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INSIDE

Fire ants / P 36

Nemacur countdown / P 46

T-1 bentgrass boom / P 54

HOW A MUNI-COURSE, A PRIVATE CONTRACTOR AND A NON-PROFIT MERGED RESOURCES TO COMPLETE AN AMBITIOUS STREAM-RESTORATION PROJECT.

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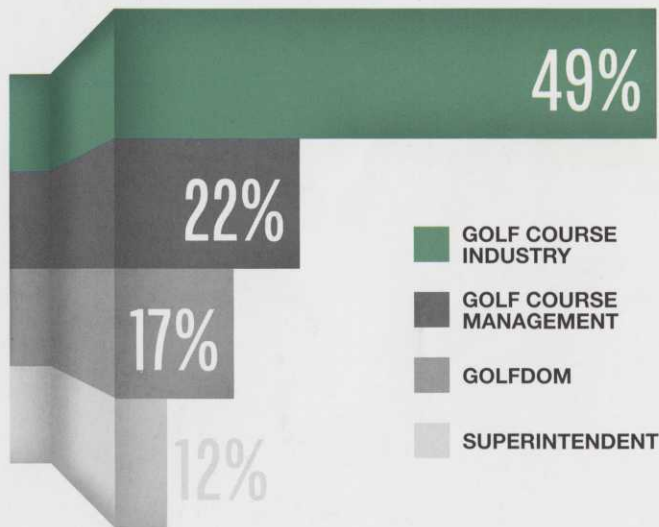
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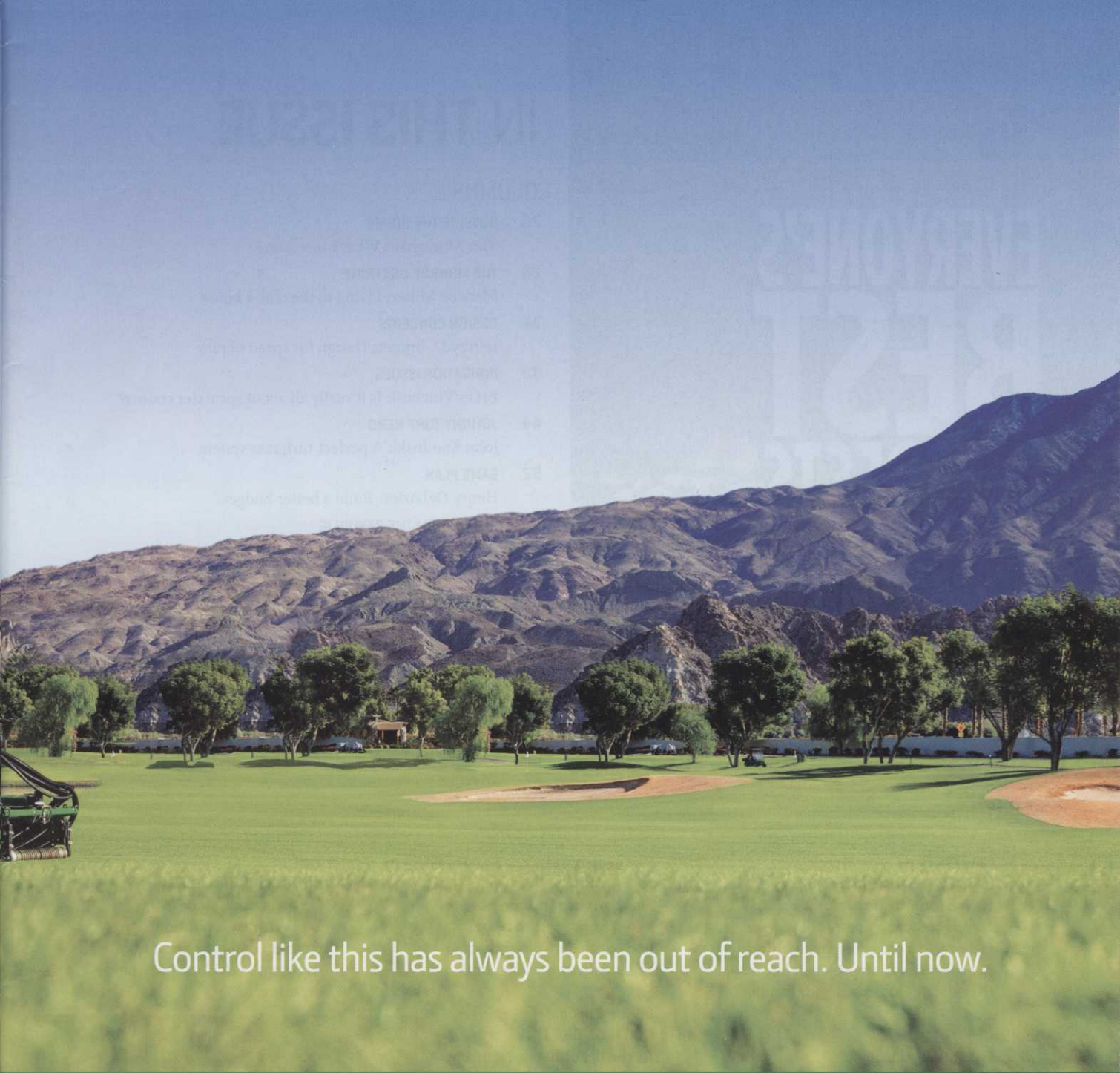
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HOW A MUNI-COURSE, A PRIVATE CONTRACTOR AND A NON-PROFIT MERGED RESOURCES TO COMPLETE AN AMBITIOUS STREAM-RESTORATION PROJECT.

FEATURES

Cover story

- 12 EVERYONE'S BEST INTERESTS**
How a muni-course, a private contractor and a non-profit merged resources to complete an ambitious stream-restoration project. Plus, how to replicate this feat at your facility.

Aeration

- 22 THE BIG & TALL OF IT**
Tine selection depends on a golf course's needs.

Industry

- 30 RIDING THE STORM OUT**
Top tips from superintendents on how to prep your course for the worst Mother Nature has to offer.

Pest management

- 36 FIRE ALARM**
Stubborn fire ants are now found from coast to coast. Prevent them from spreading like wildfire on your course.

Industry update

- 46 A LITTLE MORE TIME**
As the deadline for Nemaicur depletion nears, some superintendents await a last-minute reprieve.

Turf

- 54 BREAKTHROUGH BENT**
On the market since 2004, T-1 bentgrass is positioned to receive a domestic boost from its recent PGA Championship exposure.

IN THIS ISSUE

COLUMNS

- 20 OUTSIDE THE ROPES**
Tim Moraghan: What's in a name
- 28 THE MONROE DOCTRINE**
Monroe Miller: Living in the club's house
- 34 DESIGN CONCEPTS**
Jeffrey D. Brauer: Design for speed of play
- 42 IRRIGATION ISSUES**
Brian Vinchesi: Is it really all about sprinkler counts?
- 44 JOHNNY TURF NERD**
John Kaminski: A perfect turfgrass system
- 52 GAME PLAN**
Henry DeLozier: Build a better budget
- 60 NOTES FROM THE REPUBLIC**
Bill Brown: How social media works for you
- 66 PARTING SHOTS**
Pat Jones: Building something special

DEPARTMENTS

- 6 TEEING OFF:** Rising to the occasion
- 8 EDITORS NOTEBOOK:** Kickin' it in Kentucky
- 62 TRAVELS WITH TERRY:** Equipment ideas
- 65 CLASSIFIEDS**
- 65 AD INDEX**

36



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RIISING TO THE OCCASION

I'm sitting in the general session of the RISE annual meeting in Tucson pondering what the future holds for pesticides and plant protection in our happy little business. The news is mixed, but (spoiler alert!) the imminent threat of having these critical turf management tools doesn't seem as severe as it's been in the past. Why?

First, the current administration hasn't made pesticides a regulatory priority on the national level. With one exception (see below), I haven't seen anything from the EPA that poses any major danger to our access to pest management tools. No big bans, no cancellations of key products, no big anti-pesticide PR campaign. The Feds have been too busy fighting with each other which means nothing good or bad is getting done. Gridlock has its benefits.

The one challenge we face is this crazy expansion of the Clean Water Act to include every damn puddle on your course under onerous permitting restrictions. Also known as Waters of the U.S. (WOTUS), the new rules could curtail both pesticide and fertilizer use but would most likely create a big paperwork hassle for applicator permits or other changes to waterways or impoundments. They figure adding massive amounts of red tape is easier than sensible regulation.

The lawyers will argue about this for a while and you'll hear a lot of "call to action" stuff from GCSAA to fight it. Golf is a tiny player in this compared to agriculture, real-estate development and other major industries who would face enormous problems because of WOTUS. And those guys have way more money and lobbyists than we do. I'll probably regret this, but my prediction is the final version won't hurt your daily operations much, if at all.

The current headache continues to be local and state flash points like Con-

necticut, New York and other "home-rule" jurisdictions where activists are constantly launching ninja attacks to ban "cosmetic" use in schools, parks and, yes, even private property like golf courses. RISE seems to have its arms around these local firefights at the moment, but do not believe for one second that you can ignore the threat they present. You must be aware of what's going on with your local regulatory authorities and chapters need to lead the way with proactive lobbying efforts at the state level.

The pollinator issue is a mess. Science is beginning to overcome activist rhetoric in some ways, but it remains a hot-button issue for the industry, particularly for our friends in the nursery and greenhouse business. Again, instead of taking the traditional political route, the anti-pesticide folks are trying "regulation by retail."

Rather than fighting at the statehouse, they're taking

their game to the boardrooms of consumer gardening outlets to demand "bee-friendly" products and plants. Bayer, Syngenta and others are responding sensibly by focusing on the real science behind colony collapse and promoting actual bee-friendly practices like pollinator gardens on courses and elsewhere. If you're not involved with one of these efforts, you should be.

But, overall, the chemical industry is more concerned with margins (branded vs. generic products), consolidation (e.g., the recent friendly Nufarm/Valent and FMC/Arysta deals) and moving towards an overall plant health approach that reinforces the fact that these products offer great value not just to supers and LCOs but to communities and society at large.

RISE continues to evolve and change like everything else but, as the session (and this column) comes to an end, I know I feel better having the association supporting our market. You should too. **GCI**



Pat Jones

Editorial director and publisher

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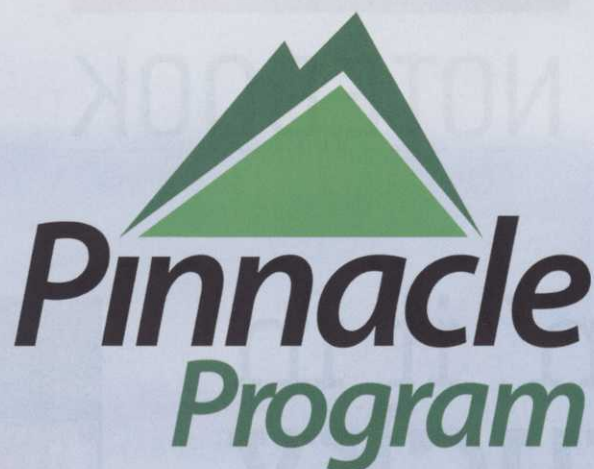
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Kickin' it in Kentucky

A witty meteorologist provided a golf twist on weather during the Golf Course Builders Association of America summer meetings in Louisville. The following are divots from a presentation by John Gordon, the enthusiastic chief meteorologist of the National Weather Service office in Louisville and avid golfer.

You're more likely to get struck by lightning in an open field than under a tree. Forty-five percent of lightning strikes occur in open fields compared to 23 percent under trees, according to Gordon. Golf courses account for 6.5 percent of all lightning strikes in the U.S.

Gordon's advice when lightning threatens? "When it roars, goes indoors," he says. By the time Gordon reached the lightning part of his presentation, the room was engaged enough to repeat his simple message on command.

At the beginning of his presentation, Gordon referenced Lee Trevino, a major champion struck by lightning at the 1975 Western Open, and compared placing percentages on weather possibilities to organized crime. "It's like the mafia," Gordon says. "Once you get in, you can't get out."

Heat, though, poses more danger than organized crime, and Gordon says more Americans die annually because of heat than floods, lightning, tornadoes and hurricanes combined. Golf course maintenance workers and builders are in peril because many spend large chunks of their careers working outdoors in toasty months. Gordon recommends staying hydrated, wearing light-colored clothing and slowing your pace to combat oppressive heat.

Valhalla, the site of the 2014 PGA Championship, is one of the courses in the 59-county region Gordon serves. Gordon appeared at the GCBAA meetings on a Wednesday, one day before Valhalla hosted the 2014 PGA Championship. Nobody in the crowd asked him to forecast the four days that followed.



Golf Course Builders Association of America executive director Justin Apel speaks following the "Sticks for Kids" golf outing at Quail Chase Golf Club in Louisville, Ky. The outing was part of the GCBAA's annual summer meeting.



GCI's webinar on Tuesday, Sept. 30 features a presenter who can help you grow healthier roots. Dr. John Kaminski, the director of the Golf Course Turfgrass Management Program at Penn State University, will discuss how a club can create an effective internship program. The free webinar begins at 11:30 a.m.



Heavy rains led to mud covering the spectator areas of Valhalla Golf Club during the PGA Championship. The tournament ended on Sunday evening despite poor weather throughout the weekend.

READY FOR PRIMETIME

The drink-a-bottle-of-water-a-hole heat left Louisville before the PGA's opening shot. That doesn't mean the Valhalla grounds crew and volunteers experienced a comfortable week.

Rain started early Friday morning, turning areas outside the ropes into golf's version of a sloppy rock concert. The dousing continued until Sunday afternoon, which made a Sunday evening finish seem as likely as hitting a trifecta at Churchill Downs on Derby Day.

Valhalla's enduring maintenance lesson is never underestimate a determined crew. Led by 36-year-old superintendent Roger Meier, a team consisting of 40 Valhalla workers and 70 volunteers cleared enough water from the course to arrange a memorable finish.

Forging forward with the group ahead of his, Rory McIlroy edged Phil Mickelson, Rickie Fowler and Henrik Stenson with a two-putt par on the 18th under skies presenting more black than blue. The tournament posted a solid 6.0 television rating on Sunday, with the number peaking at 9.2 from 8 to 8:30 p.m. More than 11 million viewers watched the tournament's conclusion. Professional golf needed the television boost, because major championship ratings had been plunging.

If the Valhalla crew doesn't end a grueling week with the maintenance version of an eagle, the PGA doesn't end on Sunday. If the PGA doesn't end on Sunday, it ends on Monday, likely posting another disappointing television number.

Squeegees, syringes, pumps and 110 determined workers created a surreal ending and saved us from another winter of "Nobody watches golf on TV anymore" stories. We'll say what PGA of America President Ted Bishop failed to mention in the Sunday night trophy ceremony. Awesome work, Valhalla grounds crew. Awesome work.



ROOTS FOR CASH

Growing healthy, strong roots has become a competitive endeavor. For the second straight year, Holganix is staging its "Holganix Roots for You!" competition.

The winner receives a \$500 cash prize and \$500 donation made in its name to the GCSAA. Last year's champion Noble Hawks Golf Links of Indiana boasted a 9½-inch root. We know 10- and 11-inch roots exist. We admire them weekly on our social media feeds.

From THE FEED

GCI's "Fast and Firm" newsletters, which hit inboxes every two weeks, are must-read publications. If you don't get them, you can subscribe at bit.ly/1vjopSe. A subscription is free. One of August's e-goodies included Todd Quitno of Lohmann Industries describing how footgolf can help a facility compete in its market. Quitno's story, which can be found at bit.ly/1sQ6S3b, led to plenty of kicking on Twitter.



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STANDARD SPEED

Green speed is one of the most sought-after bits of information about a course from day to day by players, and one of the first accused culprits when a round goes sour. Each superintendent has his own way of handling it, despite pressure from media coverage and players to run greens at tournament speeds.

Whether the green speed is in double digits or a closely guarded secret, being able to talk about the reasons the green speed is at that level is just as important as the number itself. We got in touch with a few people in the industry with some strong opinions about why.

Larry Gilhuly, director of the northwest region of the USGA, says the priority to emphasize should be smoothness of the green first, then green speed. Older courses aren't designed for high speed greens, and it ends up in stressed turf and limited hole locations. Most important, though, is that fast greens

usually mean slower play.

"It's just a fact that you'll have more putts, and it slows down the game when the greens play too fast," Gilhuly says. "We have three things in the game that we have to address: it's too hard, it's too expensive and it takes too long."

Talking about green speed with players can mean facing down high hopes, but just agreeing to those demands can set up unrealistic expectations, he says. Read more at bit.ly/1leleGX.

Oakmont Country Club is known for its fast greens, and superintendent John Zimmers responds diplomatically to players by setting



course standards at the beginning of each season, to give players a clear idea of an end goal.

"It's always good to set standards," Zimmers says. "Green speed is just one of those standards, like the height of the rough, or how many times you're going to rake the bunkers."

Staying consistent helps members know what to expect, but it may also just be more realistic to reserve faster speeds for special events, he says. Read more at bit.ly/1vmpVD8.

Check out stories like these on communication with members and managers by keeping up with our Talkin' Turf newsletter. GCI



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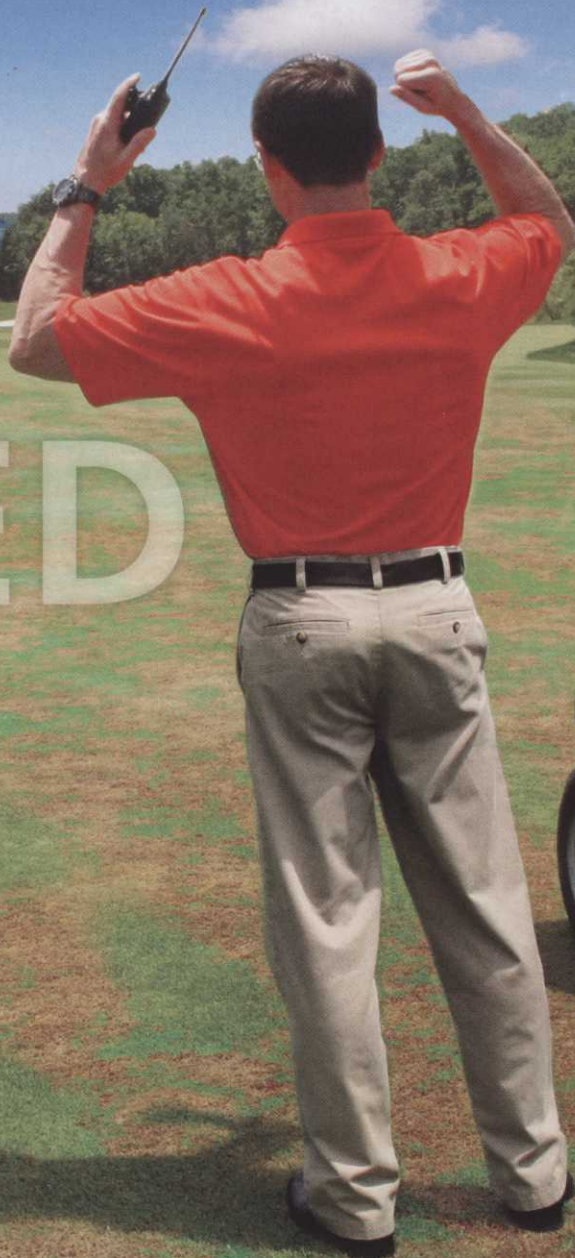
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PLUS, HOW TO REPLICATE THIS FEAT AT YOUR FACILITY.

BY GUY CIPRIANO

The superintendent and general manager lead a five-hole tour of their municipal golf course on a sweltering July afternoon. Gently, they stop their carts along the right side of a fairway. They watch a foursome tee off. They gaze at a floodplain between the fairway and tee.

Following their lead are a biologist, project manager and environmentalist. The convoy pauses between shots, admiring the scene on the 13th hole at Lost Nation Golf Course in Willoughby, Ohio, 21 miles from downtown Cleveland and one mile from Lake Erie.

A clear creek with level banks meanders through the hole. Everybody in the group stares at the creek and the surrounding vegetation. The creek's past and future, along with the federal grant and collaborative work required to cultivate this serene appearance, spark personal stories.

For Lost Nation general manager Mitch Allen, it's about fewer floods and an enhanced look, two necessities for operating a facility with a limited budget in a competitive golf market. For superintendent Greg Hill, it's about maintaining less turf in an area that receives little play and maintaining drier turf in areas golfers roam.

For Davey Resource Group senior biologist Ken Christensen, it's about native plants and creating a wildlife friendly environment easy on a golfer's eye. For Davey's Ana Burns, a biologist who served as a project manager, it's about the organization required to complete a major golf course stream restoration project.

For Keely Davidson-Bennett, it's about the mission the non-profit organization she represents, the Chagrin River Watershed Partners Inc., developed when it formed in 1996: preserving and enhancing the scenic environmental quality of the ecosystem of the Chagrin River and its watershed in a sustainable manner for all involved. Ward Creek, which knifes through Lost Nation's back nine, flows into the Chagrin River. The Chagrin River flows

© LAUREN MAY

into Lake Erie. Flooding and erosion within the shadows of an important American body of water is a harrowing thought.

Their July reunion yielded laughter and admiration. More importantly, it yielded pride and provided an example of what happens when golf and environmental needs collide.

UGLY AND OVERBOARD

Ward Creek crosses five back-nine fairways: 13, 14, 15, 16 and 18. Allen, who has been with the course for 25 years, serving as superintendent before Hill arrived in 2001, knew the creek presented problems.

In a typical year, the course would lose a half-dozen play-



The 14th hole at Lost Nation Golf Course in Willoughby, Ohio, before the completion of a major stream restoration project. Ward Creek, which flows through the back nine, was experiencing severe erosion, leading to sediment runoff entering the Chagrin River. The river flows into nearby Lake Erie.

able days on the back nine because of flooding. The number is higher in a saturated year.

Lost Nation, a H.S. Colt and C.H. Alison-designed course opened in 1927, receives close

to 40,000 rounds per year. But unpredictable weather makes playing golf between November and March difficult, thus the need to maximize April-October play dates.

Following Hill's arrival, the course embarked on a series of renovations. Main-line drainage was improved. The par-5 second hole was rebuilt. The par-5 fifth hole was also rebuilt.

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The 14th hole at Lost Nation Golf Course following a major stream restoration project. Ward Creek was restored on parts of five holes, which has reduced flooding and improved aesthetics on the municipal course designed by H.S. Colt and C.H. Alison. The course opened in 1927 and receives close to 40,000 rounds per year.

The driving range was improved. Tees were altered.

Hodgson Road intersects the course, with holes 2-8 resting on the level north side of the road. The back nine and floodplain rest behind the clubhouse.

Ward Creek's banks had experienced severe erosion and presented maintenance challenges for Hill and his staff. Banks were steep and surrounded by maintained turf. "It would get swamped and it would take a lot of handwork and trimming to get it aesthetically prepared," Hill says.

Something needed to be done. Allen and Hill agreed a stream restoration would be costly and unlikely a high priority on the city's to-do list. Stream restorations are six- and sometimes seven-figure projects.

"We realized it was an issue," Allen says. "It all comes down to expense. Where do you put your money first? We knew it needed to be done. Unfortunately, it would have been a reactive situation if we hadn't had the grant come through. We would have come in one day and on 13 the hillside would have been gone and everybody would be like, 'Now what are going to do?'"

As Hill's crew worked furiously after storms to keep the back nine open, the CRWP, which is comprised of 37 northeast Ohio municipalities, sought funding for a series of projects along within the Newell/Ward Creek watershed. CRWP collaborated with the cities of Willoughby, Mentor and Eastlake, the Lake County Soil and

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COVER STORY



Lost Nation Golf Course superintendent Greg Hill, left, and general manager Mitch Allen, middle, tour the 18th hole with Davey Resource Group senior biologist Ken Christensen. Hill and Allen worked with Davey to minimize disruptions to daily play while work was completed on the course last fall.

Water Conversation District, and Simon Property Group, which owns the nearby Great Lakes Mall on stream-related projects. The groups secured a \$285,000 grant through the U.S. Environmental Protection Agency Great Lakes Restoration Initiative in 2012.

Besides reducing the amount of play on the back nine, the stream bank running through Lost Nation posed environmental problems. Davidson-Bennett says the stream doesn't meet Ohio EPA water-quality standards, a conundrum through no fault of the golf course.

Testing on the stream is performed in Eastlake, a city bordering Willoughby. The Newell/Ward Creek watershed consists of high runoff areas such as parking lots and housing developments. Tires, mattresses, toys and other items carelessly dumped into the creek flow into portions of the stream running through Lost Nation.

"This watershed has a lot of hard surfaces," Davidson-Bennett says. "It's our most impervious watershed. We have a lot of parking lots.

We have a lot of houses. That changes the way the stream behaves. Instead of a lot of water soaking into the ground, we have a lot of places where water runs off the hard surface and creates a lot of problems to the solution in the stream, and it also changes the pattern of water rise and fall that the stream life isn't used to."

The project marked the CRWP's first involving a golf course. "We have been interested in working with golf courses in the past," Davidson-Bennett says.

WORKING ALONG THE BANKS
A competitive bid process resulted in Davey, based in Kent, Ohio, being awarded work for the project. Planning started in March 2013 and before beginning work, Davey needed permit approvals from the City of Willoughby, Ohio EPA and U.S. Army of Corps Engineers.

The design/build team consisted of Davey, TGC Engineering and Marks Construction. Ohio-based golf course architect Brian Huntley was also involved



A variety of native plants were installed along Ward Creek following a stream restoration project at Lost Nation Golf Course. Species include lizard tail, prairie chord grass, blue flag iris, spicebush, red buckeye and bottlebrush buckeye trees.

in the project. Multiple northeast Ohio golf courses are in Huntley's portfolio, including The Quarry Golf Club, one of the state's top facilities. Huntley also had visited Lost Nation multiple times.

"I wanted somebody with a golf background involved in the project whether it was a superintendent or a golf course architect," Allen says. "Everybody that submitted a bid had a golf course architect on their design team. It was very important that somebody took a look at it from a golf playability standpoint and agronomic standpoint."

Huntley's input also soothed Christensen and Burns, whose team was restoring 2,900 linear feet of stream bank. "That was very helpful," Christensen says. "As a

biologist, we can turn it into an unplayable course very quickly. We can ruin the whole thing. We worked closely with him on the planting and he was giving us tree heights and shrub heights."

Construction started in September 2013. The course remained open as crews restored one hole at a time. Crews worked from 7 a.m. to 3 p.m. Monday-Friday. Construction was completed in December 2013. "The timing when it was done helped tremendously," Allen says.

Crews started work on far reaches of the course and maneuvered toward exits as the project progressed. Positioning large vehicles near a narrow, steep stream wasn't easy and the weather provided twists, with snow arriving in October.

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COVER STORY

Tee boxes on multiple holes were moved to improve aesthetics and increase the course's yardage to close to 6,500 yards from the back tees. On the 15th hole, a long, par 4 considered one of the toughest holes in northeast Ohio, the stream bank was flattened and a new bridge was built and re-routed through the woods. The previous bridge traveled directly through the flood area. The new bridge, which has a concrete base, steel reinforcement and wood covering, was designed by Hill and constructed in-house. Lost Nation will be reimbursed for the cost of the bridge and labor, which cost \$11,500, according to Allen.

"We were going to have to take the bridge out anyway," Allen says. "If we were going to do one hole, it would have been 15. For them to get what they wanted to get done here as far as stormwater in this area and stopping erosion, the bridge had to leave. It was a huge pinch point."

Instead of mowing to the creek's edge, a variety of native plants, including lizard tail, prairie chord grass, blue flag iris, spicebush, red buckeye and bottlebrush buckeye trees, were installed on 15 and other holes. Areas restored to a more natural state included 2.1 acres of short grass riparian meadow and .72 acres of tree and shrub. Playability represented a major consideration when determining which plant species to install in the tree and shrub areas.


"It had to be low-covering shrubs," Burns says. "You won't see the ground. It will be low-growing shrubs with colorful things going through them."


Christensen says it will take three to four years for most of the vegetation to mature. Maintenance includes reducing the height of the shrubs once per year, and Hill says the red buckeye has already helped areas along the stream absorb water faster.


Aesthetics have changed on every hole along the stream. A new tee box on the 13th hole will eliminate blind drives. The 16th hole, a 175-yard par 3, was re-graded. The 18th hole, a 500-yard par 5, features scenic vegetation


DOING THIS AT HOME


Pursuing a partnership like the one at Lost Nation Golf Course is not out of reach. Here are 10 tips to replicate it at your facility.


Identify a problem that might be affecting more than the golf course 


 **Determine** grant money available for the project


Secure non-profit and government partners capable of assisting in funding and approval processes 


 **Educate** customers about the scope of the project and why it will benefit the golf course and surrounding communities


Hire an experienced contractor 

 **Seek** design and construction input from somebody with a golf background such as a golf course architect or agronomist

Develop ways to enhance playability and aesthetics 

 **Establish** a construction schedule that minimally interrupts play yet offers flexibility

Maintain open lines of communication throughout the construction process 

 **Combine** work with other restoration projects needed on impacted holes

and water ripples within sight lines on approach shots.

Besides enhancing the golf course, Davidson-Bennett says the project provides significant environmental benefits. "Through this project we decreased sediment loading because soil was being eroded from the sides of the stream," she says. "It wasn't stabilizing. We have also added floodplain access, which gives a place for stormwater to spread out during storm events and that helps decrease downstream sediment erosion."

The end result – and process – has satisfied Allen. Four months of construction crews on the course didn't overwhelm Hill and his staff. Allen adds golfers will notice

improved aesthetics when native vegetation along the stream banks mature. Lost Nation has only come close to losing one day of play this season because of flooding.

"It went about as good as it could have been expected and probably a little bit better than I thought it was going to go," he says. "The bottom line for me is the bottom line. I had Greg's job back before I hired Greg. My background is in that end of the business. I wanted to make it easy as I could on him. I didn't want those guys getting overwhelmed with everything. We have a very tight budget around here. We don't have a lot of extra dollars." **GCI**

Guy Cipriano is GCI's assistant editor.

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WHAT'S IN A NAME?

Or why you should judge a superintendent by his title.

Fall is traditionally the time when people in our business start looking for jobs, and clubs, courses and resorts begin their searches for new personnel. If you are among those looking – or if a property comes calling – you need to be prepared. This means having an updated resume ready to go at all times, as well as a prepared “stump speech” about who you are, what you do and what you want to do next.

Each year, I help individuals and clubs find each other, as well as coaching others to move up our “corporate ladder.” I’ve found a few areas where job-hunters make simple mistakes that cost them opportunities. These include making sure the resume’s timeline of experience is accurate; the resume and cover letter are attractive and functional; cover letters are brief – they are not autobiographies; and limit sentences that start with “I.”

Among the advice you’re going to get about finding a new job, the most important is to be truthful. Be accurate about your education, experience and personal history. In this Internet age, it is very easy for potential employers to learn the truth. And trust me: They are going to look. If there’s anything embarrassing on your Facebook account, get it off. Now.

Job-seekers are especially good at fact-fudging their title. Sometimes they inflate their position, often they use a false title, a label they made up – and their current employer went along with – that sounds impressive. In most cases, false titles are confusing and force you into a lot of unnecessary explaining.

GCSAA stands for Golf Course

“Now ask yourself if the title you’re ‘wearing’ reflects the position you hold and the duties you perform. When in doubt, simplify.”

Superintendents Association of America. You should wear membership as a badge of honor and remember what the “S” means.

Now ask yourself if the title you’re “wearing” reflects the position you hold and the duties you perform. When in doubt, simplify. And better yet, go with a title in common use everyone will understand.

If you’re an assistant applying for a superintendent job, good for you and good luck. But remember, you’re an assistant now and shouldn’t pretend to be anything else. Don’t camouflage your title or responsibilities in a complicated name. Clubs are used to hiring assistants and making them the head guy: That’s how people move up, so there should be no embarrassment in stating your actual title.

If you are a first assistant or overseeing one course in a multi-course complex, be honest: The bulk of responsibility does not really rest on your shoulders, so don’t say it does. If you’re not responsible for budgets, membership interaction or personnel, be honest. You have nothing to gain and everything to lose.

Facts like these are easily checked and lying on your resume or in conversation – even if your “lie” is nothing more than inflating your position a little bit – is the fastest way to lose

any hope of that new job. No one is a bigger advocate for helping junior people move up more than I am, but when consulting with a club, I’m the first one to remove a candidate from over just such tall-tale telling.

You cannot “fake it till you make it.” Someone is going to find you out, if not in the hiring process, then when you’re on the job. Clubs know that people moving up will need on-the-job training and some learning curve is inevitable. However, if they believe they’re hiring the total package and it turns out to have some big holes, that’s going to mean trouble for you.

While every profession has its share of meaningless or derogatory titles, we superintendents seem to have more than our share. Whenever you’re thinking of inventing a new title for yourself, think for a minute about some of the silly ones that have been applied to us:

- Grass ass
- Dirt monkey
- Dirt farmer
- Weed whacker

Now think about some of the even sillier ones we could come up with to inflate our egos and “impress” others:

- Director of blade management
- Stimp supervisor
- Soil prober
- Seeding oversight director

Being a superintendent – and carrying that title in any form – implies a position of responsibility, authority and knowledge. No matter where you are on the hierarchy, you’ve worked hard to get where you are, both cracking the books and working the land. Take a step outside, look at that golf course you’re responsible for, and remind yourself, “I helped do that.” **GCI**

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The big & small of it

Tine selection depends on a golf course's needs.

By Rick Woelfel



Aerification is a dirty word to some golfers. It conveys images of greens filled with holes and putting surfaces that are at best inconsistent and, at worst, may not be playable at all.

But serious golfers understand that aerification is necessary to sustain healthy turf. Aerification counters the effects of foot traffic and compaction while also minimizing the risk of disease.

"You need to have an ongoing program," says USGA Greens Section Course Con-

sulting Service senior agronomist Chris Hartwiger, "to remove organic material and replace it with sand for the purpose of keeping desirable physical properties in the upper root zone."

Organic material begins to accumulate in a green complex literally from the moment grass is planted on it. Ideally, the grass takes root and grows downward through the soil; the root system provides the plant with the necessary water, oxygen and nutrients.

But over time, the level of organic material on the soil increases to the point where it collects in the soil pores and stymies the growth of the plant.

Dr. Bob Carrow, a renowned turfgrass specialist from the University of Georgia, did a study on the issue of organic material in green complexes. His data, which was compiled during the mid-1990s and published in 1998, indicated that when the amount of organic material in a sand-based green reaches 3 to 4 percent by weight, the amount of pore space in the green complex begins to decrease, making the turf more susceptible to oxygen deprivation, heat stress and disease, among other things.

So it's a given that organic material must periodically be expunged from greens and fairways and replaced with sand.

But what's the best way to achieve that aim? Are large tines or smaller ones the best approach? Opinions vary on the subject.

FINDING A FIT

Many superintendents prefer larger tines, with a diameter of perhaps a half- or five-eighths-of-an-inch, with a 2-by-2-inch spacing pattern.

Dr. Beth Guertal has taught at Auburn University for more than two decades and has done extensive research in the field of turf management. She notes the advantages of using larger tines, whether hollow or solid.

"Those significantly reduce compaction in that top two

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inches,” she says. “They remove a little bit of thatch, they stimulate root density, they stimulate chute density ... If you don’t have deep compaction or a layering problem, they work really well.

“The only thing is, you need to make sure it has a little bit of a shaking or quaking effect so you don’t see the development of a sub-surface tillage pan. [But] today’s newer equipment takes care of some of that.”

Some superintendents will choose smaller tines with a diameter of one-quarter or three-eighths-of-an-inch with a 1-by-1-inch or 1½-by-1½-inch spacing pattern.

There are some advantages to smaller tines. Aeration holes heal more quickly which results in less disruption of play. The downside of this practice is the aeration holes are more difficult to fill. As the hole size decreases, the likelihood of sand particles bridging over the surface of the holes increases.

“The larger the hole, the easier it is to fill it with sand,” says Hartwiger, who’s based in Birmingham, Ala., and works with golf facilities throughout the southeast.

A superintendent must develop an approach best suited to his or her own circumstances.

Don Brown has spent 34 years as the superintendent at White Manor Country Club in Malvern, Pa., outside Philadelphia. During that span he hosted an LPGA Tour event for six seasons and has also hosted what was then the Senior PGA Tour.

While some superintendents tend to rely on one particular size of tine, Brown has taken a different approach over the course of his career.

“We have changed a little bit

back and forth over the years kind of adjusting for the need at the time,” he says. “I don’t think you can say that, ‘This is the size you use and that’s the size you’re always going to use forever.’ We have varied our size, not so much year to year, but every couple years it seems like we get into a slightly different aeration mentality.”

It’s a matter of choosing

“We have changed a little bit back and forth over the years kind of adjusting for the need at the time. I don’t think you can say that, ‘This is the size you use and that’s the size you’re always going to use forever.’ We have varied our size, not so much year to year, but every couple years it seems like we get into a slightly different aeration mentality.”

—Don Brown, superintendent, White Manor Country Club, Malvern, Pa.

the tine that’s suitable for the soil conditions at a given time, Brown says.

“There was a time when we had a good bit of organic material in our greens and we went to a larger tine,” he says. “We were punching holes that might have been .580 inches and spaced very closely together, about an inch-and-a-half apart, but then we reached a point where we didn’t feel we had to remove as much organic, so we went to a smaller tine, .406-something and maybe did more like two- to two-and-a-half-inch spacing because I didn’t feel like I needed that much material removed.”

Aeration changes and evolves depending on the real need, Brown says.

“Is there a lot of organic that we need to remove? Or is there not enough to create an issue and we can back off?” he says. “We can have fewer holes, or holes that are a little bit smaller, which impact play less.”

In 2002-03, White Manor was completely redesigned by

spacing in order to keep the air channels open. Once the greens became established and started to develop some organic material, we started to get a little bit bigger with the tines and a little closer in our spacing until we reached the point where we had the organic issue under control. We still punch as often, but not as big a hole and not as close together.”

Brown aerifies twice a year, usually the last week of March or first week of April and again during the third or fourth week of October. Ideally, he’d prefer to schedule aerification in May and early to mid-September, but the busy golf schedule at the club makes that impractical.

architect Bobby Weed. The golf course was closed for most of two seasons before reopening in late summer of 2003. The new course featured bentgrass greens and fairways, giving Brown a new a new set of conditions to deal with.

“We were maintaining a sand-based green that had a very aggressive-growing bentgrass,” he says. “That creates a lot of organic matter. We made some significant changes to our aeration program.”

Those changes included using a smaller tine in a quad time holder.

“Initially we used a very, very small tine in very tight





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TIMING IS EVERYTHING

Steve Aitken has spent 21 years at Aspen Golf Club where he's not only the head superintendent but also the director of golf.

The Colorado municipal facility sits 8,000 feet above sea level. The golf course is open from mid-April to late October, but the peak season is short, spanning the period from late June to mid-September. The club hosts 28,000 to 30,000 rounds each year.

Because of the shortened season, the cooler temperatures (even during the summer temperatures dip into the 40s at night) and the dry climate, Aitken aerifies just once each

“We’re trying to eliminate thatch and create a firm surface. When we do go in, we’re not using a solid tine. We’re using a hollow tine one-half inch in size that actually holds the core. You’re at least keeping your head above water as far as thatch accumulation. You don’t want it to accumulate.”

— Steve Aitken, head superintendent and director of golf, Aspen Golf Club, Aspen, Colo.

season; in late April or early May, theoretically after the last snow of the season has melted. He’s toyed with the idea of aerifying in the fall instead.

“I really feel at elevation you need only one core aeration a year,” he says. “Otherwise

you’d have the place torn up most of the time.”

Aitken prefers to utilize a half-inch tine with a 2-by-2-inch spacing pattern.

“We’re not using a solid tine,” he says. “We’re using a solid tine that actually holds the

core. That lets us keep our head above water as far as thatch accumulation is concerned.

“We’re trying to eliminate thatch and create a firm surface. When we do go in, we’re not using a solid tine. We’re using a hollow tine one-half inch in

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size that actually holds the core. You're at least keeping your head above water as far as thatch accumulation. You don't want it to accumulate."

Aitken says the dry climate in the Rocky Mountains accelerates the aerification process. "I think it makes it go a little quicker," he says. "We can pull out our cores and they're fairly dry and they're light, so the pickup process goes pretty quickly."

"And when you're applying sand, the drying time is minimal. I think the whole procedure goes pretty quickly. You've just got to make sure you've got irrigation to water everything in afterwards because everything is so dry."

Some facilities and golf course owners are reluctant to aerify at all. They cite the revenue lost while the golf course is closed for aerification.

But for a daily-fee opera-

tor looking to turn a profit, aerification is part of the cost of doing business, just as the owner-operator must change the oil regularly in his car.

Delaying aeration may save money in the short term, but it puts a golf course at risk. Too much organic material in the soil can lead to other problems, although Hartwiger points out those problems don't always manifest themselves immediately.

"When you defer aeration, you definitely run the risk of poor plant health," he says. "But sometimes, for greens to really turn up their noses, you need another catalyst like a super-hot summer. You can go a long time without terrible secondary problems and then you get a really hot summer and 'boom.' The greens don't perform at all and you're wondering what happened." GCI



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ALUMNI UPDATE

The accounting breakdown session was very interesting, especially since it was tailored toward us as superintendents. It was one of the highlights of my learning experience. It gave me a much better understanding of important financial concepts such as depreciation and balance sheets.

The most important thing that I learned in the conference was managing generational differences. The instructors did a great job in helping us understand the key differences are among the various generations and how to manage them accordingly.

There are some significant generational differences among our staff here at Kapalua. So when I got back from the conference I was able to utilize some new managerial techniques which have been a great success here within our staff. As with everything else, it is a continual process, but the conference gave me some new perspectives and insights on managing my staff.



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

LIVING IN THE CLUB'S HOUSE

One of the first out-of-state colleagues I established a friendship with was giving Cheryl and me a tour of his club's facilities. It was a regular stop on the PGA Tour, and the clubhouse was enormous.

"Let me show you where our apartment was," he said as we walked up a grand staircase to the second story.

I didn't react one way or the other because in those days superintendents frequently lived on golf course property. Although it was infrequent to literally live in the clubhouse, it wasn't unheard of. Sometimes it was actually a requirement for the superintendent to live in the club's house.

When I started my career, the club that hired me had a house next to the shop. The retired golf pro lived in it, but when he moved out it sat empty. It was small and needed a lot of work, and no one thought about offering it to any other club employees. We used it for storage and a few years later we had the village volunteer fire department burn it. They got practice in putting out fires; we had more room for our new shop.

I've wondered why golf courses took the steps to house a superintendent and his family. One reason is that farms were purchased for course construction and included buildings. It

seemed natural to use the barn and other buildings for the shop and storage, and to offer the house to the greenkeeper. Another reason is that superintendents seemed to have greater longevity at a club, more than the golf pro and especially more than managers. And it might have been presumed proximity to work was more important to us.

For some superin-

“There are plenty of downsides to living on the golf course. You never really leave work.”

tendents, a club home's advantages outweighed the disadvantages. When a young superintendent is hired, he doesn't have to worry about a down payment to buy a house. The club takes care of housing needs and assumes the expenses associated with home ownership. A new roof, new carpeting, HAC maintenance, painting and dozens of other costs we tend to forget about aren't carried by a superintendent living in a club house. And there are no property taxes to pay.

Plus, home equity today isn't what it used to be. Living in a club home also can make moving easier – no house to sell.

Bruce Worzella and his wife Mary are retiring at year's end, leaving the

house that's been their home for 35 years. It's been a beautiful place to live and raise three daughters. Their family was immediately embraced and welcomed into the club family. They worked and enjoyed life together. Mary always knew what problems Bruce was facing and understood them better. They will have fond memories of West Bend Country Club.

Another family – Steve

dent with equity in another home. And the home a club offers might not be in the best of shape.

Serious discipline is required to build equity similar to that available through home ownership. A superintendent's job is difficult enough without being complicated by owning rental property. There is also the possibility a member will bother a superintendent or his family, complaining about green speed or expecting help starting a car on a cold January night.

I am convinced this concept is on the decline. I see club houses now being offered to assistants or to immigrant staff. In a case I am familiar with, a general manager moved into a club's house the newly hired superintendent wanted no part of. I know of an instance where a new hire declined the club's house because it would have created a very long drive for his wife to and from her work.

Is club housing going the way of manual irrigation, pull behind mowers and old Ford tractors? Likely not anytime soon. Most who have had such an experience speak very favorably of it. But one thing will be true for all time – home is where the heart is, whether or not the club owns the house the superintendent lives in. **GCI**

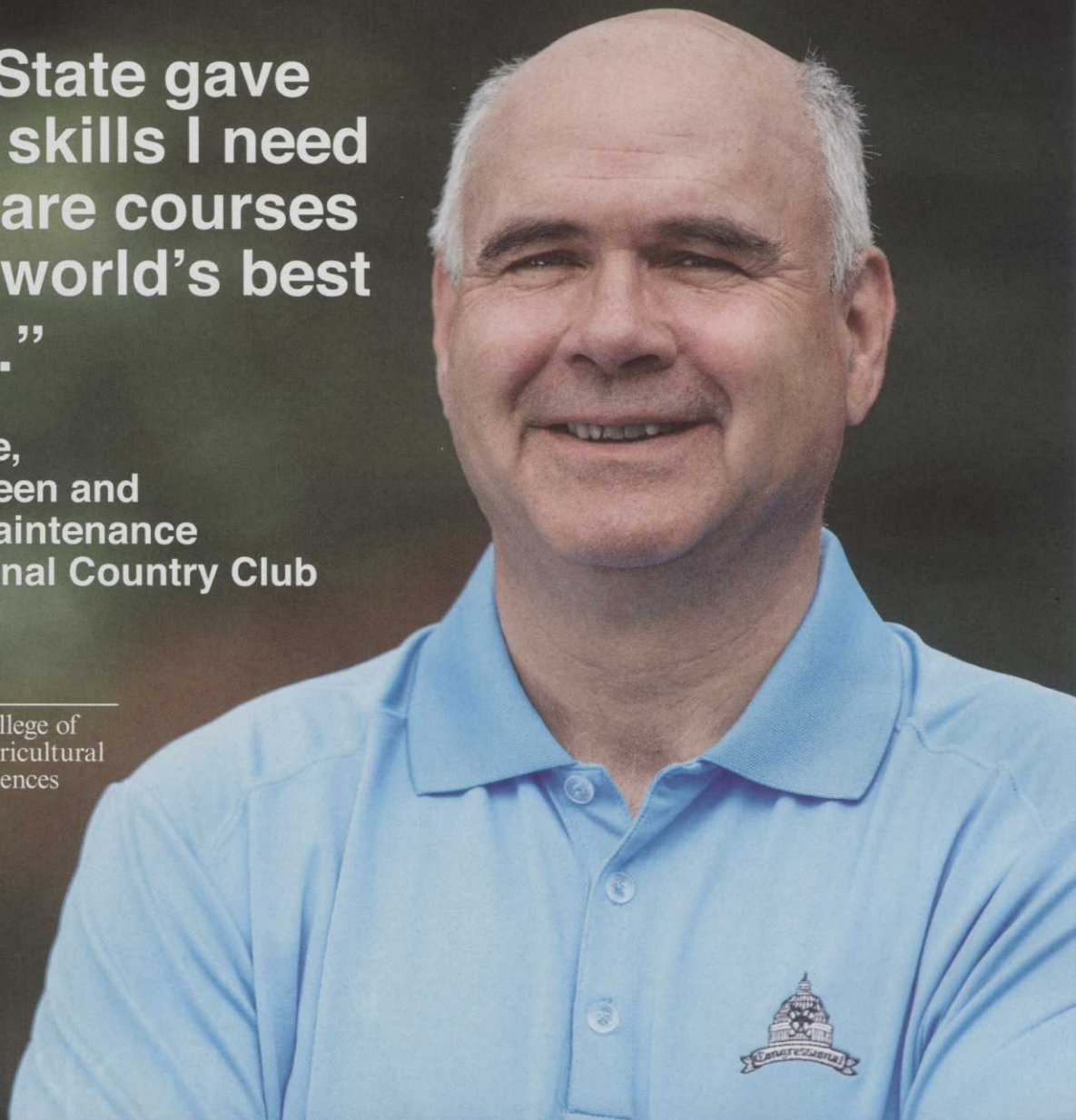
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RIDING THE STORM OUT

Top tips from superintendents on how to prep your course for the worst Mother Nature has to offer.

BY RICHARD J. SKELLY

LIKE A LOT OF PEOPLE WHO'VE LIVED THROUGH SEVERE TRAUMA, SUPER-INTENDENT ROBERT EDMONSON FROM SILVER LAKES GOLF CLUB IN GLENCOE, ALA. REMEMBERS NEARLY EVERY DETAIL OF WHAT HE DID ON APRIL 27, 2011. THAT'S THE DAY AN EF4 TORNADO CAME THROUGH HIS FACILITY, PART OF THE FAMED ROBERT TRENT JONES GOLF TRAIL.

"We had about two weeks' notice, based on computer models, that conditions might be favorable for an outbreak of tornadoes," Edmonson recalls. But no one had an idea where or when they might strike. On the morning of April 27, "they grew more confident there was going to be a big outbreak. That morning we actually lost 15 trees from a line of thunderstorms."

Then, the sun came out and Edmonson and his crew readied the course for a tournament that was slated to be played at Silver Lakes that day.

"They were predicting that bad stuff was going to happen in the afternoon. My assistant Patrick and I just had gut feelings that something bad was going to happen that day. We finished the day and everyone went home at 3:30. Then we started seeing a big outbreak of tornadoes all over the place," Edmonson recalls, adding that more than 300 people lost their lives that day in northern Alabama. He argues that tower cameras in places like Tuscaloosa and Birmingham saved a lot more lives that day, "because being able to see tornadoes moving through these places, which added a sense of urgency to get into a safe place."

"I got home and went to the

store to get more batteries," he says. "By the time I got home just west of the golf course here, my wife was watching TV and they said, 'If you live on the Southside, you need to get to a safe place now.'"

Knowing the clubhouse at Silver Lakes had a huge basement, Edmonson took his wife, three kids and family dog there, five minutes away. The EF4 tornado that did strike Silver Lakes, about 400 yards wide, came within 100 yards of the clubhouse with almost 200 mph winds at 7:15 that evening. The storm missed the clubhouse and seemed to go straight for the irrigation pump house, not far from the maintenance building. Several minutes later, as Edmonson made his way up the stairs and peered out of the basement, both facilities lay in ruins. His 15,000-square foot maintenance facility was in shards, to say nothing of the machinery and his ability to irrigate.

Cellphones weren't working.

"I was trying to call corporate with a report about the extent of the damage, and there was so much debris in the way, I couldn't make my way to the pump house or maintenance area right away," he says. Silver Lakes lost between 35,000 and 40,000 trees that evening.

While it used to be known as a parkland-style golf course, "now, it's more of a links-style course; we still have a few wooded holes, but not many. We planted some replacement trees but for the most part we just planted grasses that are native to the southeast."

What did Edmonson, who's also been through several hurricanes, learn from his experience with a severe weather event?

"If counties surrounding you come under a warning, just get your people out of there," he says. "If the weather is supposed to be that bad, nobody's out there playing golf. At least here at Silver Lakes, if we need to, we have a place to put people in the basement."

In prepping for hurricanes like Katrina and Rita that passed through northern Alabama, Edmonson and his crew removed all benches, flagsticks, waste baskets, tee markers and anything else not anchored on the property. But tornadoes are trickier than hurricanes, he argued, so why take chances?

Here in the Northeast, we like to think of ourselves as immune from devastating hurricanes and tornadoes, yet just two years ago Super Storm Sandy struck the New Jersey-New York-Connecticut coasts and inland areas with a fury that caused massive power outages, flooded the massive Brooklyn Battery Tunnel and several subway lines. And in July, a tornado struck just outside of Boston, throwing trees and cars around and shaking up the city for a week.

Here is what some southeast-based superintendents had to say about getting ready for hurricanes, and, when possible, tornadoes.

Tim Hiers, senior agronomist at Old Collier Golf Club in Naples, Fla., has lived in the Sunshine state for almost 60 years. Asked about hurricane preparedness, he acknowledges he's lived through dozens. Old Collier, which opened in September 2001, is situated on the Coccohatchee River not far from the Gulf of Mexico. The river is tidal and the water brackish.

"I think it was Hurricane Wilma that more than made up for the previous four storms," Hiers says, acknowledging he's been through so many storms, the memories blend into one another. Wilma blew in off the Gulf of Mexico with 120 mph sustained winds.

The key point: "We were prepared years before Wilma hit. If you haven't got years of preparation, you're in trouble. We had storm shutters for our maintenance facility, and we had it built to a higher wind code." Hiers and management at Old Collier also went through drills and had established protocol days before the storm hit.

"We took anything we could move, including dumpsters, and put them inside the building," Hiers says. "We fueled all the equipment up a couple days before the storm hit, brought it inside and pushed the equipment up against the overhead doors to strengthen them."

Hiers and his crew even had a plan to bring all equipment to the highest point on the property – under tied down tarps if need be – if it looked as if the storm surge would bring water levels to 18 feet, seven feet higher than the 11-foot level where the maintenance building stands.

"You want to be sufficiently prepared so your employees can go home at least a day early and

prep their own homes for the storm," he says.

"I don't know if there is any such thing as hurricane-proof," Hiers adds, "when you build a new facility today, it has to be able to sustain winds of 160 mph. When we built Old Collier clubhouse and maintenance facility, it was 110 mph winds, although we built it stronger than that."

Being prepared for an extended power outage is another big part of hurricane planning.

"We have extra gas on hand, small generators and a portable pump that can pump 1,250 gallons a minute. If you don't have power for two weeks and you can't irrigate – you don't want



A tornado that hit Alabama in 2011 destroyed between 35,000 and 40,000 trees at Silver Lakes Golf Club on the Robert Trent Jones Golf Trail. The maintenance building and pump house were among the other parts of the course destroyed by the storm.

that to happen," Hiers says. "As much as possible, Old Collier was designed with hurricane readiness in mind, but with lightning and tornadoes and flooding, there's only so much

you can do."

Art McCoy, currently in equipment sales for Jacobsen, was at Deep Creek Golf Club in Port Charlotte, on Florida's west coast, when Hurricane

Charley hit on Aug. 13, 2004. McCoy noted weather forecasters use the phrase "cone of uncertainty," and superintendents and club managers should be mindful of it. Charley did a lot

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of damage in Orlando and other parts of central Florida, but its eye passed right over Deep Creek, spawning tornadoes. McCoy holed up in a second floor bathroom that day with his wife, two kids and dog. He lived in a townhouse just a half-mile from the golf course.

“The force of these storms is unreal. The eye was within five miles of us. In another five minutes the sliding glass doors were actually bulging, so at that point we headed for the bathroom,” he says.

“Entire second floors of other condos near us were just ripped off and the debris ended up on the course.” His lesson? If you’re within 100 miles of

this cone of uncertainty, “you may as well prepare to get hit, because you never know where it’s going to go.”

Ronald Wright, based in Mobile, Ala., is southeast regional director for GCSAA. Wright was working in Miami Beach in August 1992, when the infamous Hurricane Andrew struck Florida. Was it a Category 4 or Category 5?

“There were questions about that, because it blew the anemometer off the roof of the National Weather Service building in Miami,” Wright says with a chuckle. In 1992, Wright was at LaGorce Country Club, between Biscayne Bay and the Intercoastal waterway when

the powerful storm struck. The major reason it was so costly was because it took an unexpected turn toward land and strengthened very quickly. Hurricane tracking models had the low pressure system remaining at sea.

“It was a relatively weak looking low pressure center in the Bahamas,” Wright says. He was playing golf at LaGorce on a beautiful Saturday afternoon 30 hours previous to the storm’s arrival at 5 a.m. Monday morning.

“This low pressure center off the Bahamas grew very quickly and took everybody by surprise,” he says. “It did an awful lot of damage and at the time I was living just north of the club

on the beach.” Needless to say, Wright and thousands of others had little time to prepare.

“We did some simple work at the club,” he says. “There wasn’t a lot we could do, that clubhouse had no storm shutters. We gathered loose materials off the golf course, locked up the maintenance facility and headed home.”

Late Sunday night, Wright and his family evacuated from their home near the beach after police knocked and ordered them to get out.

Interestingly, salt water encroachment was not an issue, but damage to trees was extensive.

(continues on page 64)

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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@jeffreymbrauer.com.

DESIGN FOR SPEED OF PLAY

Last month, we discussed speed of play in course presentation, with a promise to provide real-world “fast-play” tips this month. I realize some of these apply to new courses, or those undergoing renovations, including re-routing. Others apply to any course. An asterisk denotes a recommendation that probably goes against the very soul of most architects.

ROUTING

1. From a speed of play perspective:
 - a. Open with longer holes. A short par 4 causes waiting on approach shots for muffed opening tee shots.
 - b. Routings closer to “level 4’s” will speed play.
 - c. Regarding well known bottleneck par-3 hole:
 - i. *Consider fewer par-3 holes
 - ii. Place the first par 3 as far back as the 6th hole, or
 - iii. *Consider starting with a par 3 (put one bottleneck before starting)
 - iv. Never follow a par 5 (holds three groups) with a par 3 (holds one group).
 - d. *Eliminate “go for it in two” par 5’s and “drivable” par-4 holes.
 - e. *In general, make hard holes easier and easy holes harder.
2. Provide efficient circulation:
 - a. Golfers must walk ahead to the next tee, never back into play.
 - b. Shorten distance from green to next tee.
3. Shorten the course – longer courses equal longer playing times.
4. Provide wide play corridors possible to keep shots in play;
 - a. 50 yards is narrow
 - b. 60 yards is minimum
 - c. 70 yards still causes about 25 percent of lost balls
 - d. 75-80 yards contains most shots within the trees or native grasses.

5. Avoid forced carries, especially on fairway shots. Fewer problems occur on tee shots:

- a. Par-3 holes (shorter club, ball on tee)
- b. Long holes, if rare, and carry distance is ½ of expected drive (60 to 80 yards from forward tees where we expect 120 to 140 yard drives)

TEES

1. Use multiple tees, proportional to play length (the 180-yard hitter should play a course 66 percent the length of a 240-yard hitter).
2. Use multiple tees to ease angles of play, reduce dog-leg angles and reduce forced carries (place ahead of hazards, outside of doglegs).
3. Rectangle shape tees should be carefully aimed to help alignment:
 - a. Down center of fairway center.
 - b. Slightly left to help allow for the typical slice.

GREENS

1. Design with a fairway approach right up to the green front, with more than half the green open to the run up shot, and not blocked by hazards.
2. Greens contouring that is:
 - a. Concave to help collect shots
 - b. Back to front slope to hold shots.
3. Remove mounds at front/sides of greens that deflect decent shots away from the greens.
4. Add mounds/ridges/landforms behind the greens to help hold shots.
5. Some experts don’t think severe undulations add to three putts and playing time, but I recommend there is at least a three-foot minimum slope around all cup locations, so a short second (or third) can be aligned confidently within the hole diameter.
6. Encourage walking on to greens from the rear, rather than front or sides.

FAIRWAYS/ROUGHS

1. Eliminate blind and semi-blind shots to reduce lost balls.
2. Mow fairways widest at 180 to 220 from the main tees. Can be narrower at 250 to 300, but should widen out again at 360 to 400 yards to accommodate second shots.
3. Mow rough as low as possible, just enough for definition between it and fairway.
4. Consider the old Scottish way of mowing one height in all “through-the-greens” areas.
5. Trim lowest limbs on trees to head height for easy access.
6. Concave or bowl-shape fairways help hold shots on the fairway.
7. Provide distance markers – plates in fairway and on paths, vertical stakes, mark all sprinklers, etc.

HAZARDS

1. Water hazards slow play least because golfers simply drop and play.
2. Sand hazards slow play moderately due to repeat attempts, but golfers don’t think long between shots.
3. *Reduce “chipping areas” because golfers need to think about those options.
4. Design more hazards left than right of greens and fairways, avoid cross hazards.
5. Greenside sand hazards should be at center or back of green, because front right is a high miss area.
6. Keep fairways at mid height to accommodate average golfers preference for higher lies
7. Mow rough as low as possible, just enough for definition.
8. Minimize “natural areas” to truly out of play areas.
9. Replace with turf that can be cut and watered less often. I have found common Bermuda and paspalum to be good and flexible native areas. **GCI**

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[...on your high traffic areas]

[...on your tee boxes]

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FIRE ALARM



STUBBORN FIRE ANTS ARE NOW FOUND FROM COAST TO COAST. PREVENT THEM FROM SPREADING LIKE WILDFIRE ON YOUR COURSE.

BY JIM DUNLAP

Red imported fire ants have become an increasingly bothersome hazard to both golfers and golf courses, if only because they have now completed their East-West journey from sea to shining sea with their arrival in the Palm Springs golfing mecca of the Coachella Valley in California. Of necessity, golf course superintendents throughout the southern half of the United States have learned techniques for controlling the ant populations at some expense, but eradication of the aggressive pests once they are established remains problematic.



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PEST MANAGEMENT

Although somewhat dated, a 1998 study by a trio of researchers at Texas A&M's Department of Agricultural Economics determined that Texas golf courses in the cities of Austin, Dallas, Fort Worth, Houston and San Antonio alone spent an estimated \$30 million on fire ant control and damages that year. Another researcher from the Texas Agricultural Extension Service named the red imported fire ant "the single most prolific pest in turfgrass." While that label may be a bit of an exaggeration, given that the northern half of the U.S. is essentially immune to the cold weather-hating ants, southern superintendents who have to add another line item to over-stretched course maintenance budgets to protect their customers, their maintenance workers and equipment, course wildlife and even the electrical components of irrigation controllers, generators and other power sources might agree.

Visible evidence that red imported fire ants have taken up residence at a golf course varies by geography. Typically, from Florida and throughout the southeast to Texas, the ants will create relatively tall mounds of dirt that they've removed from underground nesting areas for the queen and younger ants. In the California desert areas, however, where the water table is significantly lower than in the southeast, particularly in recent years, the ants generally only create small piles of dirt above ground, according to Bobbye Dieckmann, field supervisor for the Coachella Valley Mosquito & Vector Control District. As in other parts of the country, those tend to be concentrated in golf course areas where there is less maintenance and mower traffic, in roughs or up against bunkers or near trees or other recently sodded areas.

The number and proximity of mounds to one another also varies by geography, says Dr. Paul Nester of the Texas A&M AgriLife Extension, who along with his predecessor Dr. Bart Drees has done a considerable amount of research on fire ants.

"In the southeast, they tend to be single queen mounds, while Texas mostly has multi-queen mounds," Nester says. Because the fire ants can be extremely territorial when there is only one queen

in the mound, single-queen mounds are farther apart, while mounds hosting multiple queens are less concerned by the presence of other ant colonies, so those mounds are frequently closer together, according to Nester.

TREATMENT STRATEGIES

Most experts recommend a combination of treatment protocols for effective fire ant control. For turfgrass areas with widespread fire ant populations, the first step should be a broadcast application of an insect bait fatal to ants when it is ingested. The forager ants who are constantly on the lookout for food and moisture to bring back to the queen and the colony will locate the bait and take it deep into the ant burrow where, if the queen consumes it, the colony will eventually die out. Bait products can include frequently used baits such as Advion, Extinguish or Extinguish Plus, Pro bait, Amdro, Ascend, Award and others, and should be applied either annually or semi-annually, depending upon the geographic region and the extent of infestation. The recommended density of application is between 1 and 1½ pounds of bait per acre. Since most of the baits are water soluble, it is necessary to apply the baits in the affected areas between watering periods.

For problem, heavily populated mounds on the surface, a variety of either chemical or bait-formulated insecticides can be applied directly to the mounds. Chemicals can be either instant acting or slower acting but longer lasting, depending upon a superintendent's preference, needs and budget. Some of the slower acting but longer lasting products can be found in granules like Bayer TopChoice or Taurus G insect granules. The problem with those types of treatments is that while they will kill the older foraging ants on or just beneath the surface, the poison will not reach the queen or the rest of the colony buried deep within the mound.

"We tell superintendents to develop a plan for treatment based on their situation, rather than just reacting to a problem infestation," Nester says. "I hate it when maintenance workers just drive around with a jug (of insecticide) and hit the



Fire ants will create relatively tall mounds of dirt that they've removed from underground nesting areas for the queen and younger ants. The number and proximity of mounds to one another also varies by geography.

various mounds. They kill some, but the rest of the ants just move somewhere else close by."

One reason for the significant spread of the ants since their arrival from South America in the 1930s is that the ants actually mate with the queen in the air, and new colonies form wherever the queen lands, enters the burrow that her attendants build for her, and begins laying thousands of eggs. Dieckmann says that studies in the Coachella Valley area have shown that queens on mating flights can fly 12 miles or even more in a single flight, depending upon the wind. The ants have been reported as far north as Kentucky and the Tidewater area of Virginia, but are not likely to go much farther north because of their aversion to extreme cold. Ironically, although neighboring Texas and California have the ants, USGA agronomist Brian Whitlark says that to his knowledge, the ants have not become a problem for Arizona golf courses, jokingly adding "maybe that's because of our tough immigration policies in Arizona." Actually, says Kai Umeda of the Arizona Extension Office, it's more likely due to the state's stringent agricultural quarantine programs that closely monitor incoming nursery and turf stock and quickly eliminate any fire ants detected.

LOW- AND HIGH-TECH SOLUTIONS

Anyone who has ever inadvertently disturbed a red imported fire ant mound and failed to notice it is well aware of the painful consequences of trashing the ants' happy home. Fire ants will respond immediately, can both bite and sting simultaneously when they latch on, and neither event is fun. Some people, in fact, are allergic to the ant venom, and can go into anaphylactic shock or even die. Bill Davidson, superintendent at the Country Club of Naples in Florida, says that one of the club's pros didn't know he was allergic to the bites, and had to be hospitalized after an attack.

There are numerous specifically designed products for treatment and control of fire ants, but some effective tricks of the trade are definitely low-tech. For instance, one way of determining the presence and density of a fire ant population in the area is simply to leave a common hot dog in the vicinity where you suspect an infestation and check it the next day for the number and species of ants it's attracted. (To my knowledge, there have been no studies to date on whether the ants prefer all-beef, pork, skinless or even kosher hot dogs, so probably whatever the snack bar is serving will work fine.)

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Most experts recommend a combination of treatment protocols for effective fire ant control. For turfgrass areas with widespread fire ant populations, the first step should be a broadcast application of an insect bait fatal to ants when it is ingested.

blades and other maintenance equipment by the ant mounds, the red imported fire ants — and some other ant species as well — are attracted to the heat and electricity generated by various types of golf course maintenance equipment such as irrigation controllers, generators and other electrical equipment. The ants often nest in the machinery or cable housing, and even chew on the electrical wiring, which causes problems in two ways: the ants can short out circuitry either by piling damp dirt for nesting on it or by clogging the circuitry with their corpses after being electrocuted — kind of a good news, bad news result.

“The boards in those irrigation boxes are expensive, and we’ve had a few fry out fuses due to the ants,” the Country

Club of Naples’ Davidson says. He has a simple deterrent to the power-crazy ants, however. “We’ll put mothballs in a cup in our irrigation boxes,” he says. “Urinal cakes work too. They fumigate the boxes and the ants, like other insects, can’t hold their breath, and they hate the smell, so they won’t stay in there.”

While the mothballs and urinal cakes don’t dent the maintenance budget much, the bait, insecticides and labor to keep the fire ants under control account for a \$2,500 annual line item in his budget, Davidson says.

There are also more sophisticated deterrents to fire ants nesting in on-course equipment. The afore-mentioned Texas AgriLife Extension Service’s extensive library of fire

ant research includes an article dedicated to the “Evaluation of ARINIX Permethrin Impregnated Nylon Plastic Strips in Preventing Fire Ant Invasion in RainBird Par + ES Irrigation Boxes at Bear Creek Golf World, Houston, Texas.” So, nylon plastic strips or mothballs, take your pick.

Research is also ongoing into ways to enlist Mother Nature’s help in controlling and eradicating fire ant colonies. Scientists are looking into the introduction of phorid flies, otherwise known as humpback flies, into the Oklahoma and Texas areas in particular. Phorid flies are natural enemies of the red imported fire ant, and wreak havoc on them in gruesome but effective ways. The female phorid flies pounce on the ants and lay their eggs in

the ants’ abdomens. As the fly larvae hatch and grow, they essentially eat their way through the ants until they actually separate the ants’ heads from their bodies, finally killing them. At that point, other phorid flies lay their eggs in the ants’ detached heads, starting the cycle all over. Eventually enough ants are killed to essentially eradicate the colony. As Nester noted, with some scientific gallows humor, those infected ants are known as “zombie ants” since they are essentially the walking dead once the fly larvae hatch. Nester says, however, that the strategy has not been perfected thus far, due to the fact that there are multiple species of phorid flies, and they too are territorial and do not co-exist well with other phorid fly species.

Dieckmann also noted that a biological control technique is currently under study. A virus known as the SinV3 virus could conceivably be introduced into the fire ant colonies which would render the ants incapable of reproducing or eating.

In the meantime, however, the scientific consensus is that golf course superintendents are best advised to combine prevention and cure techniques to control their fire ant populations, using the combination of fatal bait to eliminate the queens and other worker ants deep in their mounds, while spot-treating particularly troublesome mounds and foraging ant populations with contact insecticides. As for golfers, they are advised to heed any local rules allowing them to take relief from any lies in the vicinity of fire ant mounds, and if there is no such rule at their course, just take an unplayable. They’ll be glad they did. **GCI**

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IS IT REALLY ALL ABOUT SPRINKLER COUNTS?

Lately we have been hearing about sprinkler counts on golf course irrigation systems and that if your course installs fewer sprinklers, it will use less water. Although intuitively it makes sense in applicability, it is far from the truth. Unfortunately, many environmentalists, politicians, regulators and the general public understand the simplicity of less sprinklers/less water and therefore promote the use of fewer sprinklers. Fewer sprinklers is now considered to be more green and more sustainable.

Please pardon a little math, but if an irrigation system has 500 sprinklers using 40 gallons per minute operating for 20 minutes each, that's 400,000 gallons of water. If I only have 400 sprinklers, then it is 320,000 gallons. Makes sense on the surface, but let's delve deeper. In golf irrigation design, using fewer sprinklers requires larger sprinklers to be used to have acceptable coverage. The larger they are, the more water they use, the more pressure they require, and the less efficiently they apply water. Using more sprinklers to provide the same or more coverage is accomplished with lower pressure, less gallons per minute, a shorter throw and higher water application efficiencies. Let's say you want to apply 0.10 inches of water. If the large sprinklers (80 foot throw) use 37.2 gpm at 80 psi with 65 percent efficiency and the 500 sprinklers (65 feet) use 22.9 gpm at 65 psi and are 80 percent efficient,

“ We should be concerned less about the quantity of the sprinklers and more concerned with the level of control within the irrigation system.”

what do the water use numbers look like? The 400 sprinklers are using 245,275 gallons to apply the 0.10 inches of water while the 500 sprinklers are using only 165,144 gallons. The math shows more sprinklers are using 33 percent less water. This could be the difference between single-row and double-row fairway irrigation for example.

The larger sprinkler count also has several other advantages. As outlined above, the greater number of sprinklers at the closer spacing operates at less pressure. This requires less horsepower to move the water, resulting in less energy use and less wear and tear on the pump system and its components. Having more sprinklers also provides for more control. Because each sprinkler covers less area, then you have control over less turf with each sprinkler. More control provides for better turf conditions and even more water savings.

It is easy to understand that less irrigated acreage and drought tolerant varieties of turfgrass equal less water. Although not true, it is easy to comprehend fewer sprinklers use less water. However, lacking in any discussion of sprinkler counts is sprinkler efficiency, spacing and uniformity. In sustainable golf discussions there is too much focus on the number of

sprinklers, which if you know what you are talking about means nothing, and not how the sprinklers apply water. Covering the same irrigated area with closer spacing and more sprinklers is a much more efficient use of water than just broadly broadcasting the water. The less-sprinklers philosophy is just less area covered to save water with fewer sprinklers and as a result irrigation systems that are very inefficient. We should be less concerned about quantity and more concerned with the level of control within the irrigation system.

Control is the key. The more control you have over the water, the less water you will use and the more targeted the irrigation application. The trend in golf irrigation design is to have more sprinklers and that trend will continue despite the Pinehurst example and the discussion it has initiated. More sprinklers allow different types of turf to be irrigated differently and so specific water requirements of the varied cultivars can be individually targeted and applied. The more we can pinpoint the water application and not widely broadcast the water, the lower the water use and better the playing conditions. Short term the costs are higher, but long term there are many benefits and decreased costs. **GCI**



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A PERFECT TURFGRASS SYSTEM

Turfgrass is a living, changing system; alter it through small, routine tweaks.

I'm sitting in a hotel room in Australia thinking about what I have learned during a two-week trip. I had the opportunity to speak to superintendent groups in Sydney and Cairns, as well as give a research summary to academics at the International Horticulture Congress in Brisbane. Every travel experience and interaction with turfgrass managers from around the world results in new ideas and a new appreciation of managing turf under different climates.

For some, the challenges are weather-related. Others deal with a lack of educated labor or fundamental resources necessary to provide quality playing conditions. From my perspective, one thing all managers can do is step back and look at their agronomic programs. Balancing out some of our fundamental agronomic practices often gets overlooked in a world of increasing expectations and the onslaught of various products that claim to solve all of your problems. The joke in graduate school was to refer to these products as the "Muck and Magic" of the turf industry.

I know I will get several phone calls and please save your cellular minutes. I'm not saying the benefits from the application of these products don't exist, but many of the benefits are based on testimonials and lack the science to back up the claims. I'm not saying they don't work. I'm simply saying the data isn't always there to support it. In some cases, I would put up a spoon-feeding program of urea against the claimed benefits of many products.

I want to reinforce the idea to never lose site of the basic agronomic practices and the balancing of a

dynamic living system. The example I always give during my talks is a graph in which the x-axis represents a perfect turfgrass system and the y-axis represents an excess above the horizontal axis and a deficiency below it. This general idea can relate to anything from mowing heights to nitrogen fertility to pesticide use.

The problem is that no turfgrass manager has the ability to manage a perfect turfgrass system. At some

as possible while knowing this is a living biotic system that will adjust and adapt on its own.

The concept can be used for any practice. The bottom line is that the fundamental agronomic practices should serve as a starting point when trying to maintain a healthy turfgrass stand. Radical practices or products that claim to allow you to circumvent some of these practices (aerification would be a good example) often

“The key to managing this ‘perfect system’ is to avoid practices that will result in a curve that deviates too much from the horizontal line.”

points in our management, the curve goes above that “perfect” line into the excess range and at other times it dips below into what we would refer to as a deficiency.

If we use nitrogen rates as an example, the application of excessive nitrogen at any one time will have consequences. On the opposite end, if a lack of fertility results in a significant nitrogen deficiency, then there are also consequences. From a pathology perspective, too much nitrogen at the wrong time could result in an increase in diseases like Pythium or brown patch while a nitrogen-deficient system would tend to increase dollar spot, anthracnose and red thread.

The key to managing this “perfect system” is to avoid practices that will result in a curve that deviates too much from the horizontal line. This means we must make small adjustments throughout the season and throughout subsequent years that allows us to hover as close to the line

seem to work in the short term, but ultimately often end up moving our curve too far away from that “perfect system” and into the area of extreme excess or deficiency.

Our turfgrass systems have a way of naturally balancing themselves. We have a tremendous amount of influence as it relates to the primary agronomic practices like fertilization and irrigation as well as supplemental practices like aerification to manage organic matter. However, trying to micromanage areas like plant hormones or soil microbial activity is often difficult and backed with little to no scientific evidence.

I recognize there are likely some benefits from some of these products and as my mentor Peter Dernoeden used to say, “if what you're doing works for you, don't change.” I'm not trying to convince people to not use products. I'm simply saying not to substitute something in a jug for basic agronomic practices critical for healthy turf. **GCI**



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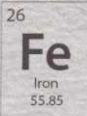
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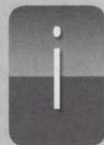
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By Molly McNulty

A little



As the deadline for Namacur depletion nears, some superintendents await a last-minute reprieve.



It was 2008. Superintendents were scrambling to bulk up their Namacur stockpiles. It was the industry's most reliable nematode control product. And soon it, and anything containing its active ingredient, fenamiphos, no longer would be available for sale.

Many superintendents stockpiled hefty amounts of Namacur for use years into the future, knowing, or at least believing, they would be allowed by the Environmental Protection Agency (EPA) to use any Namacur they purchased by the deadline until it was exhausted.

But the situation has changed, and superintendents with substantial stocks of Namacur remaining suddenly find themselves in a serious bind: They must use or dispose of their Namacur by Oct. 6.

The deadline came as a surprise to superintendents, and it's fast approaching.

So what happened?

The EPA didn't expect stocks to last so long, that's what happened. So on Oct. 5, 2011, the agency put a notice in the Federal Register mandating any existing Nemacur supplies be used or legally disposed of by

Oct. 6, 2014.

Three years' notice may seem ample. Only, superintendents didn't know about the notice listed on page 61,690 in volume 76 of the Federal Register. And while most

greenkeepers have depleted their stockpiles entirely by now, a few – particularly in coastal areas like the South and California – have not. That's a problem.

"It's going to have a huge impact on a few superintendents," says leading nematologist Billy Crow, Ph.D., of the University of Florida. "Most golf courses don't have any Nemacur on hand. But there are a few courses that were able to accumulate large quantities of it, and they have more of it than they can legally get rid of by the deadline."

Nemacur applications are limited to two applications of 100 pounds per acre annually, Crow says. "And for some of these golf courses, if they went wall to wall on the golf course they wouldn't even use it all. That's how much they have."

Disposing of pesticides hardly is as simple as disposing of a paper towel, as superintendents well know.

"The EPA has created a potential problem with disposal of these products that now won't be used at all," says Brian Powell, CGCS, president of the Carolinas GCSA. Not to mention, he adds, superintendents who thought they were preparing wisely when they stockpiled Nemacur in large quantities back in 2008 are facing the fact that their substantial financial investment will be wasted.

The GCSAA learned of the EPA's change in the cancellation order just this spring. The association was quick to publish the information in its communication materials, says Chava McKeel, GCSAA director of government relations, and it wasn't long before concerned superintendents began calling.

On its membership's behalf, the GCSAA recently wrote to EPA, asking for an extension of the deadline for the use of existing stocks found within the fenamiphos cancellation order. "We sent a letter asking for continued use for a few more years," McKeel says. "We just hope we can work with the agency to agree on an extension."

EPA is reviewing the request now, and McKeel says GCSAA expects a response soon.

While quality nematode control products are on the market today, none are as popular as Nemacur, those in the industry say.

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"I believe that golf course superintendents in the Carolinas still do not have a replacement for Nematicur," laments Powell. "They do not have a current option for [fully] controlling nematodes."

That's because other nematode control products are much more targeted than Nematicur, which was praised for its versatility.

"The good thing about Nematicur is that

it could be used on greens, tee boxes, fairways, driving ranges, wherever you had a nematode problem, and it would manage several different species of nematodes," Crow says. "That's not the case with the others available now. They work well in certain situations but not in others."

Steve Wright, CGCS at Boca West Country Club in Boca Raton, Fla., recalls seeing immediate improvement in color and root growth after putting Nematicur out. With today's options, he says, "you're not going to get an instant response – maybe three or four months as compared to Nematicur, which showed results in three or four days."

Wright says though he still has an iota of Nematicur on hand for the direst nematode problems. He's been using another control product that comes in liquid and granular formulations for more than 10 years. "I'm very happy with the result," he says. "It's very safe and worked out very well."

While it's true newer products are more expensive and need to be applied much more frequently than Nematicur did, a few of them are gentler on the soil, Wright says. He's happy about that.

"I know that I have healthier soil now," he says. "The beneficials there are far outweighing the antagonistic forces."

Crow says three new nematicides are working their way through the regulatory process right now. They've been tested and submitted to EPA for approval but have yet to be labeled.

"I expect the time frame to be two to three years," Crow says. "In the meantime, we have some effective nematicides that work in certain situations, but you can't throw them out there and have them work against all the different nematodes."

Crow isn't holding out hope the EPA will grant an exemption to the Oct. 6 deadline.

"I would be surprised," he says. "The agency is not in the habit of changing regulations once they're in place. Personally, I'm doubtful, but hopefully this extension will get approved and grant everyone a little more time." **GCI**

Molly McNulty is a freelance writer based in Cleveland, and a frequent GCI contributor.

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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.

BUILD A BETTER BUDGET

Five guidelines to prepare a well-planned budget for 2015.

Just as sure as football and the turning of the leaves, autumn brings the budget cycle to most facilities. The responsibility for budgeting – deliberately and accurately – is one of the certain signals of career advancement and increasing accountability.

Developing the annual budget is a vital exercise that demands careful planning and estimation informed by thorough research and consideration of facts, trends and members, and customers' preferences. Many people overlook that the annual budgeting cycle allows managers to imagine the upside potential of the course or club. Here are five guidelines to remember when undertaking the 2015 budget.

KNOW WHERE YOU'RE GOING. Before beginning the budgeting process, ask questions of the board of directors, the general manager and your direct supervisor: What are our financial objectives for next year? Are there any new or different goals you want me to achieve? How much revenue elasticity do you expect for 2015?

DO YOUR HOMEWORK. Understand your position within the local set of competitive clubs and courses. This means more than simply calling other facilities and confirming their rates for the coming year. Proper due diligence requires you dispassionately evaluate the value and experience offered at other facilities. How do you measure up to your competition?

UNDERSTAND WHAT YOUR CONSTITUENTS WANT. Whether they are members or daily-fee customers, your "regulars" will provide you with a candid assessment of the value proposi-

tion. Is your course worthy of the fees it charges? Are you too high or too low? Ask and you may be surprised by what you learn.

In addition to the NGF, take advantage of the resources available to managers today, including PGA PerformanceTrak, consumer confidence and unemployment trends, and projections about the local economy.

REVIEW AND RECONSIDER THE OVERALL SCOPE OF OPERATIONS FOR YOUR DEPARTMENT. If the board is unwilling

cutting approach to budgeting for much of the last decade. This is not sustainable. Costs certainly must be contained and managed, but revenue growth is the key to a return to healthy and sustainable operations.

Successful revenue-building tactics include:

Increasing non-member access to the golf course. Whether through Monday outings or their equivalent or increased tee times and access for guests, members tend to prefer increased non-member play ahead of

“Outdated operational models prevent a balanced budget. Develop a business model and scope of operations that bears its own financial burden.”

to increase fees and dues, which is ill-advised in most cases, it is usually necessary to re-think the scope of operations, such as the days and hours when basic services are offered. Many clubs and courses are revising the scope of operations to offer golfers and tennis players more self-service options. This approach enables superintendents to revise the scale and frequency of mowing secondary playing areas – such as outer roughs and non-play club property. Hours of operation for certain seasonal facilities, such as halfway houses and poolside or courtside refreshment stations, should be reviewed and set to align with demand. Outdated operational models prevent a balanced budget. Develop a business model and scope of operations that bears its own financial burden.

SEEK REVENUE GROWTH. Most facilities have operated on a perpetual cost-

dues increases.

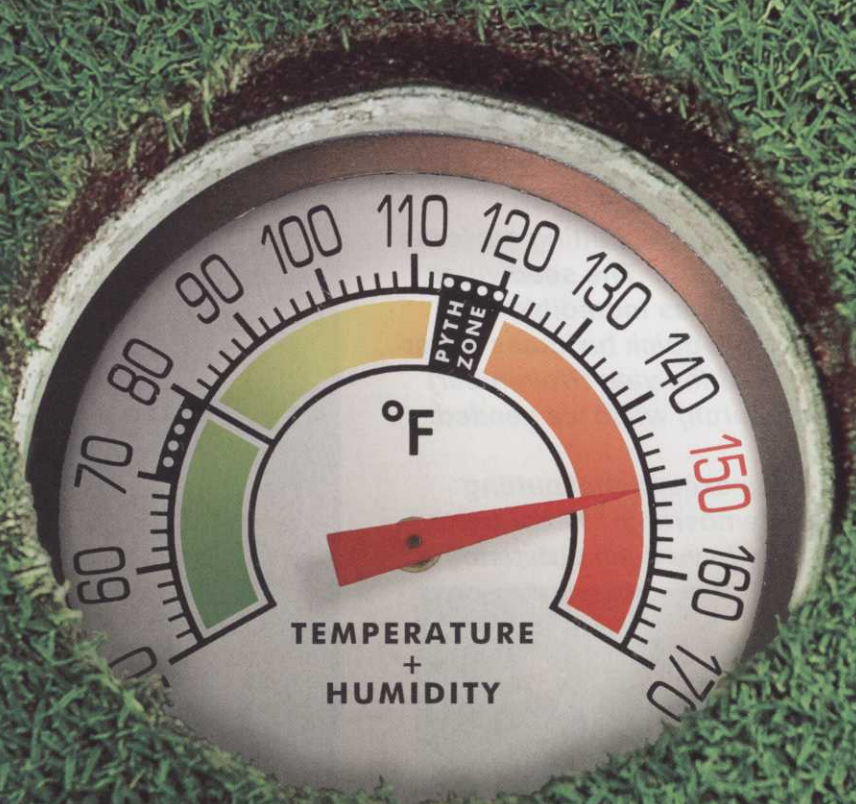
Rewarding loyalty by locking in fees for improved volume. Think like the airlines and reward your best customers or members. Establish your desired use levels and reward for exceeding targets. For example, reward those who host more than five guest rounds per season. Two hundred members who host five more guests in 2015 will generate 1,000 additional rounds. At seasonal clubs with roughly 100 peak days, that's 10 more rounds per day.

Increasing fees for popular services and preferential access is growing because most members will pay extra for advantage.

Plan for slippage. Even the best plans have flaws or unrealized expectations. Try to overshoot targets to allow for the probability that some projections will fall short. Do not sandbag your budget. Identify the slippage factor – call it “contingency” – and budget for it just as big businesses do. **GCI**

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Valhalla Golf Club in Louisville, Ky., site of the 2014 PGA Championship, was the first major championship venue with T-1 bentgrass greens.

BREAKTHROUGH BENT

On the market since 2004, T-1 bentgrass is positioned to receive a domestic boost from its recent PGA Championship exposure.

By Guy Cipriano

The hue is distinctive. T-1 bentgrass presents a rich, ivy-toned appearance. Even the man who developed the variety wondered if T-1 would be embraced by agronomic traditionalists.

"I thought it would be too dark for people," says Dr. Doug Brede, research director for Jacklin Seed. "But everybody loves it because you can grow it with less nitrogen and have that nice T-1 color. It never really turns pale on you."

Ten years after debuting in another country, T-1 bentgrass

enjoyed a breakthrough when Valhalla Golf Club in Louisville, Ky., site of the 2014 PGA Championship, became the first venue using the variety on its putting greens to host a major championship. The greens withstood a zany week that included humid practice rounds, a comfortable start to competition and soggy conclusion.

T-1 has experienced an arduous journey since 1994, when Brede sought to create a “heat-tolerant, low-maintenance” bentgrass. The variety reached the market in 2004, a perilous period for any golf-related unveilings in the U.S.

So a turfgrass developed to work at places such as Valhalla, a transition zone course with a membership that enjoys fast, smooth greens, debuted at the Izumi Parktown Golf Course in Sendai, Japan, where superintendent Katsuhito Takefushi assumed others were already using the variety.

Brede, who keeps pictures of the Japanese course in his Idaho office, remembers a quizical exchange with Takefushi.

“What? I was the guinea pig,” Takefushi asked Brede.

Yes, Takefushi’s course went first.

Other golf facilities in Asia followed Izumi Parktown. Brede says 300 of the approximately 400 golf courses built in China in the past decade use T-1 bentgrass. Multiple European and Korean courses also use the variety. Jon Scott, President of Nicklaus Design Agronomy Services, says his company has used T-1 in Moscow. “I’ll just say it’s worked well in every climate that we have put it in,” Scott says. That includes Beijing, which endures stifling summers and

frigid, dry winters.

Brede understands why T-1 didn’t generate an immediate buzz in the U.S. “It takes a while for bentgrasses to catch on,” he says. “You almost have to have a new generation of superintendents who understand how to grow it. And in eight of the 10 years it has been out, we have had a depression in the U.S. that has really cut down on the number of courses being constructed.”

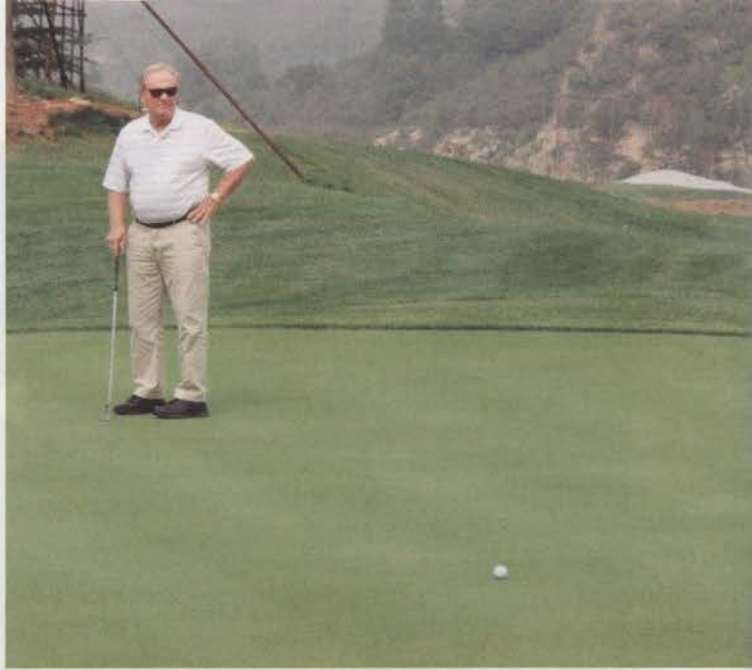
TRENDING THROUGH THE TRANSITION ZONE

Economic woes haven’t affected Valhalla, a regular major-championship site, and Roger Meier is part of the new generation of superintendents. The 36-year-old Meier faced a tricky decision regarding putting green surfaces when Valhalla underwent renovations in 2011.

A tight schedule required the project to be completed in the spring of 2012. Plus, the transition zone, an area that stretches through the Ohio-Kentucky border, presents conundrums for superintendents looking to grow healthy, resilient turf. The winters are often too cold for warm-weather turfgrasses, but muggy summers can damage a cool-season grass such as bent.

“It’s a tough place for any bent to grow because of the humidity and the warm nights,” Brede says. “The warm night temperatures really do the bentgrasses in, but T-1 really tolerates the heat, so if they have 90-, 100-degree days, it’s doing fabulous. Any bentgrass is going to suffer if they have 85-degree nights.”

Meier consulted with multiple industry experts, including Scott, the former head of the PGA Tour’s agronomy department. Jack Nicklaus designed



Jack Nicklaus putting on a T-1 bentgrass green at Jinhai Lakes, a course his company designed, in Beijing.

Valhalla, which opened in 1986. The PGA purchased the club in 2000. Scott was introduced to T-1 during a seed panel conducted by Simplot in 2007, and Nicklaus Golf recommends the variety to clients interested in installing bentgrass. “Since I had already used it successfully in various climates, I was very comfortable in making that recommendation to Roger,” Scott says. “Roger, of course, did his own due diligence and came to the same conclusion that I did. There weren’t any complaints about T-1.”

Multiple courses located in the same microclimate installed T-1 greens before Valhalla, including Hunting Creek Country Club in Louisville. Hunting Creek switched from Penncross to T-1 when its greens were rebuilt in 2010.

Hunting Creek superintendent Ted Willard researched various varieties of creeping bentgrass, including A-1 and A-4, which he wanted to stay away from because of the volume of thatch the varieties produced during tests in one of Hunting Creek’s nurseries. Willard visited the University of Kentucky’s turfplots and ad-

mired the appearance of the T-1. He then visited Otis Park Golf Course in Bedford, Ind., where superintendent Brice Gordon had installed the variety on the nine-hole course’s greens. Bedford is 70 miles from Louisville. “His greens were incredible,” Willard says.

Valhalla opened with Penncross greens before being regressed with an A-1 and A-4 blend. The early performance of T-1 at Hunting Creek impressed Meier. “We were very, very confident in the selection of T-1,” Meier says.

TESTING T-1

Before reaching a major championship site or even a guinea pig’s course, T-1 experienced a methodical research and development process. First stop was North Carolina, where superintendents encounter the bentgrass vs. Bermudagrass decision. “Unlike what some people think, we don’t conjure these up in the laboratory,” Brede says. “We go out and find them on golf courses.”

Brede visited a course converting to Bermudagrass to secure the last of the germplasma material found on the

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Pegasus DFX Fungicide	Our proprietary Pegasus DFX is a reformulation of the active ingredient chlorothalonil plus a green pigment in an extruded granule. This unique improvement provides superior, long-lasting fungicide performance compared to old spray-dried products, resulting in better turf quality. One of our exclusive NexGen products, Pegasus DFX also offers tank-mix options to improve disease control and minimize resistance.
Viceroy® 70DF Fungicide	Viceroy 70DF provides superior control of Pythium and other soil-borne diseases, including many stress-related disease complexes in turfgrass – such as Summer Stress and Bentgrass Decline – when mixed with fungicides like Pegasus, Raven, T-Bird or Kestrel MEX.
Symmetry® NXG Aquatics	A broad spectrum algaecide ideal for use in golf course ponds. No restrictions on swimming, fishing, irrigation, livestock watering or potable water use.



bentgrass putting surfaces. The 20-year-old greens had three- and four-foot sections that prospered under the heat and humidity. "So I picked this up like a kid in a candy store," he says. Brede brought the sections back to his Idaho research facility for crossbreeding. He planted a two-acre putting green consisting of *Poa annua* and then using a grid system put in plugs of T-1 and other turfgrasses. Older varieties of bentgrass struggled when encountering the *Poa annua*, but the material from North Carolina started growing larger than 3 feet.

Tests also were conducted in Maryland and Ohio and the Green Course at Bethpage State Park on Long Island. The Green Course is used to test lower input maintenance techniques. "We knew we were on to something because we were competing very well against the *Poa annua*," Brede says.

Initial movement of T-1 in the U.S. involved interseeding to transition from *Poa annua* back to bentgrass. The most successful periods of interseeding started around July 4th, which contrasted conventional growing practices. Brede says some courses in the Mid-Atlantic and Ontario were going from no bentgrass coverage to as high as 50 percent within one year of seeding. "The A and G series were out there, but they were for the elite golf courses that had the money to put into it," Brede says. "What I wanted was a grass that looked very nice with less maintenance."

Valhalla certainly qualifies as an elite golf course, and its greens are subject to rigorous maintenance practices such as frequent top-dressing and aeri-



The selection process for developing T-1. Bentgrass plugs were planted in a grid system into a *Poa annua* green. Desirable plants were identified with flags and recorded for later crossing.



Dr. Doug Brede of Jacklin Seed and Katsuhito Takefushi, the superintendent of Izumi Parktown Golf Course. The Japanese course was the first facility in the world to use T-1 bentgrass.

fyng and the use of greenside fans to improve airflow. Greens were rolled by hand using large drums filled with water, instead of machines, during the week of the PGA Championship.

Valhalla's greens typically run at around 11 on the Stimp meter for member play, according to Meier. Under normal circumstances, Meier says T-1 requires less maintenance than other varieties of creeping bentgrass because it yields less organic material. Valhalla's greens are less than three years old, but Meier says the prowess of the T-1 was evident when a

maintenance volunteer discovered a plug with 10-inch roots during the week of the PGA.

"There are a lot of good grasses out there," Meier says. "It's just like any industry. Technology is changing, grass types are changing. But I think it will be a great grass that will continue to be looked at. I don't know how fast it's going to grow, but it's been a fantastic grass for us."

Scott says T-1 can "rise up" to the rigors of high-level tournament yet offers advantages for courses without the resources such as Valhalla because it

produces less thatch than other varieties of bentgrass. "It gives excellent daily golf conditions that the everyday player can enjoy a good, true ball roll," he says. "There's not a lot of grain that develops. It's a very upright grass. But other than that, it's not a real aggressive thatch producer like some of the other bents that have been on the market for several years. They are good grasses, but they are very aggressive in producing organic matter from beneath the surface and you have to be pretty diligent on the management program. I find T-1 gives you a little more margin when you can't be that aggressive. It still performs well."

Willard likes the flexibility T-1 provides. Hunting Creek also uses the variety on its tees and Willard says divots are healing quicker because of T-1's resilient qualities. "You can groom it however you like, brushing, backcutting, doublecutting, verticutting or using groomers on your mower and it making it pretty tight," he says. "If you need to heal, it will lay down and move for you too. It can heal very quickly."

Stories of 10-inch roots in August and daily maintenance options are what Brede envisioned when he visited North Carolina 20 years ago. He considers the major-championship exposure a bonus.

"Internationally, it's become a big variety," Brede says. "It's slower to catch on in the U.S. for a variety of reasons. People are slow to adapt. I think the PGA will go a long way because people saw it on a transition zone course in the middle of summer and it's doing absolutely fantastic. I think that will give it a real good kick in the pants." GCI

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Bill Brown, CGCS, is CEO of Turf Republic and founder of iTurf Apps. Bill has spent 20 years on golf courses, including the last 5 years at Hartefeld National Golf Club. He's served as an officer and board of director for the Philadelphia Association of Golf Course Superintendents, as well as served on national committees. Contact him at billbrown@turfpublic.com.

HOW SOCIAL MEDIA WORKS FOR YOU

Two Virginia assistant superintendents share their stories.

Social media is a mainstay in the turf industry. Companies, courses and individuals have turned to this form of communication to bring relevant timely information to customers and members, as well as for information gathering. I'll take an inside look into how individuals and companies are using social media, as well as what advice they have for those who haven't started their journey. I'll talk to superintendents, assistants, interns, industry partners, media and architects. You name it, I'll bring you their story.

First up is an assistant superintendent pair at Westham Golf Club in Moseley, Va., Chad Karr and Zac Vander Goot. They come from opposite ends of the social media spectrum. Chad never thought about social media. In fact, at one point, he created a Twitter account and after a bit, deleted it. Now, he's not sure how he'd get through the day without it. Zac is a bit different. Growing up in the connected generation, he's a regular on social media, and just starting in the turf industry.

WHAT WERE YOUR INITIAL THOUGHTS ON SOCIAL MEDIA?

Chad: I did not see the practical use of using social media outlets and how they could possibly be used for benefits of turf management individuals and courses.

Zac: I am part of the social media generation, and have used social media on a personal level for as long as I can remember.

WHAT GOT YOU TO START USING IT?

Chad: I started to use social media after being told about how other turf

managers used it to collaborate on ideas and practices.

Zac: I was asked to run the Facebook, Twitter and Instagram accounts for Westham Golf Club as soon as I started working here. From a business standpoint, there is nothing better than the advertising that comes from social media. I have since become more involved with using my personal Twitter with a turf manager's mind-set because Chad showed me the benefits.

WHAT ARE YOUR USES OF SOCIAL MEDIA NOW? WHAT DO YOU USE IT FOR? WHAT PLATFORMS DO YOU USE?

Chad: I use Twitter almost exclusively. On Twitter, I showcase the conditions of the current course and the construction of the new nine.

area and around the world handle the conditions at their courses.

Often, I see ideas I believe could be put into practice at my golf course to improve efficiency or health of my turf. The community on Twitter is astounding and the camaraderie among turf managers is inspiring. Superintendents often post their struggles and successes on their courses, and the community is always supportive.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE NOT SURE IF THEY SHOULD USE IT?

Chad: I was hesitant at first, but now I see social media is an invaluable asset for turf management individuals.

Zac: I would encourage anyone that does not use social media to try it.

“I would encourage anyone that does not use social media to try it. The learning curve to becoming an active member of the social media society is minimal, and it has massive returns.”

—Zac Vander Goot, Westham Golf Club

This helps with exposure for both my course and my entire turf management team. There are countless superintendents and assistants using Twitter; the community is very tight-knit, with an incredible wealth of knowledge. Every day, I use Twitter to view #VATurf, if I am not actively posting myself.

Zac: I use Facebook, Twitter and Instagram to boost knowledge of my course. This ranges from upcoming events, course conditions, and special deals and giveaways. I use my personal Twitter now to view how other turf managers, both around the

The learning curve to becoming an active member of the social media society is minimal, and it has massive returns.

Social media is a great way to get your golf course more publicity, as well as show your personal knowledge to both your followers and other turf management professionals.

If you are looking to begin your venture into social media or looking to see if you are indeed getting a return from your investment, the team at Turf Republic is glad to assist. **GCI**

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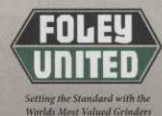


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Travels With Terry

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



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

EQUIPMENT TAG SYSTEM

This effective system tracks which employees are using specific small equipment, like string-line trimmers, hovercraft rotaries and reciprocators because they inevitably get mistreated and none of the employees will step up as the responsible party. Each machine is hung on the wall or sitting on a shelf, with an ID tag on a hook adjacent to each respective machine. Next to the equipment is a board with each crew member's name with a corresponding hook next to their name. When a crew member signs out a specific piece of equipment, the equipment tag is then placed on the board next to the respective employee's name. A special small-equipment room was created during the maintenance building remodeling in 2010 when this tag system took effect. The cost was less than \$100 for all of the tagging materials and it took about a day to complete. Mark Smith, CGCS, Raul Ramos (aka Hop Sing), Ron Mahaffey and Nora Pelayo created this very successful system at The Quarry at LaQuinta in LaQuinta, Calif.



LUNCHROOM TABLES

The Quarry at LaQuinta in LaQuinta, Calif., remodeled its maintenance building in 2009. They have a new lunchroom /meeting room measuring 48 feet by 27 feet in the main part and 12 feet by 15 feet in an adjacent area, totaling approximately 1,476 square feet. The five new lunchroom tables fold neatly into the wall for a nice, clean, uncluttered look when they are not being used for easy cleanup of the floors, which are mopped daily. Palmer Hamilton (www.palmer-hamilton.com) of Elkhorn, Wis., is the manufacturer. The table single wall pockets model number is No. 86R031412, No. 40M03293014 for the wall pocket table and No. 42M03171214 for the wall pocket bench. Twelve employees can sit comfortably at each table. The total cost was about \$15,684.96 for the materials and about \$1,675 for the installation. They were installed in one day. Mark Smith is the certified golf course superintendent.





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(continues from page 33)

"There wasn't a palm tree with a palm left on it. We had huge fichus trees, all gone. Virtually every square inch of the golf course had debris on it," he says.

"It was leaves, limbs and some indoor things, curtains, paper, boxes, pieces of wood, insulation, shingles, you would find stuff and have no idea what it was." The contents of many beach-front condos were strewn about the course after windows in nearby multi-story buildings blew out.

"Andrew was a huge learning experience for me and a lot of people in south Florida," Wright says. Superintendents should know the law and real-

ize that FEMA will not pick up debris on private property; it must be accessible by a public right-of-way.

"We had some open areas on the golf course with piles of debris and FEMA wouldn't come on our property to get it," he recalls, noting that now, all managers and employees at LaGorce CC have a hurricane preparedness checklist and hold drills to be ready for the next storm.

Wright says the most important thing is to be prepared to be without power for a week or more. You can prepare for what you anticipate is going to happen while being mindful that hurricanes more than 100

miles inland can still produce powerful tornadoes.

"You need to have a plan of action three and four days out, things like getting a refrigerator trailer for all the food in the clubhouse so you don't lose thousands of dollars' worth of food," Wright says. "One of the things I always did, with all my managers, I would always send them home a day before the storm with a chainsaw in their car."

"You tend to think of the storm in terms of damage to the golf course," he adds, but your employees may have to cut themselves out of their own driveways and side streets in order to get in to work.

Each hurricane has its own personality, Wright stresses, in their manner of attack – monsoon like rains, tidal surges, winds and tornadoes – or a combination of all these things.

"We have a meeting before everybody leaves work," Wright says. "We make a point of saying, come to this point on the property as soon as you can be here, meet here at sunrise as soon as you can be here. Until you actually live through one, you don't realize all the things that you go through." GCI

Richard Skelly is a music, golf and finance writer based in central New Jersey, and a frequent GCI contributor.



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AAT Direct Solutions	www.aatdirectsolutions.com	32-33*	Penn State	www.turf.psu.edu/apply	29
Amvac	www.amvac-chemical.com	25	Performance Nutrition	www.PNFertilizers.com	48
Aquatrols	www.aquatrols.com	42, 43	Phoenix Environmental Care	www.PhoenixEnvCare.com	57
BASF	www.betterturf.basf.us	45	Precision Labs	www.precisionlab.com	46
Bayer	www.BackedbyBayer.com	63*	Qualipro	www.quali-pro.com	38
Club Car	www.clubcar.com	5	Redexim Charterhouse	www.Redexim.com	21
Cushman	www.cushman.com	10	SePRO	www.sepro.com	7
Ecologel	www.bioprotechnologiesllc.com	14	SipcamAdvan	www.sipcamadvan.com	67
Foley United	www.foleyunited.com	61	Spring Valley	www.springvalleyusa.com	39
Grigg Bros.	www.griggbros.com	41	Spyker Spreader	www.spyker.com	50
Jacklin Seed by Simplot	www.jacklin.com	54	SUPERthrive / Vitamin Institute	www.superthrive.com	64
Jacobsen	www.jacobsen.com	68	Syngenta	www.SyngentaPlantProtectionUS.com	cover tip, 27
John Deere	www.JohnDeere.com/Golf	2-3	Turf Diagnostic	www.turfdiag.com	23
Koch	www.KASTurf.com	51	Turf Max	www.turfscreen.com	59
Neary Technologies	www.nearytec.com	49	Turfco	www.turfco.com	35, 64
NuTec Soil	www.nutecsoil.com	23	Wiedenmann	www.wiedenmannusa.com	26
OHP	www.ohp.com	53	Winfield	www.winfield.com	15, 17, 19
PBI Gordon	www.gordonsprofessional.com	11			

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Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gje.net or 216-236-5854.

BUILDING SOMETHING SPECIAL

One of the wonderful things about the golf industry is that our business practices often reflect the values of the game itself. We treasure honesty, fair play, camaraderie, friendship and fun...all while attempting to earn a living and do quality work.

Despite the economic ups and downs, the good folks tend to stay around the business and rise to the top. Thankfully, most of the asshats bailed out when the downturn hit but the committed folks stuck around because, despite the economy they love what they do no matter what.

No organization reflects the crazy path of the golf business over the past few decades than the Golf Course Builders Association of America. The group has evolved from a small, loosely knit core of tough-minded dirt movers to a much larger presence during the idiotic boom times of the '90s to today's small but passionately dedicated post-recession organization.

Of all the alphabet soup of associations around golf, you would have to think the guys who make a living building courses in an overbuilt market would be the most likely to fail.

Yet, as I attended the 2014 GCBAA summer meeting in Louisville last month, I came away thinking they might be the least likely to ever fail. Why? Let me tell you about the culture of this very special group.

The builder and supplier membership, which had ballooned during the '90s, has certainly shrunk. But, they have gone from being a big crazy army to being the Marine Corps: small, highly skilled, tightknit and laser-focused on the task at hand. Sure, we'd all love to see the game grow and demand for courses return, but that ain't gonna happen. In many

ways, the smaller GCBAA is a better organization than before.

Ask any longtime member what still motivates them to work so hard to get remodeling and renovation jobs or the occasional new course and they won't tell you about a new sailboat they want to buy or some other investment. Instead, they'll tell you they wake up every day trying to do one thing: keep their people employed. They view their crews – the shapers, site superintendents and others who lovingly create great golf using big angry pieces of iron – as family.

And they are scrambling and changing to achieve that goal. They obviously are fighting for every remodel they can get, and bunker work and greens reconstruction have filled the gap for some. But many are also expanding into sports field construction and overall types of commercial and residential development. One member told me with a straight face that he'd just proudly completed a skateboard park. Not exactly a new Coore/Crenshaw gem but pays the bills.

The GCBAA leadership is remarkable. Over the years, legends like Brent Wadsworth, Bill Kubly, Chip McDonald and our pal Tommy Sasser put blood, sweat and tears into growing and solidifying the group. Now, a newer generation like Rick Boylan, Kurt Huseman, Scott Veazey and Judd Duinick are guiding it through the troubled waters of a deflating market.

They recently created a new membership category for irrigation contractors in recognition of the growing importance of smart water management in our business. This was politically a bit risky since other associations also represent those folks but it's quite simply the right thing to do considering how largely water will

loom in our future.

The GCBAA took another risk a few years back by hiring a "kid" as its executive director. But here's the thing: Justin Apel is anything but a rookie when it comes to getting things done and keeping GCBAA moving forward based on the board's strategic priorities. Justin seems to be everywhere and has become a respected part of the Allied Associations leadership group at activities like National Golf Day. He is a talented association executive and a genuinely good guy...thus making him a perfect fit for an organization that is reshaping itself for tomorrow.

Finally – and perhaps most telling in terms of what makes GCBAA special – these guys like to have fun. They may fight against each other tooth-and-nail for projects but when they gather together they are old friends with a common cause: supporting the growth and development of golf. Yes, they have speakers and education at their events, but the real focus is on auctions and raffles to raise tens of thousands of dollars for Sticks for Kids. The bidding is boisterous, loud and fun.

Speaking of which, I am about to fulfill a promise I made during the auction in Louisville. We donated (predictably) a drone to be auctioned off and the bidding stalled at about \$500. I opened up my mouth and said if the winning bidder would also get a mention in this column. Our pal Big John McDonald, now a legend in his own right after following in his dad's substantial boot-prints, jumped in with a very generous bid. He got a drone and he now gets a little well-deserved attention for being one of the people that makes the best little association in golf so cool. **GCI**

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