, and a successful season requires thoughtful planning. PBI-Gordon is honored to join Golf Course Industry in bringing you this Spring Turf Planning Guide to help you succeed in 2016.

Even with the most accurate weather forecasts, we can never tell what nature has in store for us. And you can bet the El Nino will have something to say about it. So this season, like every season, it's best to plan for almost anything, from plantain to Pythium — we recommend Segway® Fungicide SC for the latter.

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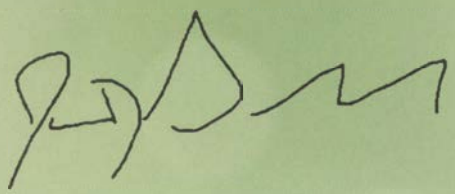
Be ready when your courses — and golfers — wake up: Plan now! And best of luck on making 2016 a great season!



Jim Goodrich
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See spot run

Agronomic problem areas lead to isolated outbreaks throughout your course that then morph into much larger pest and disease issues. Turf experts suggest using spring to address, spot treat and even correct those trouble areas.

By Rick Woelfel

The only thing predictable about the life of a golf course superintendent is its unpredictability. Unexpected issues are part of the job description but anticipating potential problems will go a long way toward preventing small problems from escalating.

With spring, superintendents find themselves dealing with small, isolated trouble spots on their courses. How they deal with them will likely set the tone for the entire season.

Respect for history matters, that is, knowing where the "hot spots" on the property have been in the past. Dr. Brandon Horvath, a turf pathologist at the University of Tennessee, notes history often repeats itself.

"What I ask superintendents is 'What are the key problems they seem to face year in and year out?'" he says. "They need to be aware of where those things occur. Most of them are. They know that down on No. 2 something always happens on the back right corner of the green.

"So when it starts to warm up it's important to just go out and scout," he adds. "Go out and observe what's going on on your surfaces and look for things that may be cropping up in the short term."

It's important to take special note of areas where changes have been made to the golf course, Horvath says. Perhaps a row of trees has been cleared out so an area that was once

When fixing a problem, turfgrass researchers and pathologists say it's important to understand why and how a particular diseases such as Pythium develops.

in the shade most of the time now receives an increased amount of sunlight.

"Does it grow more?" Horvath asks. "Do you need to treat it differently?"

Once the short-term problem is identified, it's important to take immediate action, with an emphasis on immediate. Delaying action on a seemingly small problem can be a prelude to bigger ones, says Todd Hicks, a turf pathologist at The Ohio State University.

"On the disease front, we always recommend to be proactive," Hicks says. "Your 'little bit' of disease one day, can become an out of control problem the very next morning. Once you're behind a disease, getting back in control usually means more spraying and time spent on that area for the rest of the season."

Horvath is an advocate for preventative product applications in the spring. "Preventative applications are always more effective than curative applications," he says."

But there are limits as to how proactive a superintendent can or should be. Dr. John Inguagiato at the University of Connecticut warns against jumping the gun, no matter how early spring arrives.

"You cannot go out and apply an insecticide or a fungicide (in early March) and expect to have any effect on adult ABW that are moving in," Inguagiato says. "While we may want to be proactive, I think where we want to be proactive is not necessarily making any sort of applications at this time, but rather, because it's a warmer spring, being proactive in our monitoring weevils coming onto surfaces while also monitoring cues like Forsythia being half gold and half green. Just being very mindful of those cues so we don't get caught off guard when the time to make those recommended applications occurs."

There is such a thing as overkill when it comes to chemical applications. Some superintendents have entered the trap of applying excessive amounts of product. This approach brings its own problems, such as increased resistance issues.

Horvath notes over application is a major problem and says it's important to have an action plan in place before problems occur, however seemingly minor they are.

"You may need to make an adjustment to that plan and change how you're going to do something because of the conditions on the ground," Horvath says. "But it's about having a plan and having that plan ready so you can make application where they're needed and not just engage in what I call the Wag The Dog Strategy, which is 'I'm just going to chuck everything I have in my tank at it and go all out right now with everything I've got.'"

There are few venues on Earth more scenic than a golf course. But Hicks notes that the same characteristics that make them so beautiful to behold also increase

their susceptibility to disease.

"Most of the things that are created or planted on a golf course to increase the natural beauty of the area can have a significant effect on things like shade, irrigation, foot/cart traffic, and air flow," he says. "All of these things can lead to an increase in agronomic or disease problems."

Hicks says it's important for a superintendent to realize not only what kind of issue he's facing, but also why the problem developed.

"The first obvious answer is spray to get the problem under control," Hicks says. "Next, explore why this area is a problem. By adjusting your agronomics for the area, see if that will bring your problem areas in line with the rest of your course."

Varieties in topography also complicate matters for superintendents, Inguagiato says.

"Obviously a golf course is a very diverse landscape," he says. "Many of the features we enjoy on a golf course like trees and topography can result in various microclimates on the property. Greens in particular can be pocketed. That oftentimes is going to result in areas that have a unique environment to them compared to other areas of the golf course. Trees are going to limit the ability of the wind to move air across the surface and that's going to have a pronounced effect on the environment there because you don't have that air movement."

Dealing with spot treatment issues includes taking steps to head off future problems.

"What I recommend to superintendents is that they think about phases of work they would like to do when they're trying to adjust the microclimate," Horvath says. "Let's take the area and improve the airflow here and see what it does and if it improves the situation than that will provide impetus to want to do more. A lot of times a small change, if it improves things, if you document it and communicate it, can kind of serve as the impetus to want to do more in that regard." **GCI**

SMALL CHANGE, BIG ISSUE

Thinking long-term to mitigate isolated disease outbreaks often requires small agronomic changes to a golf course. Most of the time, these tweaks and alterations are nearly unnoticeable to players, but they have a significant impact on a late spring dollar spot outbreak, or a flush of mid-summer anthracnose.

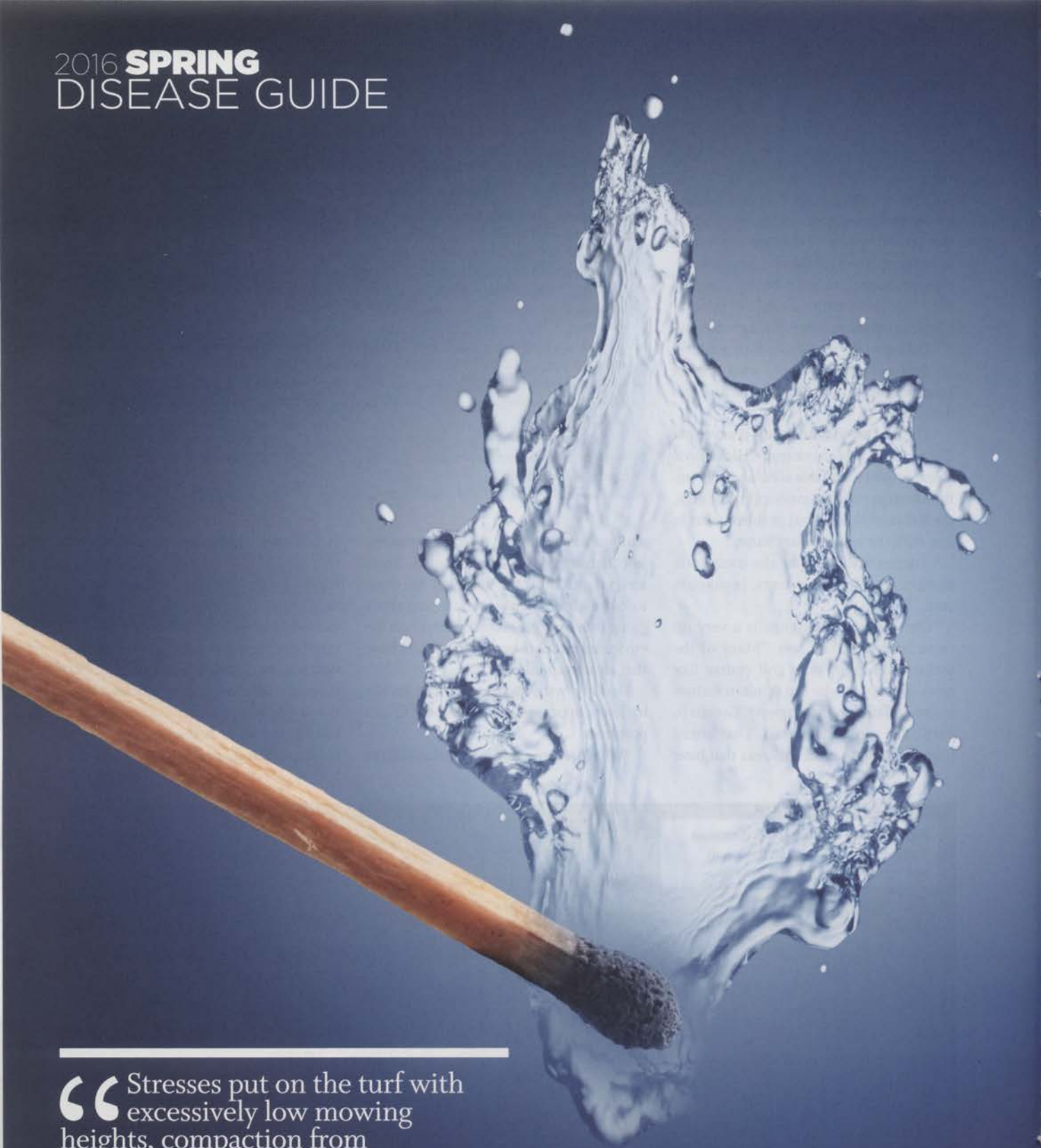
One of those small changes to a golf course often involves tree work. Indeed, virtually any significant renovation to a golf course in North America involves at least some tree removal.

This is a touchy subject at many clubs, to put it mildly. But a well-planned and well-executed tree program can improve the airflow over a golf course, expose certain areas to additional sunlight and, in general, reduce disease pressure and the risk of small problems growing exponentially, says Dr. Brandon Horvath, a turf pathologist at the University of Tennessee.

"It seems to me the really key piece of changing an area that's pocketed with trees involves trees that you own and can cut down," Horvath says. "You really need to sell that to your membership."

Brown patch is among the diseases that can be spot treated following spring scouting of a golf course.

2016 **SPRING** DISEASE GUIDE



> "Stresses put on the turf with excessively low mowing heights, compaction from equipment, and damage to leaf tissue from sand topdressing and dragging also can create an environment favorable for disease."
>
> *—Dr. Alex Ellram , SUNY Cobleskill*

Expect the unexpected

Successfully managing for unplanned outbreaks is an art form for any superintendent, especially when the bulk of the season's disease program is purchased the previous fall.

By Rick Woelfel

Seasoned superintendents have a knack for anticipating problems and having a plan for dealing with them. When faced with an unexpected disease outbreak, a superintendent needs to know what steps to take.

And these "unexpected" outbreaks have been occurring more frequently over the past two decades or so. Admittedly the topic of climate change is a subject of strident debate in political circles, however, Dr. Jim Kerns, a plant pathologist at North Carolina State University, says those conversations should not detract from the reality of the situation.

"Regardless of what is causing the climate to change, it is changing," he says. "Therefore, golf course superintendents should be monitoring weather very carefully if they want to win the battle against disease."

Excessive heat and humidity are a recipe for turf problems, but management and cultural practices are contributing factors, as well, says SUNY Cobleskill turfgrass professor Dr. Alex Ellram. "Many cultural practices can contribute to disease outbreaks," he says. "A few examples include nutrient deficiencies or excesses, especially with nitrogen. Other nutrients can certainly affect disease as well, but generally adequate but not excess nitrogen is key to minimizing many diseases.

"Stresses put on the turf with excessively low mowing heights, compaction from equipment, and damage to leaf tissue from sand topdressing and dragging also can create an environment favorable for disease," Ellram says.

Overwatering – for example, in the event of unusual amounts of spring rain – can lead to increased disease pressures on golf course turf, Ellram says. "Excess soil moisture leads to inadequate soil oxygen that weakens turf and favors many pathogens like those that cause Pythium blight and brown patch," he says. "One the other hand, keeping soil too dry can increase the incidence and severity of diseases like dollar spot and anthracnose.

"It is a generally accepted theory that the longer leaf tissue (grass blades) are wet, the more favorable it is to turf disease," Ellram adds. "So irrigation should be done at times that promote

more rapid drying of turf."

It's essential that a superintendent be proactive when dealing with a sudden outbreak, Kerns says. It's important to make a complete assessment of the situation before determining how to deal with it, particularly if it's an issue the superintendent hasn't dealt with before.

"I suggest if the disease is not familiar to collect a sample for diagnosis immediately and send to a diagnostic lab," Kerns says. "Then spray a broad spectrum fungicide coupled with a specific one. So if Pythium root rot develops, I always say spray Terrazole first followed by Segway while also protecting the foliage with something like chlorothalonil. Now this would be different depending on the disease. The key here, though, is to collect the sample before spraying the fungicide."

Ellram at SUNY says it's important that a superintendent have some product in reserve to deal with unpleasant surprises. "I suggest that when budgeting for fungicides, at least one if not two 'rescue' applications are included for the major diseases in your area," he says. "That will allow rapid response without budget concerns. If possible, these rescue treatments will be ordered and available on site."

There are instances in which a superintendent can justifiably skip a treatment because the outbreak itself will be short-lived, Ellram says. For example, a dollar-spot outbreak in December in Pennsylvania is not likely to be a long-term issue.

"However, if it is likely that conditions will persist for continued disease development, and your clientele are likely to notice the disease, treatment is generally justified," he says.

If present trends continue, the number of surprise disease outbreaks will likely continue to rise. Ellram says it's vital that superintendents be ready.

"As far as climate change goes, climatologists/meteorologists predict that more extreme events are likely in the near future," he adds. "If this is true, turf managers need to be prepared for more frequent unusual weather events and the disease that may result from them." **GCI**

RELATIONSHIPS MATTER

While steps can be taken to manage the unexpected, turf experts stress the importance of maintaining a good relationship with a supplier or someone who can get the superintendent what they need to deal with a problem.

It's important to maintain a good working relationship with suppliers to assure quick fulfillment of orders when fungicides are needed, says SUNY Cobleskill turfgrass professor Dr. Alex Ellram.

"In large metropolitan areas where there are often many suppliers competing for your business, the onus is on them to keep a good working relationship with you," he adds. "If you are more rural and have fewer suppliers competing for your business, you may need to work more at maintaining relationships with them."

An experienced and knowledgeable distributor can offer their experience as well as their product line, says Jim Kerns, a plant pathologist at North Carolina State University.

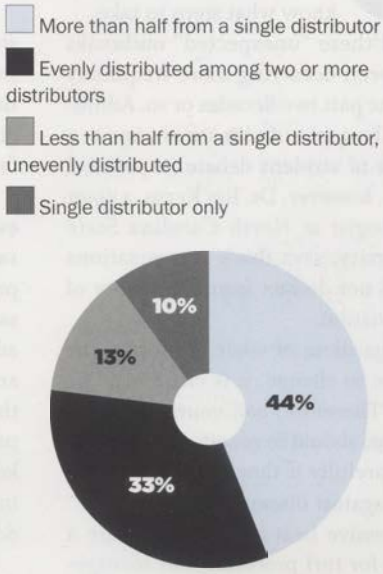
"A good distributor will save as many if not more jobs as an academic in my opinion," he says. "Turf is a wonderful industry because we are all on the same team. Many distributors attend education meetings and take excellent notes, so they also have a decent understanding of what we suggest when a disease develop. Plus, many of them were former golf course superintendents and can provide some excellent advice."

FACTS & FIGURES

It's often advised not to place all of your eggs in one basket. Superintendents take this to heart when spreading out their purchasing decisions among chemical suppliers. Many superintendents agree that it's advantageous to cultivate more than one relationship with chemical suppliers, both to maximize purchasing options and to take advantage of the educational and professional resources in times of need.

Likewise, a little more than half (55%) make half or more of their annual chemical purchasing during supplier Early Order Purchasing programs the previous fall.

Where are your golf course chemicals purchased?



Percent of chemical purchasing that uses Early Order Purchasing (EOP)

3% of superintendents purchase 100% of chemical purchasing through EOP

31% of superintendents purchase 75%-99% of chemical purchasing through EOP

21% of superintendents purchase 50%-74% of chemical purchasing through EOP

9% of superintendents purchase 25%-49% of chemical purchasing through EOP

16% of superintendents purchase Less than 25% of chemical purchasing through EOP

20% superintendents purchase no chemical purchasing through EOP

Source: 2015 Golf Course Industry State of the Industry report.

Build a better **fungicide program**

Squeezed by a mandate to do as much or more with a lot less, superintendents can utilize this time to evaluate the best protocol for disease management.

By Rick Woelfel

Creating a fungicide program for the spring is an individual endeavor. A superintendent must develop a protocol that suits their individual circumstances and there is a myriad of factors to be considered. One of them is cost.

Advance planning is necessary to develop a program that will be effective without adversely impacting the bottom line of the annual turf maintenance budget and perhaps leaving the superintendent without the necessary financial resources to combat an unexpected problem late in the season.

As luxurious as it may sound, Dr. Brandon Horvath, a turf pathologist at the University of Tennessee, suggests that when creating their spring program, superintendents should take a sky-is-the-limit approach.

"I always approach preparing a fungicide program from the perspective of money being no object," Horvath says. "What would

I do if I had no budget and I could do anything I wanted? Put together that plan and then work backwards toward your budget by substituting materials that are less expensive for more expensive ones, by maybe changing an active ingredient from something that's brand new to something that's been around for a while and may be a little less expensive, but always with the idea that you're trying to maintain the best possible control that you can maintain. Then it's a matter of not only being confident in that plan, but also being aware that you may need to make some adjustments."

> "Simply changing chemicals does not mean you are rotating modes of action. For example, the fungicide propiconazole and the fungicide triadimefon both have nearly the same mode of action. So, switching between these fungicides is not a proper rotation to delay resistance."
>
> *—Dr. Alex Ellram, SUNY Cobleskill*

Superintendents are justifiably proud of their record as environmental stewards but concerns about environmental issues have increased in recent years. Today's superintendent is expected to use less product to achieve the same results with regard to visual appeal and playability.

And while environmental concerns are much more important than in the past, Dr. Alex Ellram, a professor of animal and plant sciences at SUNY Cobleskill, says in most cases there are limits to the amount and frequency of a fungicide a superintendent can apply to an area.

"For example, chlorothalonil could be used continuously in the past, but now has restrictions on how much can applied each year," Ellram says. "Also, a much greater knowledge base of BMPs [best management practices] to manage diseases with less fungicide is available today. This may allow superintendents to reduce their use of disease management chemicals."

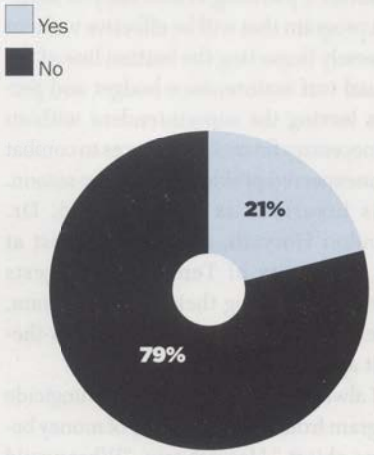
Resistance is another issue golf course superintendents contend with. "It's important to know what to look for when resistance develops and how to minimize the potential for resistance to develop," Ellram says, adding that some products are more prone to resistance issues than others.

"Pesticides that attack a pest in more than one way, like multi-site fungicides

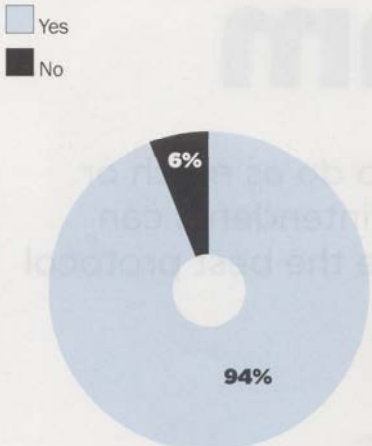
FACTS & FIGURES

Resistance is always a major issue when developing a fungicide program. To mitigate the opportunity of resistance issue developing, the majorty (70 percent) of superintendents indicate they actively rotate their chemistry and do not use any one product or mode of action (MOA) exclusively, according to recent GCI research. As a result, only about a fifth (21 percent) of golf course superintendents report experiencing resistance issues within the last three years.

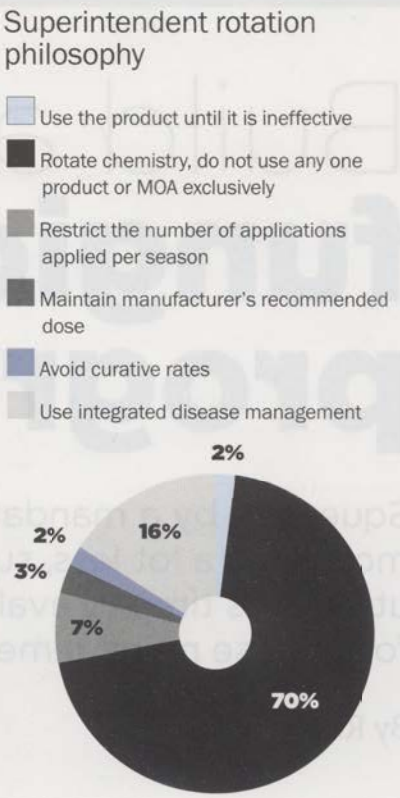
Experienced fungicide resistance issues within the last three years



Changed program when resistance was observed



Superintendent rotation philosophy



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Budget, environmental concerns and resistance are three things superintendents must consider when creating a fungicide program. North Carolina State University's Dr. Jim Kerns urges superintendents to reflect on their course's growing conditions and cultural practices before making decisions.

– such as chlorothalonil – have very low risk of developing resistance problems," he says. "On the other hand, fungicides that have one specific way to attack a pest – for example, propiconazole – have a fairly high potential of losing their ability to control fungal diseases through overuse."

As every superintendent knows, it's important to rotate products for maximum effectiveness. But Ellram points out that it's important to alternate products that work in different ways.

"Simply changing chemicals does not mean you are rotating modes of action," he says. "For example, the fungicide propiconazole and the fungicide triadimefon both have nearly the same mode of action. So, switching between these fungicides is not a proper rotation to delay resistance."

There is more to a fungicide program than the product itself. Dr. Jim Kerns at North Carolina State University urges superintendents to "Do a little self-reflection," when developing a fungicide program.

"Am I providing the things a plant needs to be healthy?" he says. "Is the plant receiving enough light, air, food and water? Changing cultural practices such as topdressing, fertility and watering practices can be very important for managing diseases. So, when developing a fungicide program, be sure to evaluate the cultural management as well. Remember the definition of insanity is doing the same thing over and over again while expecting different results."

Kerns says product representatives can be a big help to superintendents who are putting together a fungicide program. "I think produce reps can be very effective," he says, "especially those that sell everything. They typically are locals and are familiar with the environment and diseases that typically develop. Moreover, at least the ones I deal with consult extension faculty regularly. Reps for the major chemical manufacturers are also helpful as they have very broad experiences and have access to technical product managers. Most of the technical product managers were turfgrass scientists at one time and have excellent experience."

Kerns notes that superintendents should not hesitate to question their product reps about a particular product. "Ask questions about why this product?" he says, or 'What do you think of this? Keep in mind the diseases you the superintendent face and develop the program for those diseases. Don't spray a product because your neighbor is or a big-name club saw this response."

In the end, of course, the superintendent is responsible for what happens to his golf course and the chemicals he is applying to it. It behooves him to become as knowledgeable as possible about the effects of those products.

"I think that knowledge is power," Ellram says. "It's not rocket science to put together a good fungicide program. My students at SUNY Cobleskill are required to prepare fungicide programs as part of their coursework. Learn the basics and put together your own program as a starting point even if you will be working with a rep." **GCI**

ROUND AND ROUND

The topic of properly rotating pesticide mode of action to circumvent resistance can be complex and confusing.

Now, three committees have been established to assist superintendents ensure their rotating in the most effective and efficient fashion – the Fungicide Resistance Action Committee (FRAC), the Insecticide Resistance Action Committee (IRAC) and the Herbicide Resistance Action Committee (HRAC).

"These committees have given number and letter designations to pesticides so that you do not have to remember the specific mode of action for every fungicide, insecticide and herbicide," says Dr. Alex Ellram, a professor of animal and plant sciences at SUNY Cobleskill. "Instead of learning all modes of action, all that you need to do is look at the number on the label. Fungicides have FRAC numbers, insecticides have IRAC numbers and herbicides have HRAC letter codes. If the FRAC code is the same for two different fungicides, then you should not use them consecutively in rotation if you are trying to delay fungicide resistance."

For more information on these three organizations, check out www.frac.info; www.irac-online.org; www.hracglobal.com.

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Wondering about the WEEVIL

Numerous theories exist about how and why the ABW landed on golf courses. Regardless of their past, they have adapted to their short-turf surroundings.

By **Rick Woelfel**

Superintendents have been dealing with the annual bluegrass weevil (ABW) for more than three quarters of a century. As spring approaches, turf pros ready for the pest's annual emergence, which is especially problematic in the Northeastern US and along the Eastern Seaboard.

Rutgers University entomologist Dr. Albrecht Koppenhofer, considered one of the world's foremost ABW authorities, has spent considerable time studying the pest. In fact, Koppenhofer theorizes there is a distinct strain of the insect that proliferates on golf courses.

"My theory – but it's a pure theory – is that the insect at some point adapted to the golf course environment, and so there is the 'golf course strain' if you want to call it that," he says. "But, again, that's just a theory."

ABW was first identified as a golf course pest in Connecticut circa 1931. But records indicate it was prevalent in other areas apart from the golf course environment prior to that, particularly in wet areas such as riverbeds. As a golf course pest, however, the ABW is concentrated in portions of southern Canada, New England, the Northeast and along the Eastern Seaboard, south into Virginia. It has also migrated westward and southwestward into West Virginia and Ohio, and certain mountainous inland areas of North Carolina. How and why this migration has occurred is a matter of conjecture.

Dr. Ben McGraw, a Penn State University plant entomologist, says ABW migration could be the result of natural movement, as well as unintended movement via equipment, sod or even golfers.

McGraw, however, shares Koppenhofer's theory. "We might be witnessing something of a speciation event," he says, "or maybe not even going that far, two different races of the same insect, one that might feed on plants that aren't important to (the golf industry) and another that has evolved to feed on golf course turfgrasses."

ABW thrives on closely mown annual bluegrass (*Poa annua*) and creeping bentgrass, both of which are prevalent in the golf course environment in the Northeast and in the Transition Zone farther south. But it has less impact on grasses with a higher height of cut such as Kentucky bluegrass, perennial ryegrass or tall fescue.

It spends the cold-weather months essentially in a state of suspended animation, in areas shielded from the worst of the winter weather, such as tree lines, in or around leaf litter or under shrubbery. Research has shown that the adult insect will situate itself in a protected area up to one-inch deep in the soil.

It emerges in early spring, and climate and topography dictate exactly when. But the University of Rhode Island's Dr. Steven Alm notes other natural clues as to when the insect will appear, and when superintendents need to begin treating.

"In Rhode Island, peak emergence of adults is normally between forsythia and flowering dogwood full bloom – approximately April 23 to May 7," he says. "However, the first adults can be seen as early as a month before forsythia full bloom depending upon the temperature in any given year … The adults overwintering in the leaf litter will be ready to emerge as soon as temperatures are favorable for development."

The pest migrates by walking; its wing muscles weaken during the winter, so when it

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emerges from suspended animation it cannot fly. Instead, it treks across the turf, be it a tee box, a fairway or green, or even a green collar.

A few weeks after they emerge, the adults begin laying eggs, which hatch into larvae. Depending on location, there will likely be two generations per season and perhaps three or four. The adults fly back to their winter home before the cold weather returns.

While superintendents strive to control the adult population (to prevent them from laying eggs), the larvae are the greatest concern. They thrive within and adjacent to the plant stem and can wreak havoc.

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Letting the bentgrass work

Some turf professionals have chosen the path of least resistance when dealing with the ABW. Chris Carson has been superintendent at Echo Lake Country Club in Westfield, N.J., for three decades. He works closely with Dr. Albrecht Koppenhofer at Rutgers University and serves as an instructor in the Rutgers turfgrass program.

Carson and his team have taken what might be best described as a *laissez faire* approach to ABW.

"We made a decision 30 years ago that we were going to manage for bentgrass as opposed to annual bluegrass," he says. "By doing a lot of things culturally that enhance the growth of bentgrass and encouraging it over *Poa annua,* we've been able to change the population and made the fairways predominantly bentgrass.

"What that means is with minimal amount of annual bluegrass we have we do not aggressively treat for (ABW)," he adds. "We almost view the annual bluegrass weevil as a selective thinner of turf in allowing bentgrass to creep in. If I told you we did it purposely that way with the ABW in mind, I'd be lying, but we definitely managed for bentgrass and let the *Poa* die out."

Those who battle ABW to alleviate patches of distressed turf do so with a wide and frequent insecticide applications, Carson adds. "That may resolve an issue that is emergent but what it has also done is made selected bugs that are resistant to those types of applications," he says. "When you have a resistant population, it's a downward spiral. People don't get a response to the insecticide so they put more and more insecticide out there with fewer positive results ... What we've done is live with some of this stressed turf because we know that bentgrass will creep in over the years. It's sort of a case of benign neglect with our fairways; we don't treat them very often."

While the ABW larvae also feeds on creeping bentgrass, particularly in areas where annual bluegrass isn't as common, Koppenhofer notes *Poa* is far more susceptible to damage.

"Annual bluegrass basically gets wiped out by this insect," he says. "In the center of the plant, if the crown is killed, that plant dies and then the larva moves on to the next one. Whereas with creeping bentgrass you might kill that one plant, but then you have the rhizomes and stolons connecting all the various plants and so the plant is much more able to draw resources from other areas ... So not only can it tolerate more before it shows damage, but it can also recover much better."

Opinions vary considerably on if and how the ABW should be eradicated or simply managed. Some superintendents rely on repeated applications of pyrethroid-based insecticides. For some time, these products proved effective against ABW and a broad range of other pests. They are also inexpensive, and thus very popular among superintendents concerned about their bottom line.

Over time, however, ABW has built up an increased resistance to pyrethroids, rendering them less effective. "Some populations are quite resistant to pyrethroids now," Alm says. "Dr. Darryl Ramoutar, working in my lab, determined there was resistance to two of the synthetic pyrethoids. Resistance is often a problem with insects that have a high reproductive potential and multiple generations per year, which the ABW has."

Koppenhofer contends resistance problems are often created by superintendents, some of whom overspray at the first sign of ABW. "They just start spraying and go nuts, and in the process that gets the insect more and more resistant," he says. "There are populations where there are only a few (products) that still work."

There are various strategies and philosophies for managing ABW and each golf facility is always a unique environment. Alm advises superintendents to be on the lookout for the pest and to get outside help when it's needed, particularly if they are confronting ABW for the first time. "First, be on the lookout for any yellowing *Poa annua*," he says. "Take cup changer cores and either submerge the cores in a saturated salt solution (four cups of salt in one gallon of warm water) and look for floating adults and larvae; or take damaged plugs to your local turfgrass entomologist for evaluation." **GCI**

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

WHY FITTINGS ARE SEXY (OR SHOULD BE)

Brian Vinchesi, the 2015 Irrigation Association Industry Achievement Award winner, is President of Irrigation Consulting, Inc., a golf course irrigation design and consulting firm with offices in Pepperell, Massachusetts and Huntersville, North Carolina that designs golf course irrigation systems throughout the world. He can be reached at bvinchesi@irrigationconsulting.com or 978-433-8972 or followed on twitter @bvinchesi.

Fittings – especially irrigation fittings – are not very exciting, but they are important. The industry talks about pipe life expectancy, but rarely does the pipe wear out. It's the fittings that wear out or cause the most issues. If it is not the fitting itself, it's the joining mechanism/process used to connect the fitting and the pipe. Fitting failure is non-discriminant. It doesn't matter whether it's PVC of HDPE.

In the old days, there wasn't a lot of selection in the fitting type used on a golf course irrigation system. PVC started with solvent-weld cement fittings and these either came apart or cracked. This progressed to gasketed PVC fittings (they cracked, too, just not as quickly) then to the disaster that was epoxy steel fittings in the mid-80s and finally on to ductile iron fittings, which is standard on PVC piping systems. We are seeing some stainless steel also, but more on the valve side than the fitting side.

HDPE doesn't quite have the history, but there are many choices with HDPE and the type fitting best used on golf irrigation systems is still being sorted out. HDPE fittings include molded, fabricated, electric fusion, strap saddles, tap saddles and compression. Different designers prefer different types and in some cases different pressure ratings. Many times the type fitting used (for PVC or HPDE pipe), is based on the size of the pipe and therefore the fitting required for the pipes application. Mainlines usually use different fittings than lateral pipes, but not always – the same material can be used, but smaller sizes.

Fittings fail for many reasons. One is they absorb most of the force of the water flowing through the pipe. Water is heavy and when running at speed creates strong forces (force = mass x acceleration). The fact that we like to turn large amounts of sprinklers (flow) on and off at the same time (acceleration = change in velocity divided by time) causes surges we expect the fittings to absorb. Sometimes the fitting doesn't absorb the force at all or no longer can absorb the force due to the repetitive schedule of irrigation systems and the fitting breaks. The other issue is installation. With both PVC and HDPE, poor installations show up quickly, average installations show up in 10 to 12 years and good installations in 15 to 17 years and excellent installations may last 25 years or more. Time always catches up to the fitting. As your irrigation system goes through on/off cycles, the fittings flex pretty much every time the system goes on or off and when the flow amount or direction changes. So fittings wear out with time – just like a pump station, a valve and/or a sprinkler. The pipe may have years of life left, but the fittings render it useless.

So which is best? It depends on your budget and how much repair work you want to perform. It also depends on whether you want to perform that work with your crew or contract it out. Certain fittings work better in certain situations. As with everything, better fittings cost more money, but the money spent is well worth it. For example, you can spend the least amount of money by buying solvent-weld cement fittings for PVC, but they do not work well on 3-inch-plus pipes because applying the cement becomes more difficult with size. Spend more money and use gasketed fittings, but they won't last the life of the system and most likely will start failing before the sprinklers. You can use ductile iron fittings – much more money, but with lots more strength and longevity (50-plus years). With HDPE you can use saddles on both mainlines and laterals or spend more and use molded fittings on the mainlines and compression fittings on the laterals.

All fittings on PVC systems and some HDPE need to be restrained. This is accomplished with joint restraints, thrust blocking or a combination of the two. Most PVC systems are still done with thrust blocks as opposed to joint restraint.

Fitting discussions are not exciting, but they play an important role. Chasing and repairing fitting failures is a miserable job. Spend the money to purchase strong, long-lasting fittings and hire an installer who knows what they are doing, especially with the larger pipe sizes and pressures encountered in golf irrigation systems. **GCI**

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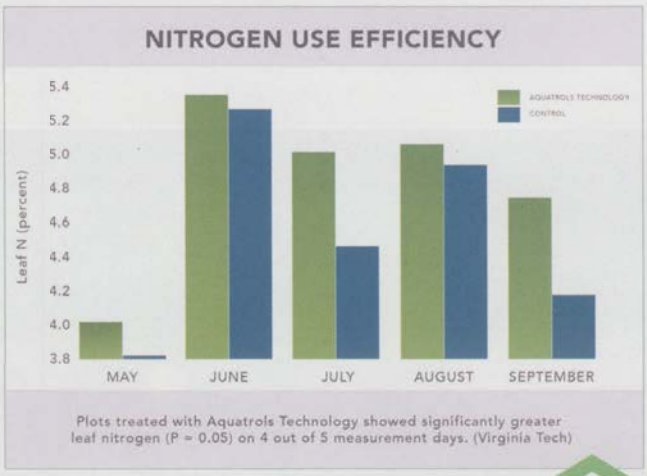

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Impressive **results**

Superintendent switched to enhanced efficiency fertilizers to address a number of agronomic problems he was having at the Country Club of the Rockies.

By **John Torsiello**

Being a keen-eyed superintendent, Kevin Ross noticed how enhanced efficiency fertilizers were producing healthy, dense turf in the rough areas at the Country Club of the Rockies, located about six miles outside of Vail, Colo. So, he wisely deduced that this technology could do the same for his fairways.

"I was looking for a new product because I wasn't totally happy with my previous fertilizer program on the fairways," said Ross, who has been superintendent at the CC of the Rockies for 22 years. "I thought there has to be something better."

And he found that there was.

"I had used the two Koch Turf and Ornamental products (UFLEXX and UMAXX) in the rough and some other areas of the course and really liked the

performance," he says. "I thought maybe this could be something that would also work in the fairways. The granular fertilizer I was using wasn't breaking down and disappearing very well. It was sticking on mowers, on mower baskets – we pick up our clippings on fairways – and on golfers' shoes."

UMAXX stabilized nitrogen fertilizer, which Ross has been using on fairways for about five years, needs only a little bit of water to dissolve into the soil profile. UMAXX fertilizer provides protection against all three forms of nitrogen loss – leaching, denitrification and volatilization. It is a urea-based product with a 46-0-0 analysis, containing both urease and nitrification inhibitors. Unlike many single inhibitor products on the market, the addition of the nitrification inhibitor in UMAXX fertilizer reduces the chances for leaching and denitrification which are big concerns in the golf industry. This second inhibitor also retains N as ammonium, which can be held on soil exchange sites, extending the window of N availability. Products with urease inhibitors alone do not include this benefit. A completely soluble granular, UMAXX fertilizer is equally effective whether spread dry or dissolved in a spray tank. Dissolved UMAXX fertilizer can also be tank mixed with many crop protection chemicals.

UFLEXX stabilized nitrogen fertilizer is specially formulated for the professional lawn care and landscape markets. This unique product also helps to protect against all three forms of nitrogen loss – leaching, denitrification and volatilization, allowing time for nitrogen to move into the root zone and stay there longer. As a result, there is immediate green-up, followed by sustained turfgrass color for up to eight weeks.

Ross did some research and determined he was applying products he didn't necessarily need on his course. "I read some things about maybe there being more nutrients in the soil than we think and that the main product we really needed was nitrogen, and UFLEXX and UMAXXX are pure nitrogen fertilizer," he says.

Using three-quarters of a pound per 1,000-square-feet to a pound-and-a-quarter per 1,000-square-feet, Ross makes one application of UMAXX fertilizer on his fairways around early to mid-June. He applies an organic fertilizer about mid-September.

"I can get almost an entire growing season out of that one application," he says. "The growth rate is superb and I don't experience flush growth after application. Simply put, the product works fabulously."

Ross is still using UFLEXX and UMAXX

Ross was looking for a new product because he wasn't happy with his previous fertilizer program on the fairways. He knew there had to be something better.

fertilizer in the rough areas of the Country Club of the Rockies, basically two applications of three-quarters of a pound per 1,000-square-feet, twice a year, once in late spring to "push things along" and get a nice green-up, and again around Labor Day to put the turf and soil in good standing prior to going into dormancy.

"We have a shorter growing season and I need something to get things moving in spring and then kick it into fall and winter in a healthy state," he says.

Because only one application of UMAXX fertilizer is necessary for the fairways, Ross has been able to decrease the man-hours required to fertilize the course, which directly impacts his budget and allows those crews to be used elsewhere.

The fact that both products come in small granular (mini) form was also enticing. "I'm intrigued by how quickly it disappears into the soil," Ross say. "Dealing with fertilizer that sticks around on the top of the turf canopy can be problematic."

"I also love the blue/green color to the product because you can see the product much better during the application process," he adds. "Many fertilizers are grayish in color and blend in with the turf, which makes it hard to see during the application process. We order product right from the factory and when it arrives here we find the material to be very pure in the bag with no contaminants."

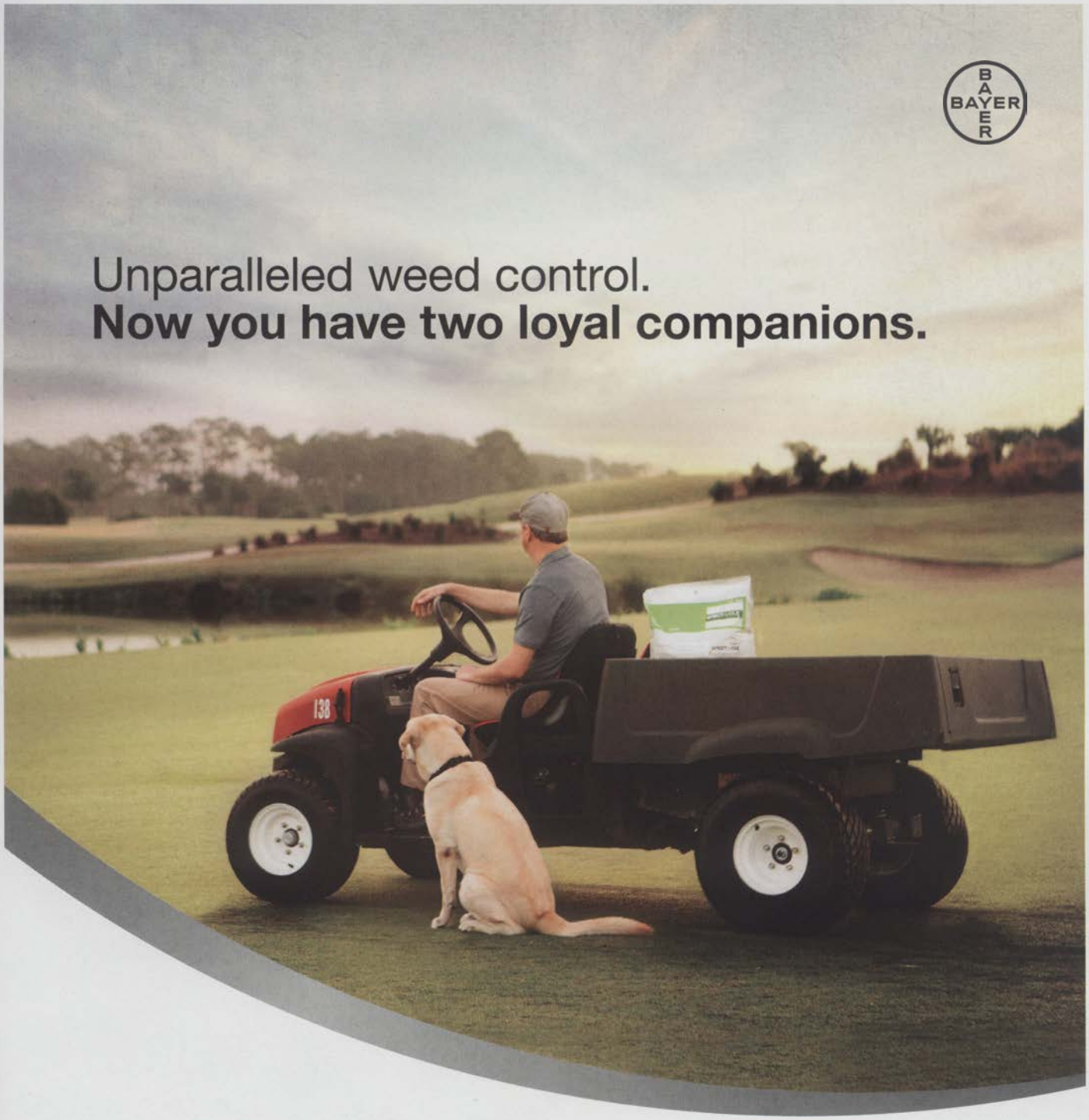
Ross also dissolves UMAXX fertilizer in water and puts it in sprayers for use on tees and approaches and does the same with UFLEXX fertilizer on greens. His rates for this are two-tenths-of-a-pound of nitrogen per 1,000-square-feet. "I add that to a foliar/wetting agent mix once every two to three weeks. The foliar works well for about a week, then the UFLEXX fertilizer takes over the next 10 to 14 days."

Ross says his membership has been extremely pleased with the results as well. "The members love the fairways. We have installed a new irrigation system with great coverage," he says. "This, combined with our fairway fertilizer program, has been fantastic."

Ross has received counseling and direction from the product experts at Koch Turf and Ornamental on how to use UFLEXX and UMAXX fertilizer on his course.

"(Koch's) John Meyer has been fantastic to work with," he says. "I've known him for quite a few years and he always tells me that if I have any problems to let him know. Honestly, fertilizers come and go, but in my opinion UMAXX and UFLEXX fertilizers make the turf respond and the results have been truly amazing."

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



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by **Rob Thomas**

It all adds up

Whether dealing with **dollar spot** preventatively, or curatively, understanding what makes this pathogen tick is your most effective weapon.

You're walking the course and notice some straw-colored spots, about an inch or two in diameter, on a putting green. Upon closer inspection, it's dollar spot. Have you missed your window to stave off the foliar disease throughout the rest of your course? And when was your window to avoid this mess, altogether?

Dollar spot infects turfgrass any time environmental conditions are conducive for the pathogen to develop, says Matt Giese, Syngenta's Midwest field technical manager. If environmental conditions are not favorable, the likelihood of a dollar spot epidemic to occur is low.

"To understand the best timing for fungicidal control of dollar spot, it's helpful to know what factors trigger disease development so applications may be timed prior to these events," Giese says. "Temperature and leaf wetness are important aspects in dollar spot development. Night time temperatures in the range of 60 to 85(F) degrees and greater provide suitable conditions for development, coupled with extended periods of leaf wetness or heavy dews that persist well past daybreak."

Low soil moisture, excessive thatch and low nitrogen fertility are stressors that encourage disease development on susceptible turf.

"These are just a few components superintendents should be aware of to prepare for preventive fungicide applications by watching weather forecasts, scouting indicator areas and monitoring cultural

practices on the golf course to help predict when and where the risk of disease outbreaks is greatest," he adds.

Dollar spot is caused by a fungus that overwinters as mycelia in plant tissue or soil. The growth of the fungus begins when temperatures are around 60.

Dollar spot fungus does not produce any spores. Instead it forms a stroma, which is a dense mass of fungal hyphae, says Nancy Dykema, research assistant at Michigan State University.

"For the stroma to infect and cause disease, it has to increase in size," Dykema says. "Early season fungicide applications injure the stroma, setting it back and delaying the time before it can reach the size to cause disease. This is the reason early fungicide application can delay the development of dollar spot."

Timing is important, of course. Dykema has read reports of early season preventive fungicide applications resulting in reduction of dollar spot two to three months later.

"Some of the early applications are timed based on growing degree day (GDD) models, while others are calendar dependent or based on the growth of the turfgrass," she says. "Degree day models typically suggest applications be made between 150 to 200 GDD for early season preventive dollar spot control."

Some turf managers time their early season applications to coincide with the onset of true mowing, such as after the second true mowing.

"This would be the mowing that occurs once the growth of the turf has started and it's not just dead plant debris that's being collected in the baskets," Dykema adds. "The ideal timing of the early fungicide applications is mid to late spring, which, in Michigan is in April or May. Since the exact ideal timing hasn't been identified yet, the best results are typically gained by making two consecutive systemic fungicide applications ... one in late April or early May, followed by one 30 days later."

But applying too early is a waste of valuable resources, so timing is critical.

Dollar spot development is limited when night time temperatures fall below the suggested range above, so applying below 50 degrees is not typically considered a prudent use of fungicide, Giese says. However, research has shown that early spring applications when plant growth resumes, but before disease symptoms are present, can delay or even minimize dollar spot development during favorable disease conditions, he says.

Fortunately, applying too early won't damage the turf, so keep an eye on the forecast.

Applying a fungicide treatment too early before the disease develops can result in fungicide degradation or removal from foliage resulting in limited or no protection when the disease actually does develop.

"A more reasonable approach focuses on forecasted favorable weather conditions and timing fungicide applications before those conditions are present," Giese says. "Best results for dollar spot control are achieved with a sound agronomic program that includes both cultural and preventive fungicide treatments."

Dykema, who works closely with Dr. Joseph Vargas at Michigan State, says there seems to be a "significant window of opportunity" for timing of early sprays to reduce dollar spot later in the season. However, making applications too early in the season prior to the turfgrass reaching its regular growth pattern is likely not very effective in delaying dollar spot epidemics and would,

Curative treatment. The image shows the results gained after 14 days from a treatment once dollar spot has gained a foothold in turf.

In contrast to the top image, dollar spot emergence on an untreated plot of turf.

rather, be considered a waste of resources. Likewise, waiting until temperatures have warmed enough that the turf has been actively growing and has been mowed regularly for a month or more is less apt to delay the dollar spot epidemic much beyond the typical interval expected for the fungicide. Neither applying too early nor too late to delay the onset of dollar spot has any negative implications on the health of the turf as long as label directions are followed, she adds.

Unfortunately, you missed your window to treat dollar spot preventatively. What now?

"If it is too late and dollar spot has begun to develop, you will need to use a systemic fungicide to stop the progression of the disease," Dykema says. "Unfortunately, folklore, which there is still too much of in turfgrass science, tells us to use a contact to knock down the disease. I have no idea what the term 'knock down' means. The fungus is already inside the plant and, unless stopped, will continue to destroy tissue.

"It would be analogous to the doctor giving me antibiotic pills to control the pneumonia in my lungs, but instead of putting them in my mouth so the antibiotic can enter my body and kill bacteria in my lungs, I rub them on my chest," she continued. "Do you think that is going to kill the bacteria in my lungs? Not any more than a contact fungicide applied to the outside of the plant is going to kill the fungus inside the plant."

Giese recommends systemic fungicides in conjunction with contact for best results once dollar spot has reared its ugly head.

"If dollar spot symptoms are already detected, then fungicide treatment at this stage is considered curative," he says. "The disease is in an advanced developmental stage and typically requires higher rates and shorter intervals of fungicide treatments."

The turf plot represents the results of preventative treatment for dollar spot.

Dollar spot allowed to run wild on an untreated turf plot.

Combinations of contact and systemic fungicides help arrest foliar disease activity as well as preventing new infections, Giese adds.

Curative applications do require additional patience for symptoms to dissipate. Fungicides need time to control the pathogen, especially with systemic fungicides that must be absorbed into the plant, and time for the plant to recover from the infection so it can grow out of the existing disease scar. Because of these reasons, preventive applications are preferred when patience isn't an option.

Dollar spot is one of the most common foliar diseases across much of the United States. Dykema says the Northeast and upper Midwest have been hit the hardest by dollar spot the past couple of years, mainly due to the milder-than-normal summers.

"Dollar spot thrives in moderate daytime temperatures, cool nights and high humidity which is what we have experienced the past couple of summers," Dykema says. "In fact, in warmer summers in Michigan, we do not see severe outbreaks of dollar spot until August when the night time temperatures begin to drop. In recent years, the severe outbreaks have started in June and continued through the summer into September."

While expectations for 2016 are anyone's guess, those who don't learn history are doomed to repeat it.

"If 2015 taught us anything, we learned that weather can be ever-changing and hard to predict no matter where in the country you are located," Giese says. "The key to avoiding dollar spot difficulties is to have a solid agronomic program heading into the season and to be prepared to adjust at any moment."

Look to the "disease triangle" to avoid dollar spot ... and others.

"For disease to develop, there needs to be a pathogen present, a susceptible host and favorable environmental conditions," Giese says. "All three must happen together for dollar spot to occur, if one or two legs of the proverbial stool are missing, the stool falls over. No disease." **GCI**

Rob Thomas is a Cleveland-based golf and turf writer and frequent GCI contributor.

GOT SYZYGY?

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.

Golf could use more syzygy. In its astrological context, the Greek word syzygy (pronounced SIZ-uh-gee) means the alignment of three celestial objects, such as the sun, earth and either the moon or a planet, which can produce an eclipse. From there we can see how its meaning has been adapted to include the alignment of things to increase effectiveness.

If you want 2016 to produce improved results, you need more syzygy. Specifically, you want to align two key priorities: 1) the promise of your brand with the quality of the golf experience you provide, and 2) the quality of the golf course to the price you charge.

> "Decide what you can own in the minds of your members and customers and promise them that's what they're going to get on a consistent basis. Then it's up to everyone at the course to deliver on that promise."

Aligning your brand promise with the experience you provide is everyone's job. Most golf facilities, whether high-and-mighty private or modest daily-fee public, are inconsistent at best and very high handicappers at worst when it comes to fulfilling their brand promise.

The understanding of brand promise is so embedded for most companies and organizations that they don't make a move until they are sure the two are aligned. Volvo built its brand on the promise of driver safety. That's the position it owns in the minds of consumers. And that's where it starts when designing a new model or creating a new TV commercial. Volvo knows safety is a major reason people buy its cars. If its product doesn't live up to its promise, the trust built up over the years with consumers is shattered.

It's the same for golf course owners, managers and superintendents. Decide what you can own in the minds of your members and customers and promise them that's what they're going to get on a consistent basis. Then it's up to everyone at the course to deliver on that promise. When considering what promises you will make and how you'll back them up, ask two questions:

• What is the market for your course or club? Understanding the market is far more than merely calling your competitors to learn what they're charging for a membership or a round of golf. Thorough market analysis takes into account such mission-critical considerations as (a) consumer confidence, which changes from one part of town to another; (b) annual household income, which helps determine discretionary spending ability (available at census.gov) and (c) education levels, which also influences discretionary spending.

• How does – or can – your course differentiate itself from the competition? Market differentiation is sorely lacking in golf. But it's an easy thing to understand and build your promise around. Simply ask your golfers why they enjoy playing at your course. Learn what your golfers think of the course and understand what value they place on that attribute. It could be its beauty, conditioning, pace of play or price. Maybe you've got the best burger and coldest beer in town. If you want your course to stand out from its competitors, emphasize the things that matter most to your golfers.

The second place you need syzygy is with the quality of the course you provide and the price you charge. Few public or private courses can explain why they charge the prices they do. That's because they don't fully understand their market. To get the price right, consider these questions:

• What are my expenses per round? And can I reduce them without compromising quality? Golf in most parts of the country – public and private – has over-reached its market. Deliberate alignment of what is being spent to maintain the golf course must be consistent with the price elasticity of the market area. Even if the course is magnificent and even if golf is as essential as oxygen to many of us, golfers seldom pay too much for golf on a continual basis. Can you name a course you have played lately where the price should have been higher?

• How much excess cash flow is required each year to pay the bills and fund future capital needs? Golf course operators who are not saving for the future are doing so at their own peril. Courses have an immense appetite for capital. Careful planning is essential to allocating funds for the future.

The ultimate syzygy occurs when you align your brand promise to the axis of price and quality. What is a fair price? Keep in mind your opinion doesn't really count. What counts is what golfers believe is a fair price for the experience you provide. Price and experience determine value. Want to win the price game? Deliver greater value. Comedian Steve Martin had it right when he advised, "Be so good they cannot ignore you." GCI

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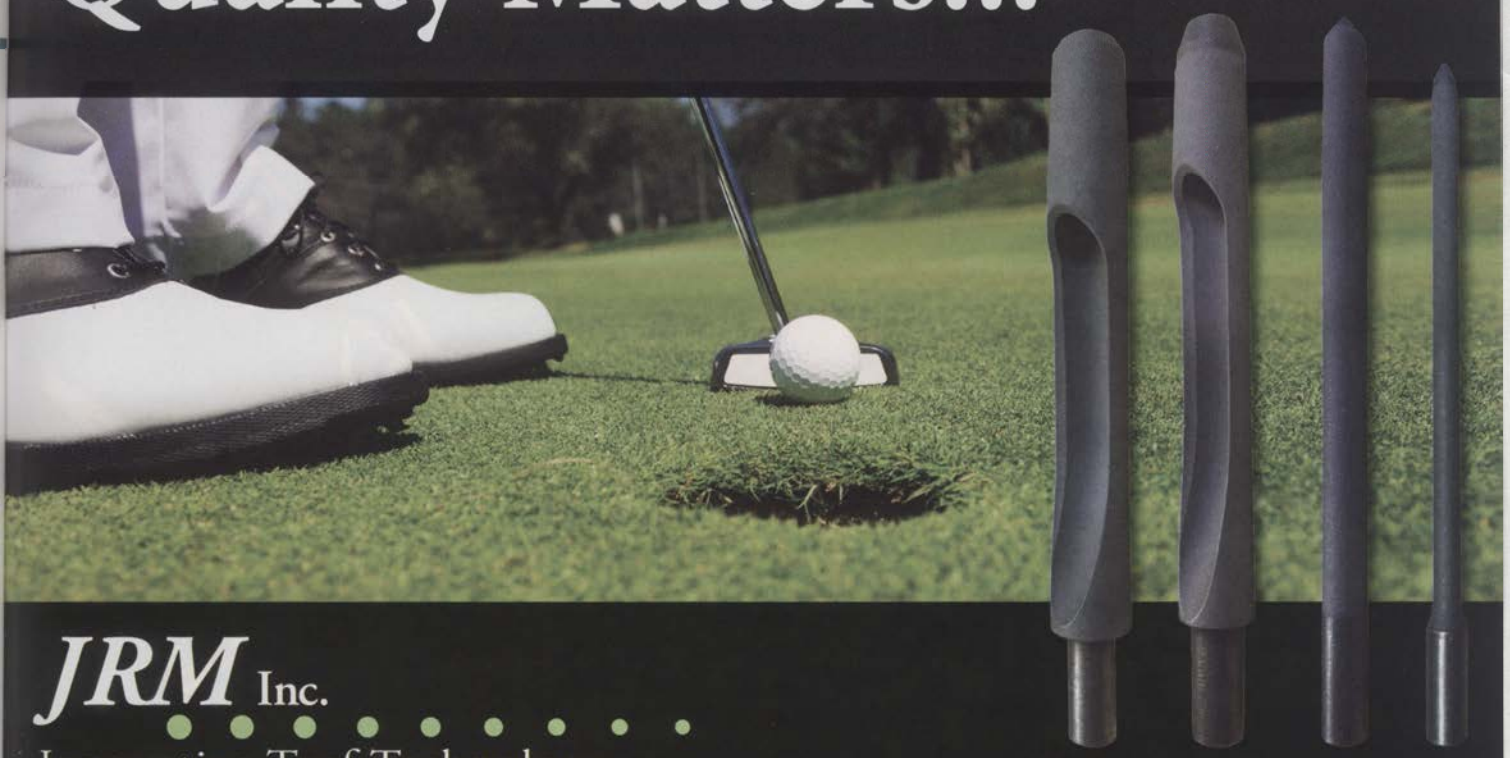

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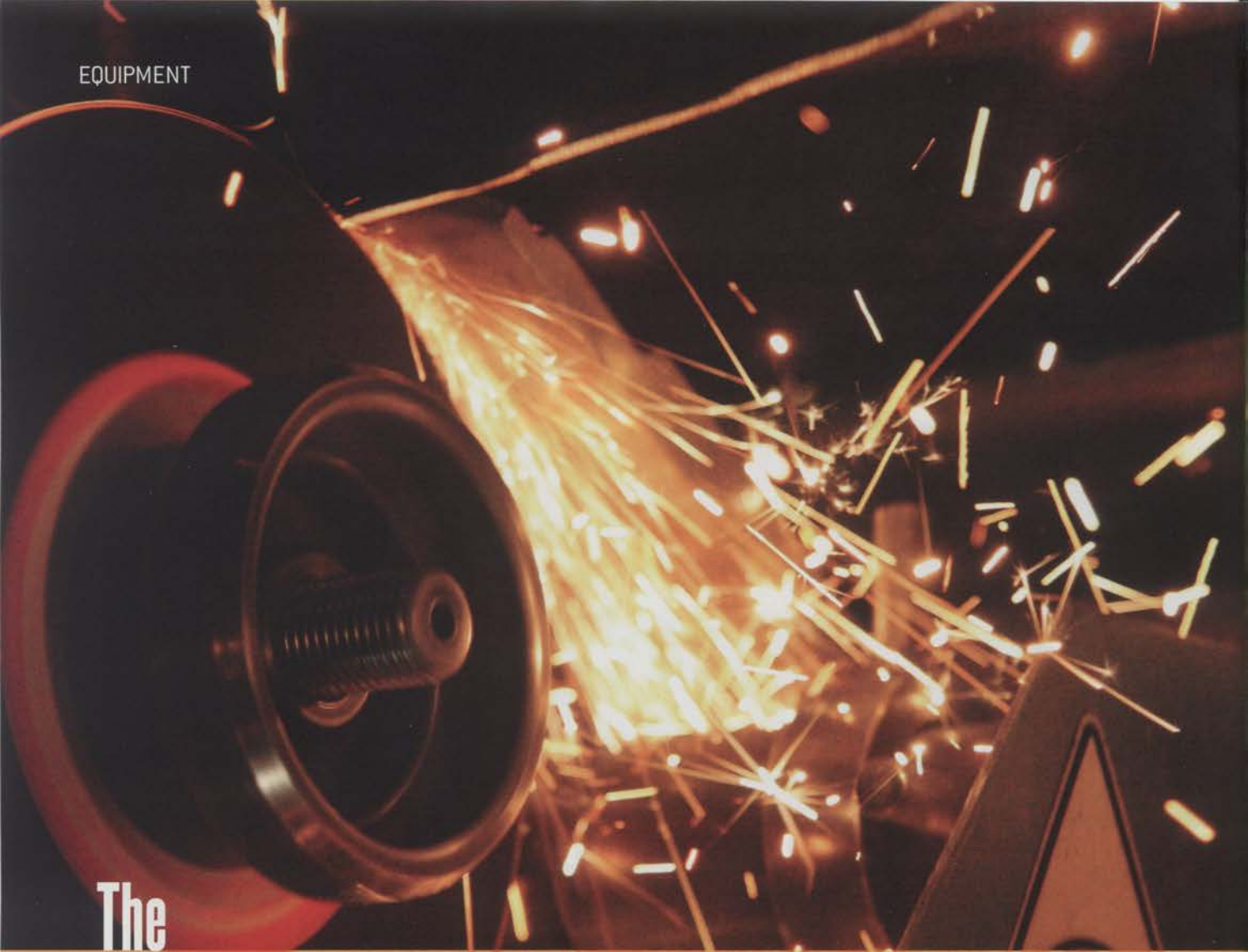

The REEL WORLD

A cutting unit or rotary deck have the potential to put you or your crew into a world of hurt. Safety guru Mickey McCord offers some tips for maintaining reels and cutting units.

By **Mickey McCord**

I've always said I'd never make an equipment technician because I'm too afraid of busting my knuckles or pinching fingers. I could not work on equipment without smashing a finger at least once a day. Are cutting units considered a hazard in your shop? A reel or rotary mowing deck is an inanimate object, it's just 100 or so pounds of steel sitting there; and like a

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gun, it can't hurt you unless you pick it up, right?

Be careful, if you do pick it up, your likely to hurt your back, even if you use proper lifting technique.

Let's take a look at some of the ways a cutting unit can be a hazard and how to reduce the risk of sharpening, handling and mowing with reel and rotary cutting units.

They're heavy, probably too heavy to safely pick up by yourself. If you're trying to pick up a smaller, triplex reel, you can probably handle that if you use good lifting technique - straight back, head up, lift with your legs not your back, and don't twist your back to turn, move your feet and whole body. For heavier units, use a lift table, hoist, or winch to get it off the ground and onto the grinder or workbench. Once you get it on the workbench, take a few seconds to tie it down with a bungee cord, or secure it with a block of wood. You don't want it to roll off the table, or smash your fingers between it and another unit. I know it's hard to perform detailed work with gloves on but wearing a pair while you're getting the reel set up might save a bruised or cut hand. What's heavy going up is heavy coming down. Steel toe work shoes are not required at most golf courses, but if you're picking up and moving heavy

If your grinders or sharpeners don't have the proper engineered safety measures, you need to wear Personal Protective Equipment (PPE), such as safety glasses, ear muffs or ear plugs and a dust mask.

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cutting units, they might be a good idea. Likewise, when an operator brings a mower into the shop, keep a safe distance away. If he drops the cutting units and you're standing too close it could come down on your foot and do serious damage.

They're sharp, and are a serious hazard to amputate fingers and toes when moving fast. Never put your hands or feet in a reel or rotary deck unless you are 100 percent sure the mower is off and any stored hydraulic energy has been released. If there is something stuck in a reel, use a wooden stick or tool to remove it. A reel doesn't have to be on a mower to cut you; groomer blades can get as sharp as a knife blade. Preston Burl, equipment technician at MacGregor Downs Country Club in Cary, N.C., warns, "If you drop a bedknife, your first reaction is to try to catch it, but don't. Just step back and let it fall. If you grab it, you'll cut your hand like grabbing a swinging machete."

Reel maintenance presents hazards, too. Noise and dust from grinders can damage your hearing and be a respiratory hazard. Many grinders are enclosed and have vacuum systems to reduce noise to an acceptable level, and collect dust before it's spread through the air. If your grinders don't have these engineered safety measures, you need to wear Personal Protective Equipment (PPE) – ear muffs or ear plugs and a dust mask.

If you back lap reels, whether with an old back lap machine or on the mower, use a long handled brush to spread the lapping compound. When a short handled brush gets worn down, there isn't much room between the moving reel and your hand. If the brush is grabbed by the reel, it can pull your hand in with it. Another hazard of working with a spinning reel is debris (or lapping compound) getting thrown out and into your eyes; you should always wear eye protection and a full-face shield isn't a bad idea. **GCI**

Mickey McCord is the founder of McCord Golf Services and Safety.

"THIS SEEMS TOO OBVIOUS TO HAVE TO SAY BUT AMPUTATIONS AND MUTILATIONS HAPPEN EVERY YEAR. NEVER PUT YOUR HANDS OR FEET IN A REEL OR ROTARY DECK UNLESS YOU ARE 100 PERCENT SURE THE MOWER IS OFF AND ANY STORED HYDRAULIC ENERGY HAS BEEN RELEASED. IF THERE IS SOMETHING STUCK IN A REEL, USE WOODEN STICK OR TOOL TO REMOVE IT."

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THIS OLD PLOW TRUCK

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.

The snow "plow truck" is an odd piece of equipment for a golf course. It spends the entire golf season in storage. It is brought out after the golf season has ended and put away just before the season begins again. When being used it is typically operating for only a few hours a day. If it quits working, it has to be fixed in a hurry or outside contractors have to be brought in to remove the snow.

The worse the plow truck looks, the better. Every scratch, dent and rust spot is a badge of honor, indicating hard use and proof that no unnecessary time or money has been spent on it. It is something to be bragged about, run hard and then replaced with another of the same caliber when it cannot be fixed. Maintenance is minimal, limited to just the systems needed to operate the blade and power the vehicle. If anything else works, that is a bonus for the driver.

Typically, a golf course plow trucks is a pickup truck which has reached the end of its life as daily driver and is outfitted with a pusher blade to finish out its years as the plow truck. The Crown Golf Club uses a GMC Sierra GT 1994 K1500 1-ton with 5.7-L, 350-hp engine. The vintage is recent and the vehicle popular enough that aftermarket parts are available same day or next day through our NAPA parts store for a fraction of what they would cost at the dealership.

The Crown a few years ago was lucky enough to get a plow truck with very low mileage. And yes, the body has major rust issues, which is why it became a plow truck. There is also ratchet strap that is either holding the tailgate on or the bumper up. I have had no reason to loosen it and find out which it is.

EXTRA BATTERY

Since the electric-hydraulic blade controls use a lot of electrical power, a second battery in parallel with the original batter is something to be added if it hasn't been already. A simple bracket made of angle iron and a bungee cord works fine to hold the second battery. A trickle charger is hooked up to the batteries when parked between uses so the driver starts the pre-dawn plowing with a full charge.

GOLF BALL STRIKES

Even stored in the walled enclosure golf balls find their way in and break glass. Covering the missing back window with cardboard is not an option when a plow truck spends half its time driving backwards winding up for the next rush forward. I have put in Plexiglas as a temporary solution. A better solution, poly carbonate a quarter-inch or thicker is said to be "golf ball proof" and could be considered a permanent repair but costs more.

BRAKES

Plow trucks use their brakes a lot and need periodic replacement, premium parts are recommended.

OIL PAN LEAK

The oil under the truck that seemed to be coming from everywhere was actually from a rusted through hole in the engine oil pan. Salt has attacked the entire underside of the truck, so everything is getting thinner. As the salt eats through them, the steel lines are being replaced with rubber hoses unaffected by salt.

TYPICAL TIPPER BLADE

When choosing a blade, use what is called a "tipper." It is spring loaded and hinged so that if you hit something like a seam in the pavement the blade tips and skips over it rather than bringing the whole truck and driver to a bone-jarring abrupt stop. You might also notice that the shoes have been removed so that the blade scrapes the pavement. This is to try to scrape away the thin layer of ice that may be under the snow. Shoes are adjusters to keep the blade edge a small distance above the pavement and adding a pipe edge the length of the blade makes it usable on turf or gravel.

Blades and their mountings are heavy so you also want a blade system that disconnects quickly from the vehicle to make off-season storage easier and so that the blade can be removed when working on the vehicle.

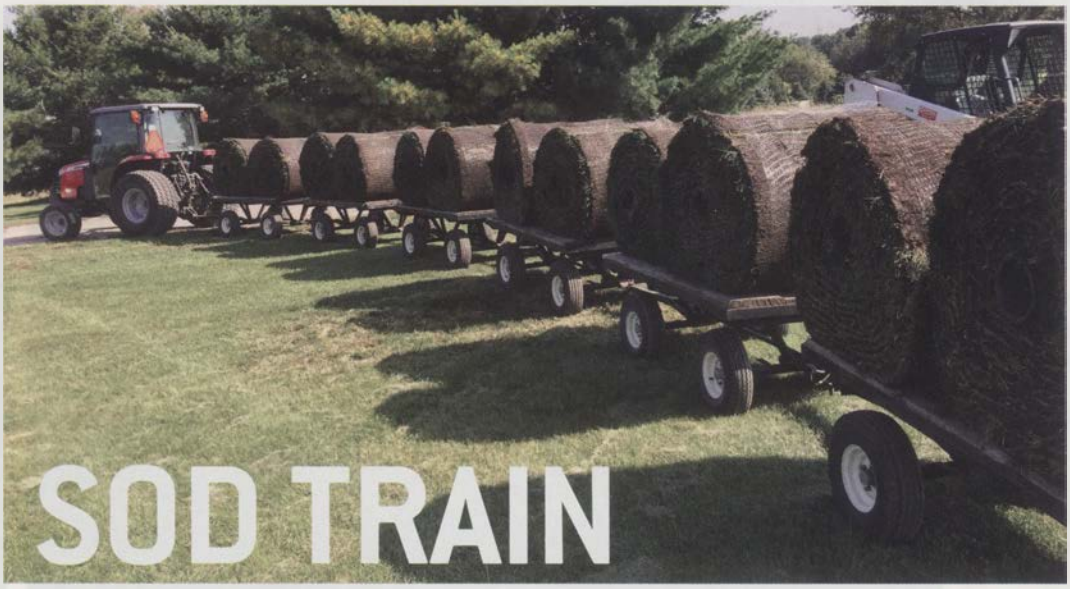
REPLACEMENT

For quick cold weather starts, you want a plow truck that runs on gasoline. Even the big county road trucks burn gasoline so that they start well in cold weather. A plow truck costs less than just about any other piece of machinery on a golf course. Plow trucks last until the salt used on the roads finishes eating the frame, then it is time to find its replacement … hopefully being sold by the side of the road. **GCI**

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.

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.



SOD TRAIN

Rick Tegtmeier, CGCS, MG, director of grounds, at the Des Moines (Iowa) Golf and Country Club, hosted the U.S. Senior Open in 1999. Six trailers were used by NBC Sports to transport their cable and equipment. When the championship was over, NBC left them in the golf course maintenance area. Each trailer is approximately 2 feet tall, measures 44 inches by 72 inches and is made of tubular steel with 2-inch by 12-inch bridge planks placed on top held in place using ½-inch diameter carriage bolts. The undercarriage was "beefed-up" using larger diameter bolts welded in place for stability. Two big rolls of sod (350 square feet each) or one pallet of sod (550 square feet) are used where each trailer can hold approximately 800 to 1,000 pounds of weight depending on the moisture content of the sod. The street eight-ply tires and wheels measuring 5.7 inches by 8 inches are still used, as the trailers are driven on the cart paths and service roads, and turf tires are not needed. A full-size turf tractor pulls them with ease. It took about three hours for the modification using parts already in inventory. For more, enter www.youtube.com/watch?v=wcvWR3fj70c into your web browser.

ULTIMATE TOOL BOX / WORK STATION

Ryan Osler, equipment technician at the Des Moines Golf and Country Club, has a Snap-On Epiq Tool Box measuring 84 inches by 30 inches with a stainless steel power top with built-in power strips on each end, which stores every tool that he would ever need. The work station is 26 inches tall and a work light turns on automatically when the box is unlocked and opened. The Snap-On Side Locker measures 65 inches by 30 inches with six pull drawers with a stationary shelf. A Dell All-In-One Computer/Monitor ($600) has a Sanus Full Motion Wall Mount ($100), with a VGA adapter to run a cable to the flat screen 32-inch TV ($180), which is also used as a second monitor. The TV is also connected to the computerized digital job board, which is located in the employee lunchroom. There also is a Sonos Sound System connected to the Internet with speakers around the work areas. The tool box cost $16,485 – $4,380 for the side locker and $4,150 for the work center. Rick Tegtmeier, CGCS, MG, is the director of grounds.

(**SLEUTHS** *continued from page 16*)

Before and after photos of "The Volcano Hole" at Fircrest Golf Club in Fircrest, Wash. A.V. Macan's original intention of creating a hole resembling the glaciers of Mount Rainier had been lost over the years. Architect Jeff Mingay and superintendent John Alexander were involved in the restoration.

© JEFF MINGAY

course layouts.

"That's the first place you go to when you want to look at Donald Ross stuff," says Mandell, whose firm is based in Pinehurst. "Then really the trail goes cold after that because there really aren't that many places that have clearing-houses like that."

Finding materials from architects who worked nationally such as Ross, Mackenzie, A.W. Tillinghast, Walter J. Travis and Seth Raynor – all of whom have their own societies or associations – is easier than finding materials from architects who worked in a specific region, Mingay says. Experts interviewed for this story listed Willie Park Jr., Herbert Strong, Harry Colt and A.V. Macan, and the duo of William Langford and Theodore Moreau as architects whose work creates sleuthing challenges.

What happens if a search yields little or no information about a particular course besides the name of the original architect? Mingay has encountered this problem when performing restorations of Macan-designed courses, and he recommends studying the architect's work at other facilities.

"Those are fun projects," he says. "It gives you a little more leeway to be creative, but also draws inspiration for what you have seen from his other work as well. I think that has probably been done quite a bit even on Ross courses where there's limited info."

IT SHOULD BE FUN

Instead of dreading a looming project or studying their course's history, Tully urges superintendents to embrace and celebrate an opportunity to be involved in a restoration. Successful restorations are often morale boosters resulting in the superintendent maintaining a better overall golf course.

"Once you start seeing what was at your golf course, I think you would be hard-pressed to find a superintendent who doesn't have more energy and more excitement about their course after they figure out what they can restore," Tully says. **GCI**

Guy Cipriano is GCI's assistant editor.

AD INDEX

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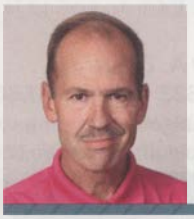

Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 216-393-0253.

The news Syngenta was welcoming a $43 billion acquisition by ChemChina caused more of a gentle ripple than a tsunami around our industry. Superintendents, long used to consolidation and mergers, kind of shrugged and resigned themselves to taking a wait-and-see approach.

That said, the company's business partners (like distributors, vendors, associations and media folks like us at GIE Media) were probably far more alarmed. I'll return to that in a bit.

The deal is in "quiet time," so nobody is saying much, but here's what I think:

There's little doubt the company will continue to be a first-class supplier of plant protection products. I'm convinced they will maintain their current level of customer support as long as that investment is rewarded. I think the Chinese will – as always – take the long view on this rather than clamoring for short-term profits and cutting costs to the bone. Remember, a big part of the attraction for them was getting the Syngenta ag technology and intellectual property they need to feed 1.4 billion people. This seems less about Wall Street shenanigans and more about the agricultural viability of the largest nation on the planet.

There's not much risk of enormous consolidation of sales forces and management as is often the disastrous case when two competing companies combine. As far as anyone knows, they aren't even going to change the name or the logo. ChemChina bought Pirelli Tire last year in a similar move to have a quality global brand to supplement their domestic tire brands. Pirelli hasn't changed much thus far, according to reports. Finally, compared to the complexities they would have faced integrating with Monsanto, this is a walk in the park.

By the way, I've heard a few folks float the idea that the ChemChina leadership might walk away from the golf market because it's a decadent western thing and the Communists don't like it. That's hilarious! About half of the Chinese economy is devoted to selling decadent things to Americans. They could eventually spin the specialty division off, but it won't be on political grounds.

Assuming the deal goes through – and all indications are it will – it's likely the standard post-merger mantra of "business as usual" will actually be true for the immediate future.

This is good because it gives us pause to consider what could have happened.

At the national level, about 30 leading suppliers pay for 75 percent of the stuff we enjoy. What stuff, you ask? They sponsor the education. They keep experts in the field to solve problems. They contribute to the vast majority of turf research in one shape or form. They buy trade show space they don't even necessarily want to support national and local associations. They buy ads in GCI and GCM. They underwrite local events through support for distributors. They write a lot of checks to support you, their customers.

I can tell you with great certainty they're not writing as many of those checks as they used to. Marketing dollars are shrinking because sales in the golf market are relatively stagnant, costs go up and they still need to make a profit. The result is smaller trade shows, fewer big events, thinner magazines and tighter budgets at the chapter level. And consider that many of our biggest brands are tied to agriculture, which is currently in a slump due to historically low corn prices. When the giant ag business sneezes, the tiny turf segment catches a cold and spending gets even tighter.

Few, if any, companies do more to support superintendents than Syngenta. They were named the most trusted and most admired chemical company in our 2011 "Ranking the Industry" report (they were second overall industrywide behind Toro) and I doubt their reputation has diminished in the intervening years. If anything, they've added products and resources via the DuPont deal a few years ago and made additional hires on their science team. This despite the fact a good chunk of the value of the turf fungicide market went away because of post-patent competition in the past decade.

Remember when George Bailey ponders suicide in "It's a Wonderful Life" and Clarence shows him what life in Bedford Falls would have been like without him? Imagine life in our world without committed companies who invest in all of us.

And, speaking of movie analogies, almost a decade ago, I wrote a column called "Hello! McFly!" (bit.ly/1OTu9qv) that was meant to remind us that good companies continue to invest because they feel confident discerning supers will return the favor by buying their stuff. That hasn't changed one iota. In fact, in the smaller, smarter golf market of the future, great supply and distribution partners may be the most important ingredient in your formula for success. GCI

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