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LITTLE SHOP OF HORRORS

Experts tame the
terror lurking in your
maintenance shop.

INSIDE

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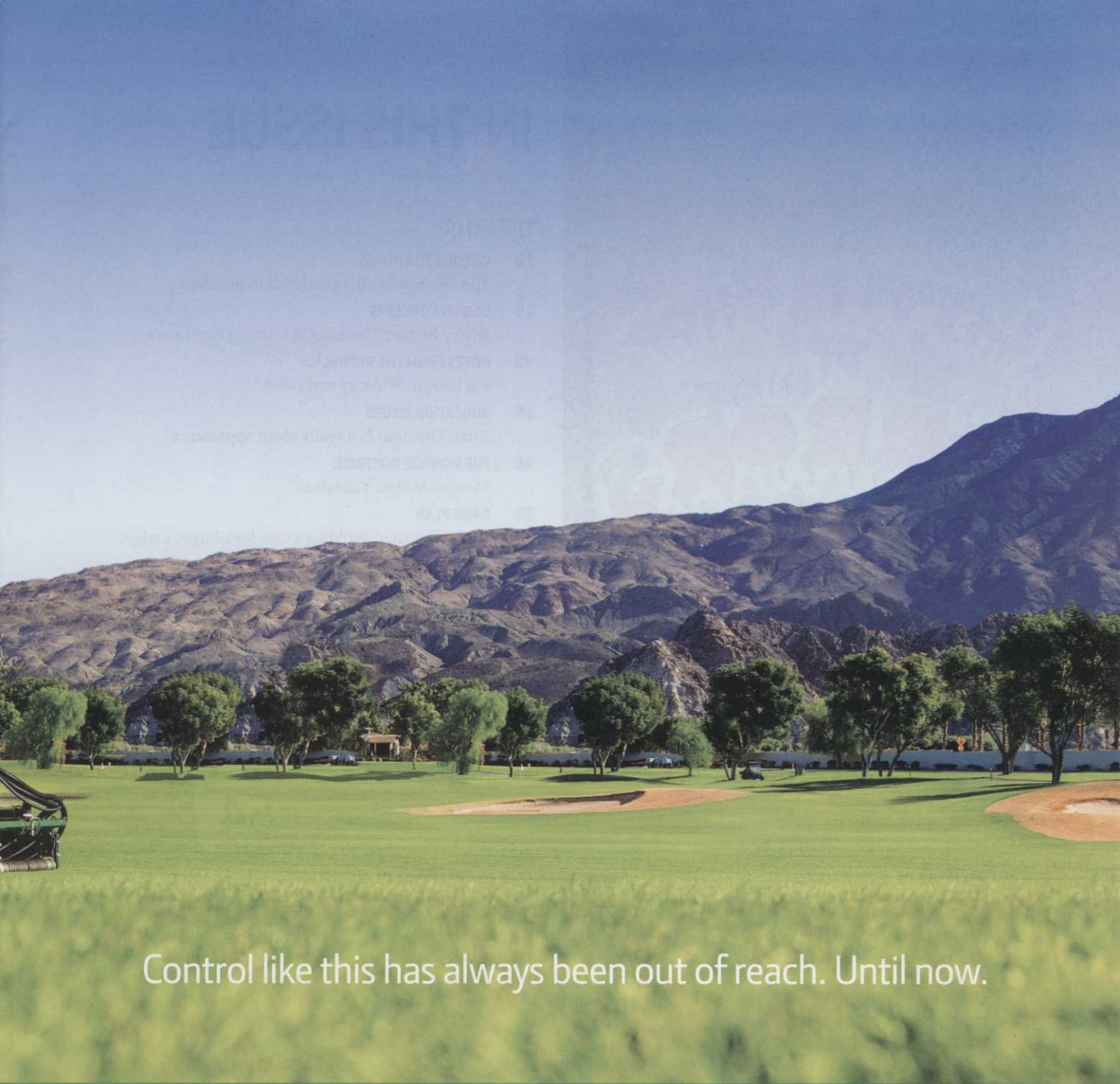
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LITTLE SHOP OF HORRORS

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terror lurking in your
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GRAB BAG

Random stuff we'd like you to know about this month...

NEW GUY: I want to officially welcome Guy Cipriano as our new Assistant Editor. Guy is a newspaper... er... guy by training but one of the things that caught our eye about his resume was that he spent a couple of years riding a mower at the Penn State Golf Courses when he was a young reporter for the State College paper. He claims that he often read GCI in the breakroom at the course and remembers being impressed. We call this "brown-nosing" and we liked it so much we hired him.

In addition to his duties on the print edition and website, Guy will be a lead player on our social media feeds, particularly @GCIImagazine on Twitter. This gives me the opportunity to deluge you with even more useless crap from my new account @PatJonesTweets. Give me a follow if you aren't already exhausted by me.

APP UPDATE: We screwed around for a while trying to figure out a way to ensure that our GCI app was exclusively available to superintendents and other qualified turfheads. We tried to make everyone fill out a form and register just to enjoy the juicy technology the app delivers every month. Well, this turned out to be a giant pain in the ass for everyone so we bagged it. The app is back to its old free and open self. You can now download any issue (current or back editions) in less than a minute with no endless registration questions.

A DOG'S LIFE: Kudos to our own Kyle Brown, the genius behind much of what you hear on our Superintendent Radio Network. He was awarded a best-in-show Gardner Award for most outstanding podcast at the recent Turf & Ornamental Communica-

tors Association awards ceremony. The winning entry? The fantastic podcast he did with Bob Kohlstedt of Fox Bend GC in Illinois about Bob's remarkable efforts to rescue his beloved dog during a severe storm. It's called "Dog's Best Friend," and if you haven't listened to it, you should immediately go to our website and find it on the Podcasts/SRN section. Way to go Kyle!

MORE TOCA HARDWARE: Congrats also to the real editor of this magazine, Mike Zawacki, for his Best Headline award for his clever "Southern Discomfort" head on a story about the challenges of warm-season disease and pest control. And, in an enormous error in judgment, TOCA gave me the Best Column award for "You Gotta Believe," a thing I wrote about the importance of passion in a very crowded golf/turf job market.



Pat Jones
Editorial director and publisher

OLD-AS-DIRT AWARD: Also during this year's TOCA meeting, I was inducted into the group's Hall of Fame along with my friends and fellow industry communicators Cindy Code and Jerry Roche. It was a wonderful evening and I was touched by the award, but I can't escape the feeling that I have now reached the advanced age where they start to give you hardware to shoo you out the door. Never fear though... I decided that the award now makes me an "elder statesman" in the industry and I can hereafter say any old thing I want. Being old as dirt is awesome!

MIKE ROWE ROCKS: Finally, check out my column on the back page for "the rest of the story" that ensued after Mr. Dirty Jobs read what I wrote about him in our May issue and posted about it for his 1 million Facebook followers. It's a funny, weird, ironic tale... which makes it perfect for GCI. Enjoy! GCI

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{ EDITOR'S NOTEBOOK }

Start off with science

Interns from Baltusrol Golf Club visit FMC research lab.

By Guy Cipriano

Lab coats, gloves, goggles and closed-toe footwear were the required attire at the FMC Red Carpet Tour.

The tour, held at the FMC Global Innovation Center in Ewing, N.J., gave eight interns from Baltusrol Golf Club in Springfield, N.J., director of grounds Mark Kuhns and assistant superintendent Chris Moffat a first-hand look at the pesticide research and development process.

After the required safety presentations – no photos or cellphone usage inside the lab, please – FMC Director of Product Development Robin Slatter introduced the company's history, global profile and how products reach market. How does 10 years and \$200 million sound? The process brings frustrations, including product eliminations and alterations, and lengthy waits for federal and state label approval.

The overview filtered into decisions superintendents make when purchasing pesticides. The interns, who hailed from Pennsylvania, New Jersey, Wisconsin and Canada, haven't reached the purchasing stage. But Kuhns has



Top: Interns from Baltusrol Golf Club, along with director of grounds Mark Kuhns, far right, and assistant superintendent Chris Moffat, second from right, prepare to tour the FMC research lab in Ewing, N.J. Bottom: Adam Manwarren, FMC brand manager for turf and ornamental products, talks to the group.

spent nearly four decades making key decisions for prestigious golf courses and the tour might lead to changes in his own practices. "I have been doing this for 38 years and you're always learning something new," he says. "I keep an open mind. There are things we saw here that we will try."

Inside the lab, interns received images of product testing. Outside the lab, they learned the value of establishing relationships with a company that develops products used on golf courses.

Adam Manwarren, FMC brand manager for turf and ornamental products, related many of the conversations to the golf industry. Before anybody entered the lab, Manwarren performed brief market research, asking the interns where they obtain information on pesticides. Trade publications, Twitter, blogs, distribu-

tors and field days such as the Red Carpet Tour were popular answers.

The college students working at Baltusrol are in fortuitous spots. Not only are they learning on two storied and plush golf courses maintained by a 75-worker crew, they take detours from manicuring and mowing to visit universities performing turfgrass research and companies developing products. "We had a lot of information that we gave them," Slatter says. "They are going to obviously need to reflect and they may circle back. It's part of a process of building up their knowledge base through these visits."

The interns were required to dispose of gloves and return lab coats and goggles following the tour. Besides the attire, everything else about the field day represented the turfgrass version of red-carpet treatment.

"I think it was an excellent educational day for them," Slatter says. "We're happy to do it."



From THE FEED



Rain, more rain and even more rain are common throughout spring. But flooding? Hail? Snow? In some parts of the country, April showers brought more May showers. A wet spring after a frigid winter challenged superintendents and crews. Twitter provided the ideal forum to describe their respective plights – or just vent.



Chris Cook @brgsuper

Pretty much sums up how the course is 2day. .75" of rain y'day on top of 2" Sunday. More expected 2day.



Matt Powell @MPowell_4

Advance week hail! #crazyweather



Dave Turner @tiltturner

#flood. Just a wee bit if excess water. Raining for 36 hrs now



James Hempfling @JamesHempfling

Not many things in this world bring me more joy than getting a sand topdressing application out just before the rain. #turfnerd



Scott Hillyard @hillyardturf

So if April showers bring May flowers, what does this bring?



Michael Benkusky @BenkuskyGolf

Somebody call Al Gore. It's snowing out there.



Donald Cross @scc1897

This water hazard is not supposed to be here!



Rob Mason @robmasongolf

Support your golf course superintendent in the spring of 2014. They are getting our courses back in playing condition after a brutal winter



Kevin W. Frank @MSUTurf

Lack of morning sun once again outlines winterkill.



Join the conversation
on Twitter @GCIMagazine!



Pat Jones inducted into TOCA Hall of Fame

GCI Publisher/Editorial Director
honored for contributions to green industry.

Golf Course Industry Publisher/Editorial Director Pat Jones was inducted into the TOCA Hall of Fame in May for his long service and dedication to the green industry.

TOCA – a trade group for editors, publishers and other communicators in the turf and ornamental industries – inducted Jones during its 25th annual meeting in New Orleans.

"TOCA celebrating 25 years makes me feel really old," Jones said. "I will always remember the people who have come and gone. Especially all of their passion and good ideas. It's amazing to me how much has changed in the past 25 years, but my job remains the same... to help other people every single day through communications."

Jones was one of the founding members of TOCA, serving twice as the organization's president. He began his career with GCSAA, eventually serving as its communications director. He also spent time working in public relations at a leading marketing communications agency and as a consultant.

"One of the best things I can say about him is he's a 'real person.' He's learned the business step by step – some steps back with downturns (like all of us), yet more steps upward. And of course he's ended on the upside," said Jose Milan, director of green business operations at Bayer. "Now, if only his golf game were a little better... He is a unique individual and one that's great for this industry."



SUPERINTENDENT
R·A·D·I·O N·E·T·W·O·R·K

Podcast pick of the month

As the season heats up, it's easy to focus on maintaining a strong stand of turf rather than building bridges. Bruce Williams reminds us of the importance of working with your general manager to cultivate a relationship as a team. Head to <http://bit.ly/Sfe8pf> to hear it.



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

AN OPEN LETTER TO MEMBERS

Member education is unending, so here's a way to start now.

A new season is upon us, which means it's time for another message to your members. It's time to remind them how what you do is for their benefit and that without your hard work and that of your team, their golf course would be a disaster.

It's a given that being a golf course superintendent would be a great job if it weren't for members. The best we can do is educate them about golf course maintenance, both short- and long-term, and how what we do is good for them. So here is a prototype letter to your membership. Feel free to borrow from it, making changes as they apply to your situation. (Please let me know if it helps so I can share any "best practices" learned with our brethren in the future.)

I also strongly suggest that you start making notes for a follow-up letter in a few months. Member education is not a one-time thing. You should be communicating with your golfers often, and be willing and able to meet with them whenever necessary.

Dear Member:

Welcome back to another wonderful year of golf. You may be surprised by some of what you are seeing out on the course, leftover damage from a very difficult winter. So let me apologize in advance.

But at the same time, let me explain that the work and conditions you see out there now are for your benefit, both for your golf and for your safety. You are our most important asset – even more so than the golf course – and we want to be sure you are protected.

We hope we have your trust as we attempt to make the golf environment a better place for everyone. We want you to be able to play on the course now and throughout the year. To make sure that's what happens, here's some information and some suggestions that will benefit everyone.

Give it time. Yes, the snow is finally gone and temperatures are on the rise. But this does not mean the golf course and its grass are fully ready. Grass needs time to settle in – take root, grow, get healthy – before reaching "mid-season" form. Just like your game.

So if the signs ask you to keep carts off the grass and on the path, please do what they say. Otherwise there's a good chance there won't be any grass to play on in July and August.

You may notice ropes and stakes in areas that have been roped off before and where you usually walk without care. These areas of sensitive turf, new sod and germinating seed need protection. The grinding of cart tires and golf shoes (with spikes or without!) will kill off in advance the good conditions you want this summer. So please, if it says "keep out," then keep out.

Ropes and stakes aren't there just to protect the grass. They indicate areas of turf that are soft, unstable and full of holes, just the place for catching your foot, falling and tearing an ACL or breaking an ankle. So taking a "short cut" could result in a long layoff from the game. When you see ropes and stakes, think of them as a red light! Stop – do not proceed.

Superintendents are not architects. If the club thinks the course needs redesigning, that's great. We're happy to offer an opinion. But architecture and design are fine arts and should be practiced by fine artists. Not us.

We're not golf course builders, either. While we may occasionally rebuild a tee, add new drainage or renovate a bunker, we are not equipped nor qualified to rebuild the entire golf course. That's what course builders and construction companies do. Furthermore, as much as we want to help, we are not qualified to resurface tennis courts, retile the swimming pool or pave the club driveway. Ask us to do these jobs and two things will happen: The job will be done poorly and the golf course will suffer in our absence.

Sorry for the inconvenience. Apologies in advance if you show up at the driving range and find that the grass tees are closed

and you have to hit off artificial mats. We closed the range tee on certain days due to weather, overuse or for normal maintenance and to allow healing. Just like the golf course. A short-term nuisance for a long-term gain.

Speaking of closings, when the golf course is closed for maintenance, it is closed for the entire day. So please, don't play behind us or wait for us to go home to tee it up. Give the course a full day to recoup, grow back and get healthy for the rest of the week. It deserves it.

Good intentions. We know that you mean well and want to help, but there are ways members try to contribute that actually can cause more harm than good. For instance:

Divot parties. Walking on the course in high heels and other street shoes, filling fairway divots with buckets of green sand, does not help us or the course. Stay in the clubhouse, enjoy the chardonnay (and the air conditioning), and let us take care of the divots. Of course, if there's sand on the cart, you should use it when you play. But once your round is over, leave the course to us.

Ball marks. If you really want to help the course, fix ball marks. Not only yours, but any other you see on the green. (And trust us, you'll see them!) Make sure the starter or the pro shop supplies ball mark repair tools, and then, please, use them. And if you do see ball marks on the course, don't blame us. They really are the player's responsibility.

Tree plantings. No disrespect to anyone, but planting trees in memory of members who have passed on is not good for the course. Superintendents don't like trees, especially those that steal water or provide too much shade to the course. We'd much rather plant flowers or native grasses or something that will enhance the course and your enjoyment of the property, rather than its course rating.

The trouble with green. You have a great golf course, but it is not Augusta National and shouldn't try to be. Many courses are too green, by which we mean they are using too much nitrogen and too much water, which leads to disease, mud and losing your \$5 Pro V1 in the rough that is too long and too thick. What green does not always mean is healthy turf and good playing conditions.

Golf course setup. Speaking of Augusta, we all watch the Masters, quickly followed by The Players Championship and the U.S. Open, and notice how these course setups challenge the best players on the planet. While the maintenance staff occasionally likes to add some challenge, we usually reserve it for the club championship and other big events. We don't cut the hole in the toughest spot on the green or push the tee markers way back every day because we want you to have fun, enjoy yourself and entertain your friends. We want you to score well and come back tomorrow happy. Tightening the screws on family days or fun-play days ruins the experience for everyone.

Communication. We come to the office early and often leave late. We are responsible for maintaining a large piece of property and overseeing a large, diverse staff. We serve many masters, including our peers in the golf shop and clubhouse, vendors, and you, the members. We love what we do and try to do it the best way we can. So while we try to return emails, phone calls, and your other inquiries, please understand that we are away from our desks and our technology more than you know. The best time to talk is when you see us out on the course. Or drop by your maintenance facility: If we're not there, we're probably somewhere on the course making sure it will be ready for you tomorrow.

Here's to another great season and working together to make it so.

Sincerely,
Your Golf Course Superintendent

LITTLE SHOP OF HORRORS

Experts tame the terror
lurking in your maintenance shop.

MAINTENANCE

By Guy Cipriano

The maintenance shop at Walnut Creek Country Club in South Lyon, Mich., is likely smaller than your living space.

To round it off, Hector Velazquez, the club's equipment manager, says he's operating within a realm of 1,000 square feet.

The tight confines don't bother Velazquez.

"Personally, I like a small shop," he says. "It keeps everything close to you."

Velazquez is a maintenance shop guru, having rearranged his shop four times in two years at Walnut Creek. The process can be tedious, yet the reward is high. More importantly, the risk is low.

"I still have my fingers, I still have my toes," says Velazquez, who has spent 14 years working in golf course shops. "I have not experienced anything really serious in a shop, whether that's attributed to maintaining a clean shop with training. ... I would like to think that's helping."

The perils of a maintenance shop, regardless of its size, are numerous and often overlooked when evaluated alongside the demands of maintaining other parts of a facility.

In short, not many shops resemble the one at Walnut Creek, where curious members sometimes visit.

"In over 25 years as a superintendent, I only remember one time when a member made a comment about my shop," says Mickey McCord, founder of McCord Golf Services and Safety. "You always get comments about the course: 'The greens are too fast or too slow. The bunkers are not raked properly.' There's virtually no interest in going in that shop."

Until something goes wrong.



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ALUMNI UPDATE

The most important thing I learned was that each individual is different; finding the differences and bridging the gap will ultimately give you a better sense of what you both need and want to be satisfied. We all have to cooperate to find that happy medium.

Being a great leader means that you have to adapt. If you want someone or something to change, a lot of times it has to start with "me" first!

I hope as I grow and become a better leader, the crew will follow and take ownership in the facility. Having a happy, well-rounded crew will only make the club better. When we believe that we are a part of something great, the details and daily maintenance will ultimately be the best it can be.



Ryan Bourne
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Andover, KS



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COVER STORY

A combination of flammable and hazardous materials, electrical outlets, poor lighting, noise, abundant equipment and high employee traffic can make the maintenance shop one of the most dangerous parts of your facility.

Some experts and superintendents consider a shop a danger zone for any employee.

"It's the most unsafe place," says Todd Miller, president of Golf Safety, which provides safety programs to more than 400 courses. "Country clubs, for the most part, are fairly safe. There aren't a lot of accidents in and around them. Machinery is the first place where an accident can happen and second is the shop, where slips and falls happen."

Maintaining a safe shop doesn't require a large budget or vast space. But it's not as easy as throwing yellow and black tape on the ground and stowing equipment not required for daily use.

Here are six trouble points and ways to avoid mishaps.



Portable fuel cans are a necessity and nuisance.

Bill Godkin, Owner of CESafety, works with more than 60 golf courses and presents superintendents with a checklist of fuel-related issues to consider.

"Do you have flammable gas cans?" Godkin says. "Are they sealed and labeled? Are they in a flammable storage cabinet? Who's pumping the gas and diesel fuel? Have they been trained? Are they wearing goggles and gloves?"

Debbie Swartz, a regional sustainability expert for ePar, has worked with superintendents since 2003. She says extinguishers should be placed in highly visible spots and checked regularly.

Loose rags, paper and wood should not be placed near the flammable storage cabinet, McCord says.



Chuck Barber, CGCS, can relate to Velazquez. His shop at St. Charles County Club in St. Charles, Ill., is more than five decades old and was considered small even by 1950s standards. The chemical and fertilizer room is 6 by 10. The small area



The maintenance shop at Walnut Creek Country Club in South Lyon, Mich., uses almost all of the available wall and ceiling space to store equipment and keep it away from the floor and workbench. Goggles and other safety equipment are placed in visible spots near machinery.

causes big concerns.

"Trust me," Barber says, "it's something I lose sleep about."

Proper storage and training are required when dealing with pesticides and fertilizer, McCord says. "It's a touchy subject," he says. "The stuff we use is not as hazardous as people make it out to be if it's stored properly. It is (hazardous) if people who not have been trained are handling them. That's the issue."

Only trained members of the staff can

enter the chemical and fertilizer room at Walnut Creek. When inside the room, they are greeted by clear signage and sheets documenting usage.

"There's a lot of money in that room and there are very few people allowed in there," Velazquez says. "They keep each other accountable. It keeps a lot of mistakes from happening."

Swartz encourages placing a spill kit in rooms storing pesticides and fertilizer.

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COVER STORY

Some states require the practice.

"If something does spill off the shelf, you want to put something down to absorb that material so nobody slips into that material," she says. "And hopefully there's no drain so the material doesn't make it out into the environment."

Swartz recommends three spots for spill kits in a maintenance shop: storage room, shop area for hydraulic devices and on the sprayers themselves.



Equipment leaks and particles carried in from the golf course can make a shop floor as slippery as a frozen pond.

"Slips, trips and falls lead to more compensation claims than anything else," McCord says. "You can go back and look at the records. You see sprained ankles, skinned-up knees from guys falling down, broken wrists. Tripping is a hazard from not keeping a shop tidy and not paying attention."

Cleaning spills immediately and displaying signs until affected spots are completely dry are obvious ways to reduce shop stumbles.

Designate areas for tasks requiring oil and batteries, and direct worker traffic away from those areas, says Swartz. The areas prevent the substances from entering a drain and negatively impacting the environment.

Barber places rugs at door entrances and uses commercial grips to improve traction. Velazquez keeps hose and cord reels off the ground to create fewer tripping hazards.



Older shops mean older electrical systems and not enough safe outlets for machine-operated equipment. Temporary solutions to the outlet shortage make safety experts nervous.

"Improper use of extension cords is very, very common," Miller says. "You see splitters, like you would on a Christmas tree with no breakers. People are using splitters instead of having a reasonable number of outlets. You will get overloads and burns because of that."

Extension cords pose multiple problems, including a hazard

Safe investments

A small investment in maintenance shop safety can yield long-term savings for a facility. Todd Miller, president of Golf Safety, which provides safety programs to more than 400 golf clubs, says his research shows that every \$1 spent on safety will save a facility \$3.

"It's a very good investment for a club," Miller says.

Mickey McCord, founder of McCord Golf Services and Safety, says superintendents should view safety as an investment instead of an expense. McCord's company produces a 12-part video series. The videos, which are in English and Spanish, last between 9 and 17 minutes each. Multiple videos are geared toward issues that might arise in a shop.

Bill Godkin says money is not an excuse for a lax or non-existent safety programs.

"If someone says I don't want to spend a fortune on training videos, I'm like, 'They are \$300 to \$400 from the ABC company,'" says Bill Godkin, owner of CESafety, which produces safety programs for more than 60 golf courses. "My reaction is, if you don't want to spend that, make your own. You're the superintendent. You know how to inspect a shop. Do it inside the shop. There's your training. It's cheap, but it's pertinent."

Cultivating a safe shop provides multiple benefits to facilities, says Debbie Swartz, a regional sustainability expert for ePar.

"If you are going to prevent an injury or save a life, that's priceless," Swartz says. "How can you put money on that? On top of that, economically, if a property were to implement a number of these measures and document them, I think they would have good reason to work with insurance companies to say we have reduced or eliminated our risk because we have taken all of these steps in these areas of potential risk."

A proper safety program helps a facility avoid government fines. Inspectors from Occupational Safety and Health Administration started increasing their visits to golf courses when new construction slowed because of the recession, according to Miller.

An OSHA spokesperson told GCI there were 85 inspections conducted and 212 citations issued to golf courses in 2013. There were 26 inspections conducted and 92 citations issued to golf courses in 2014 through May 21.

Government fines can be hefty. OSHA fined the Guam International Country Club \$32,900 in 2011 for 17 alleged workplace safety violations found at the maintenance shop.

OSHA offers free on-site consultation visits from compliance assistance specialists to small- and medium-sized businesses. The visits, which are separate from enforcement, do not result in penalties or fines. They are designed to identify hazards, offer compliance advice and assist in establishing injury and illness prevention. Priority is given to high-hazard worksites.

"Unless it is something life-threatening, they will give you a list of things where you are out of compliance and say, 'Here you go. No fines or penalties. You have a time frame to get things in shape,'" Swartz says.

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COVER STORY



Hazard tape should separate the employee walkway from the shop area to prevent accidents. Experts say clearly marked doors and proper lighting as shown above are essential for keeping a maintenance shop safe.

for falls. Extension cords without circuit protection are fire hazards, especially when they leave the shop.

Godkin recommends inspecting cords for frays, properly grounding all plugs, avoiding overloading outlets and keeping breakers labeled and clear of obstructions.

A lack of overhead lighting is another issue in some shops. Dim parking lots are additional hazards because of early start or late finish times.

St. Charles installed motion-sensor lighting for the interior yard of its shop. The investment is worth the cost, Barber says. "If it prevents somebody from kicking a machine or car and going to the hospital or urgent care, it pays for itself immediately," he says. "Little things like that have a big impact."

Barber is fortunate because an assistant mechanic position is included in his budget. The assistant acts as a facilities manager. Checking and replacing fixtures is one the assistant's jobs.



Yes, there are cases when outside opinions about its appearance can benefit a shop, according to Swartz.

"I would say keeping an older shop is absolutely more difficult, but it's not impossible,"



Hector Velazquez, equipment manager at Walnut Creek Country Club, has rearranged the club's shop four times in two years to create a space, workable space.

she says. "Sometimes it takes a fresh set of eyes to say, 'What about moving a door?' It's not something you think about, but you're like, 'Wow, it just made this whole area safer.'"

Moving one door or altering a wall can minimize risk by redirecting employees past potential trouble spots. Velazquez says the staff at Walnut Creek constructed a small wall to direct traffic away from the shop and toward the office. The path is marked with hazard tape. Employees are also told to enter and exit the shop through the same entrance. Visitors are directed through the same spot.

"It makes it safer for everybody," Velazquez says.

Clear paths also make it easier to reach safety equipment such as googles and spill kits.

"I don't have to go across the shop, so there's less potential for danger," says Velazquez. "Everything is readily and easily accessible. When something happens, it will happen real quick."

Blocked emergency exits are another traffic-related problem. Miller says creating single-aisle walkways make emergency exits easily accessible.



An old or broken piece of equipment might have sentimental value. But unless it serves an immediate purpose, it shouldn't be allowed to linger.

"Some of these people are like pack racks and there is stuff jammed everywhere," Godkin says. "Organize a cleanup day. Bring in a dumpster and throw away all the crap you don't need. It will create some valuable storage space."

Barber has a two-year rule. If anybody on his staff hasn't used a piece of equipment in two years, he gets rid of it.

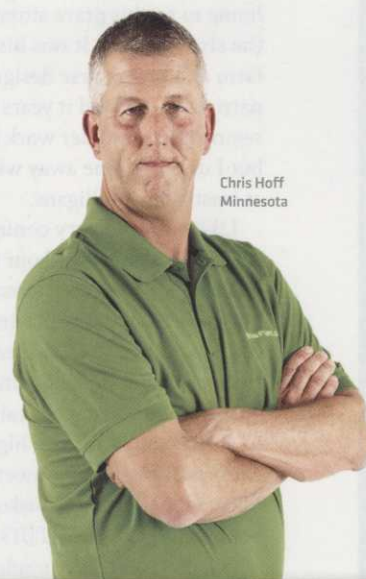
Minimal works in Velazquez's shop. When the floor is crammed, he looks for ways to store objects such as tires along walls.

After multiple tries, Velazquez believes he has found the right setup in Walnut Creek's shop. He says frequent idea exchanges with green superintendent Scott Rettman turned a small shop into a spacious – and safe – workplace.

"People say my boss, Scott Rettman, and I are like two peas in a pod," Velazquez says. "It takes a team. It just can't be one person. It just can't be the superintendent wanting to improve and the crew doesn't care. It can't be one guy on the crew or the technician and everybody else doesn't care. Scott and I have the same goals and it helps out. It makes my job easier and his job easier." GCI

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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.

THE ASGCA LEARNING EXPERIENCE

Jeff outlines the highlights from the 2014 meetings.

I have attended over 25 of my 34 annual American Society of Golf Course Architects (ASGCA) meetings, which have helped me in terms of continuing education, exposure to great golf courses and the ability to discuss relevant issues with my peers. This year's meeting in Tulsa, Okla., was no different.

I love history. This year, we had presentations on the life and designs of Oklahoman architect Perry Maxwell and played many of his courses during the meeting. After the meeting, I was moved to stop at Dornick Hills in Ardmore, Okla., on the way home to see his grave situated above the sixth fairway. It was his family farm and first course design, and I partially renovated it years ago. I like seeing how my older work has fared, but I usually come away wishing for at least a few mulligans.

Like most industry conferences, ASGCA has shortened our formal meeting for time/cost reasons, but leave options for playing extra courses. Some ASGCA members arrived early for an opportunity to play a true Maxwell gem at Prairie Dunes in Hutchison, Kan. The highlight courses of the regular meeting were Maxwell's Hillcrest, Muskogee and Southern Hills, and RTJII's Patriot, which contrasted the modern and classic design styles.

Some learning comes in the form of "aha" moments. While I generally prefer playing classic courses, Southern Hills with its constant diet of narrow fairways and small, well-guarded green targets reinforced my belief that I will be designing easier courses in the future. Obviously, Southern Hills enjoys being a periodic major tournament site, making its design

reasonable for them. In my opinion, courses like that are too hard for everyday play. And, while I enjoyed the Patriot, it convinced me that I need to keep pushing shorter and shorter forward tees because 5,600 yards is too long from the front tees, especially on a dramatic course with some forced carries.

Other sessions were devoted to brainstorming how to attract and speed up play. I was disappointed in these discussions. It's amazing how every discussion goes quickly to both how far PGA Tour pros hit the ball or Augusta National and how well they

turf to reduce irrigation.

The idea of giving players monitors was both intriguing scientifically and unsettling in a "1984" kind of way. They can measure all sorts of behaviors, which we can use in design, but it would have to make some golfers/customers uncomfortable.

Similarly, Moore's take on reducing tee irrigation was stunningly simple math. On the typical turfed course, we water over an acre to produce about 6,500 square feet of tee surface, or about seven times the actual turf requirement. If we used desert style tee irrigation, with small pop up

“The idea of giving players monitors was both intriguing scientifically and unsettling in a ‘1984’ kind of way.”

maintain their course. To me, that has about as much correlation as talking about moon rocks when discussing Mount Rushmore. I don't think we came out with any consensus ideas on these tough problems or, like most industry conferences that fire up participants who then go home to doing exactly what they always do, any practical way to implement those ideas. Golf seems to have no shortage of ideas, except in actually creating a mechanism to implement real change, even if we agree that change is really necessary. And we don't. Read my column from last month.

On the technical side, the USGA's Jim Moore presented on both drone technology to get real-time assessment of turf conditions and player monitors that might help us scientifically take more course areas out of

heads watering only the tee surface, we could easily reduce turf acreage by 10 to 15 acres per course with little effect on playability. Is it time for Midwest and Northeastern courses to adopt this style in the name of water conservation? If not now, then possibly soon.

And then, there were the after meeting discussions over dinner and drinks, which often provide me valuable design advice and life lessons. While I hang on every word from Tom Fazio, Pete Dye, Jack Nicklaus or Rees Jones, many lesser known members have offered great advice, too. The essence of the organization is to share experience and knowledge on design, which most do willingly. We spend 51 weeks a year as fierce business competitors and one week together as best friends. GCI

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The long and short of it

With mowing heights, superintendents strike a balance between turf health and player expectations.

BY RICK WOELFEL

Maintaining healthy turf requires a balance between plant health, meeting budget and addressing members' sometimes-lofty expectations.

The right mowing practices minimize those risks to the turf posed by weather and disease while still providing golfers with the conditions they crave.

Traditionally superintendents have raised their mowing heights during the peak of the season to minimize the risk of heat stress and allow the root of the plan to flourish.

The key to having a thriving root system in the spring and summer is proper fall preparation, says Mark Kuhns, director of grounds at Baltusrol Golf Club and a past

president of the Golf Course Superintendents Association of America.

"It's important that you've all the proper aeration in the fall and early spring, and that you're doing your dressing and sand topping on a 10- to 14-day basis," Kuhns says. "You have to take care of the things that are going to affect you."

"If you have a history of disease on your greens you'd better be treating about this time of year," he adds. "Getting that early makes a difference between a strong plant and a weak plant."

Kuhns appreciates fast greens as much as anyone; he worked at Oakmont before coming to Baltusrol, but says it's important to resist the temptation to cut too

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low, too early.

"A lot of young superintendents don't understand the correlation between root growth and top-growth of the plant," he says. "A lot of guys start mowing it down

because their members want the fast greens right out of the gate. So they begin to mow them down too soon and the root systems don't have a chance to grow, to go deeper into the soil. We try to maintain a higher

height of cut even if it's above an 1/8th inch."

Today's modern grass strains have proven more amenable to heat and humidity, even at lower mowing heights.

"We've seen the development of grasses that seems to perform better at lower mowing heights," says Dr. Jack Fry, professor of turfgrass science, director of Rocky Ford Turfgrass Research Center. "That all occurred with the release of the A-series grasses, like A4. Not that they don't benefit when they're mowed a little bit higher, but they tolerate heat and they look good when they're mowed low. They perform well at those lower mowing heights, which we didn't use to see."

Even grasses that perform well or better at lower mowing heights still benefit from being mowed a little bit higher, Fry says.

"We're just talking millimeters here but slightly increased mowing heights will result in improved root development," he says. "That's really a key on the putting green. If we can maintain root health, we maintain the health of the plant. If we ever see decline in a putting green, it's usually roots that go first and we don't see that happen. Then chutes start to decline and then the quality goes down."

There is no one-size-fits-all approach when it comes to mowing. Each superintendent must deal with unique circumstances. Huntingdon Valley Country Club outside Philadelphia is known for its challenging putting surfaces. Superintendent Scott Anderson watches over turf that is comprised primarily of old-style Pennncross and other classic laterally growing bentgrasses.

"We embrace those," Anderson says. "We do it from a playability standpoint. It adds interest to the grain when you read a putt as opposed to the upright bentgrass where you just read the contours and putt. Here, you have to look at the contours as well as what the grass is doing. Am I putting into the grain or am I putting cross-grain?"

"What that adds from a health standpoint is, we'll have blades that are laying over and longer than the mowing height. Even if we're in essence cutting short, the blades are allowed to run out so we get more leaf surface and less plants per square inch.

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By The Sea

With the heat of summer at hand, superintendents are looking for ways to give their turf healthier root systems. Scott Anderson, the superintendent at Huntingdon Valley Country Club outside Philadelphia, has experienced success utilizing extract from seaweed.

"It's full of hormones," he says. "The sea is full of minerals so seaweed is full of minerals and plant hormones."

The extract, used in conjunction with growth regular, provides the plant with additional nutrients. "We saw it years ago when we started using it," Anderson says. "Growth regulator stunts the top growth and the growth wants to go somewhere so it enhances root growth."

Anderson uses the extract virtually everywhere on his 27 holes, save for deep rough areas.

"Sometimes will throw a touch in the deep rough too," he says.



spring," he adds. "Then we'll remove more of the grain in the summertime to have less leaf surface for the plant to support. We do everything we can to push roots. Having more leaf surface in the spring correlates to deeper rooting."

"Cutting short" can increase the risk of turf damage during mowing. But Anderson points out that today's state-of-the-art mowers minimize the risk.

"The new advances in floating head technologies have allowed us to mow shorter with less issues with gauging or scalping," he says. "We just got a new batch of John Deere greens mowers and they are absolutely phenomenal."

Mike Bair is the director of agronomy at the Stockton Seaview Resort and Golf Club just outside Atlantic City, N.J. At deadline, Bair was preparing the resort's Bay Course for the ShopRite LPGA Classic. The course features undulating greens and Bair has found a mower that will give him the condition he ranks without undue risk to the turf.

"We've been using Toro equipment on our greens," he says. "Because of the undulations that we have we do get better cuts with those mowers."

Rolling can often provide an effective alternative to mowing, allowing the superintendent to create the types of green

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speeds his members crave without the risk of cutting so low that the health of the plant is endangered.

"We try to alternate with mowing and rolling," Bair says. "Technology has changed. We

don't have to go as low."

Advances in turfgrass science have influenced mowing habits. Anderson is utilizing a new strain of Bermuda grass, Latitude 36, on his practice tees and is now incorporating

"Cutting short" can increase the risk of turf damage during mowing. However, experts point out that today's state-of-the-art mowers minimize the risk.

it on the golf course itself. In addition to being more cold tolerant than some other grasses, Latitude 36 thrives during the spring and summer months. Consequently, divots heal very quickly, in seven to 10 days or so, compared to the 21 to 28 days typically required with bentgrass.

"We've installed two new tees on par threes," Anderson says, "and we're sodding those with Latitude 36. They'll be so aggressive they may have to be mowed more often than bentgrass during the summer months. They thatch up a lot

and probably will have to be aerated more."

Fred Biggers is the head superintendent at the Wintergreen Resort in Roseland, Va. A veteran of 30 years in the industry, Biggers has been at Wintergreen since 1999. He is responsible for two golf courses: Devil's Knob, located on a mountain, and Stoney Creek, a 27-hole layout situated in the valley below.

In 2007, Biggers installed Cavalier zoysia grass on nine fairways at Stoney Creek. Zoysia is native to eastern Asia, notably Japan. It was first utilized

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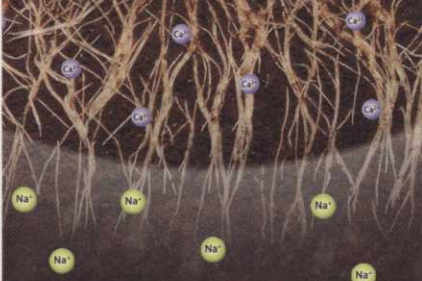
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MOWING



Modern grass strains have proven more amenable to heat and humidity, even at lower mowing heights. Even those grasses that perform well or better at lower mowing heights still benefit from being mowed a little bit higher.

in the U.S. in Texas. It provides a consistent playing surface; hitting off of a zoysia fairway feels like hitting off a plush carpet.

More importantly, from Biggers' point of view, zoysia can be cut lower than other grasses with no ill effects. And it costs significantly less to maintain, which frees up dollars for other projects.

"It doesn't grow fast," Biggers says. "You might have to mow only 40 times a year compared to maybe 150 with bentgrass.

And it takes a pound or less of fertilizer per year."

In today's world, any development that will allow a superintendent to reduce costs will attract his interest. But maintaining quality playing conditions is no less important. And the quest to create and maintain those conditions goes on. **GCI**

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

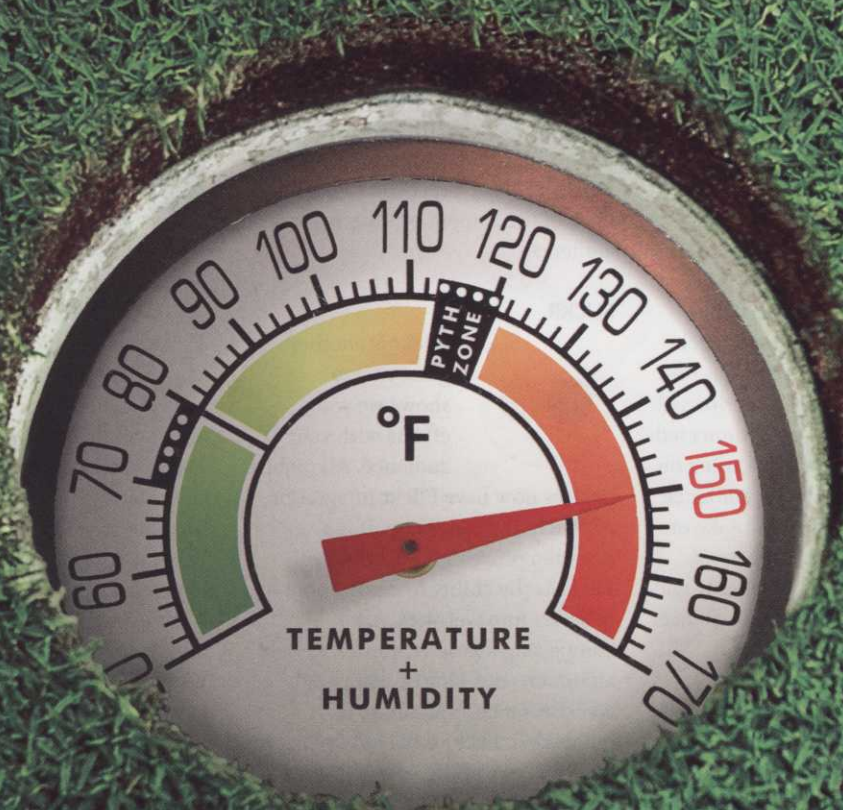
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Looking for more data and opinions about mowing heights? Check out these online resources.

- "Turfgrass Maintenance Mowing," by Tom Samples and John Soroachan, University of Tennessee Extension. Enter bit.ly/1p753Km into your browser.
- "Turfgrass Mowing," by Tom Voight, University of Illinois Turfgrass Program. Enter bit.ly/1vulUeB into your browser.
- "Mowing Height, Mowing Frequency, and Rolling Frequency Affect Putting Green Speed," by Jay Richards, Doug Karcher, Mike Richardson and Josh Landreth, University of Arkansas, Department of Horticulture; Thom Nikolai, Michigan State University, Department of Crop and Soil Sciences; Aaron Patton, University of Arkansas, Cooperative Extension Service, Arkansas Turfgrass Report 2007. Enter bit.ly/Tn3u0N into your browser.

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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.

WAKE UP AND TWEET

Exploring four effective social media platforms.

The 2014 growing season is in full swing, which means you have less time to fiddle with your practices. It's much like the golf swing. You're not going to fix it while you're playing. That is what range time is for. So with growing turf your top priority, I'd like to take you through a few of the better known social media platforms that require little effort, but pack a punch and can be used to communicate with your members and golfing public.

I think we all know by now that social media is a very powerful tool to communicate with your peers, get help and advice or just have casual conversation. Waking up and checking social streams has become as routine as waking up and getting dressed. In fact, some people are so connected that dressing may be the last thing on their minds. With a captive audience thirsting for the latest tweet, Like or +1, turf managers should harness these powerful tools to efficiently and effectively reach the golfing audience.

“If it's not something you would say to a member's face, you should probably keep it off the club's Twitter account.”

INSTAGRAM



Instagram is a great way to share quick, 15-second videos with your members of things that you and the crew do or projects you may be working on. In addition to short videos, you can also post photos for your membership to see. One of the great things about Instagram is that you can post to multiple social media platforms at once, including Facebook, Twitter, Tumblr and Flickr. One click of the camera can reach a huge audience.

FLICKR



Flickr is another great way to showcase your efforts with your audience. All mobile devices now have Flickr integration, so much like Instagram, it is a one-step process. A big bonus of Flickr is the ability to embed photo galleries into websites. After completing a project, embed a Flickr album on your blog or company's website. Once your album is embedded, Flickr will auto upload in real time any photo you take with your mobile device. No need for syncing or heading back to the office to upload photos.

TWITTER



Twitter is great for a quick course update such as “We will be syringing the greens at 2 p.m. today” or to communicate progress on a project. While Twitter seems to be the most popular social media platform in the

turf industry, it needs to be used with some caution. If you are tweeting from an account for the course, watch what you say. If it's not something you would say to a member's face, you should probably keep it off the club's Twitter account. I would recommend having one account for personal and one account for professional use.

FACEBOOK



If your club has a Facebook page, make sure you're an administrator on it so you can use it to communicate information. Another great way to communicate via Facebook is to create a Facebook page for the grounds department and the only information shared there will be about your department. When using a Facebook page to communicate, it is important to be as consistent as possible so your message continues to reach your audience. If you have a course blog, be sure to share your posts on your club's Facebook page and the grounds department page to be sure that those blog updates make it to as many members as possible.

As you implement social media to communicate to your membership, start small and be consistent. It may be difficult to keep up with multiple social media platforms if you are new to social media, so start with one, be consistent and then add to it as you feel more comfortable. Inconsistent posting will not help you to get your message out.

Looking for more assistance with social integration, send us a message on our Tech 911 (<http://iturfapps.com/tech-911>) board.

Happy tweeting. **GCI**



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BY STEVE TRUSTY

How to stretch every last drop of irrigation water is a topic nearly all superintendents wrestle with in some fashion. Drought and restrictions, escalating costs, and a public sensitive to how water is being used around them are all factors coming into play throughout the golf industry.

As superintendents, you're not only being asked to maintain a certain level of playing conditions at your facility, but many times you're forced to do it with water limitations.

Distribution uniformity is an important part of the overall equation. Here's a bit of irrigation boot camp to help you use water and your system most efficiently.



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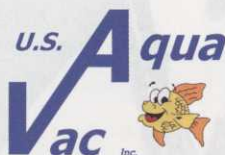


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WATER MANAGEMENT

KNOW WHAT YOU HAVE, TWO OS AND WHAT ELSE?

The first step to proper water management is making sure you're familiar with the water and all the tools you have.

"Know what your water is," says Erik Christiansen, president of EC Design Group. "Sample it at least once a year, in some areas, twice."

Many factors can impact how the water affects turf growth. If the pH is off or the salinity is high, your turf is going to be affected. Your system may be working perfectly, but the water could be causing problems.

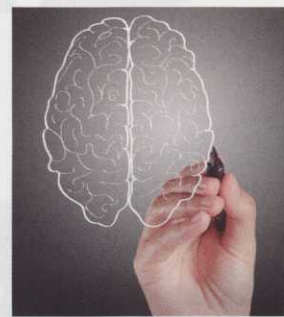
"The majority of superintendents are on top of this, but it is so important it has to be at the top of the list," Christiansen says,

MAINTAIN WHAT YOU HAVE

You've tested the water, made the necessary adjustments and know what you are working with. Now review and maintain your system.

Are all components working properly? Make sure all heads are level and set to their optimum height. Machinery and top dressing can tilt heads or cause them to be too deep. Tilted or too deep heads are not going to distribute the water uniformly. Make sure the heads are spaced properly, the pressures are correct and any pressure regulators are working as designed. Check if the flow meter in your pump station is calibrated.

"You can't manage your water if you don't measure your water," says Brian Vinchesi, design engineer, Irrigation Consulting. He recommends testing flow meters at least once every two



Anatomy lesson

Irrigation consultant Erik Christiansen likens an irrigation system to the human body.

"Everything is interrelated," he says. "All parts must be working together, just like in the human body. In looking at the irrigation system, the pump station is the heart. The piping and that part of the system are the arteries. The control package is the brain and the sprinklers are the muscles. The water is the blood. All parts are important."

If the infrastructure is not working together properly, you are going to have problems. Think of the results the last time one or two parts of your body were not working properly and the rest seemed OK. Did you experience optimum results?

to three years. Some states require annual testing and some require no testing at all.

Lastly, make sure your computer system is up-to-date with what you're using in the field. Did you add a head in a dry spot, but not put it into the computer? Did you change out a full circle head to a part circle due to a change in the landscape? Did you add new components that will affect the overall operation?

If your computer and the components in the field are



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WATER MANAGEMENT

not current with each other, you are not going to get accurate data. And without accurate data, it is impossible to know if you are using too much or too little water.

If a weather station is a part of your system, check it at least every four or five years to make sure it is working accurately. Update as needed, and collect accurate data.

If you do not have a weather station, consider adding one. They can be used to automatically turn water off due to rain events. They can also turn irrigation off if wind conditions are at a level that too much water is wasted when water is run at those times.

If you know what you have and know if it is working as designed you can then determine if adjustments need to be made to use water more efficiently.

Vinchesi suggests having an irrigation technician or someone dedicated to irrigation. "One person dedicated to irrigation can provide preventative rather than reactive solutions," he says. "That is not only good for the course, but for the irrigation system."

AUDITS AND OTHER TESTS

Now you need to see how the water is being distributed. Is it hitting the areas you want hit? Are you watering areas that no longer need it? Is your system putting out the amount of water you want over the areas you want covered? Is the water distributed uniformly over the area? Distribution uniformity is a measure of irrigation efficiency defined as the ratio of dry areas to average areas. The best way to determine your distribution uniformity is to perform a water audit.

"Some level of audit is important, otherwise you are guessing," says Dr. Grady



Miller, professor of crop science at North Carolina State University. "Do an audit to get a baseline."

While you may have been watering the greens for 20 minutes each, you may find through an audit that some greens need 22 or 23 minutes and others need only 18 or 19 minutes. You need to know the amount of water for optimum turf growth, but any irrigation beyond that amount is a cost you don't want. While you may not want to do it during your prime season, you can gradually cut back your runtimes to find your minimum.

OPTIONS TO AUDITING

You can do the auditing yourself. Courses are available from The Irrigation Association and the GCSAA. There are also numerous online articles that provide the details. If you can't audit the whole

Seek and ye shall find

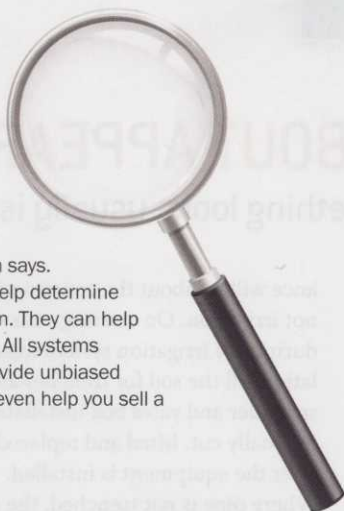
Seek advice to save time and dollars. Don't be afraid to ask for help whenever you feel the need.

"Start with company reps, distributor sales people and others who are able to give great advice for free," says Curtis Bruton, golf sales with Ewing Irrigation.

Talk to other superintendents. If they have irrigation techs or specialists, talk to them, as well.

"Irrigation consultants are a good investment," Bruton says.

"They can provide a wealth of information." Consultants help determine what's wrong and what can be done to rectify the situation. They can help analyze your system, downtime, repairs and water usage. All systems are going to eventually wear out and a consultant can provide unbiased information to help you determine when that time is and even help you sell a replacement solution to those that control the budget.



course, start with three greens. Audit your best green, your worst green and an average green. Then work with the averages for your overall schedule. At the very least, start with the worst areas and determine how the water is being distributed and what is needed to obtain the best efficiency.

If you don't have the time or inclination to perform the audit in-house and if you can budget for it, there are experienced irrigation consultants who are registered to perform audits to get the most efficient performance from your system.

Distribution uniformity is especially critical if you are using fertigation or applying other products through your irrigation system. It is not the only important factor. He recently completed research and is in the process of publishing the paper on the results. "The nature of the soil and the canopy will affect the water distribution as much as the irrigation distribution affects water availability," Miller says.

Moisture meters and sensors are excellent tools to determine how the moisture is being distributed in the soil. While soil probes have been used for years and many superintendents are very proficient at pulling a core and feeling the soil, they don't provide reference numbers. It's difficult to convey how much an area should be watered based on how the soil feels.

Entry-level analog meters cost around \$375. Digital meters start at around \$600

and adjust to soil types. For \$1,100 you can get a long-handled meter with dual handles that adjusts for soil types, but also can be connected to a GPS receiver stores 3,200 readings, and is compatible with online web-mapping software. Probes of different lengths provide readings at the depth you need. These meters offer real-time accurate measurements of what moisture is present in the soil.

Collect readings before and after watering to determine if what you are putting down is adequate. John Mascaro of Turf-Tec Technology recommends to use the irrigation system to saturate an area and get your wet reading. Go to another area that needs watering to obtain your dry reading. Then you can determine how much water you need to apply to get to the best range between the two. Stationary soil moisture sensors are another great tool that can help you make decisions.

There are all kinds tools, including handheld radios and smart phone apps to manually run your system as you visually observe specific areas. None of these are going to give you the results you really need without knowing what you have, maintaining it properly, and auditing your system to measure what it is doing. Apply just the amount of water you need, in the needed areas, to prevent damage to your turf and overuse of water. **GCI**

Steve Trusty is a writer based in Council Bluffs, Iowa, and is a frequent GCI contributor.

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

IS IT REALLY ABOUT APPEARANCE?

Apologizing for how something looks usually is a sign of deeper issues.

I visited a golf course irrigation project and came across this sign posted on the bulletin board outside of the pro shop. I thought the wording was odd, but I moved on. Later that day, I looked at it again and asked the superintendent who had posted the sign. Apparently, it was the irrigation contractor installing the new system.

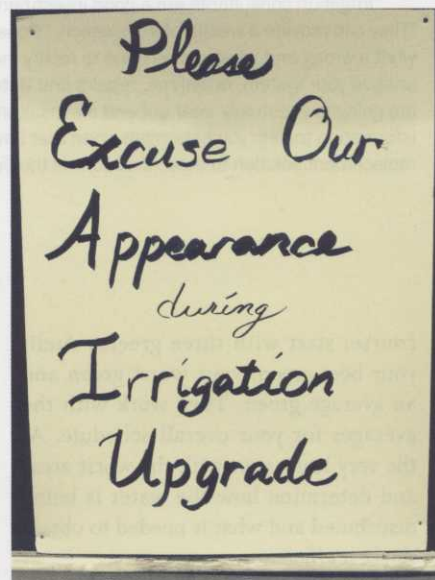
I've been to hundreds of system installations, but I'd never seen a sign worded this way. I've seen posted signs during irrigation construction addressing closed holes where the contractor was working that day. Perplexed, I went back and photographed the sign.

Over the next week, I thought about the poster. What bothered me was the word "appearance." Had it said "inconvenience" or "disruption," I would not have given it a second look. My problem is an irrigation system installation should never affect the appearance of the course. It might cause disruption in play and/or inconvenience to the golfers due to the loss of a hole, but not the appearance. The irrigation system should be installed neatly and efficiently at all times with minimal changes to course appearance. The fact the contractor apologized was not a good thing – or so I thought.

Why should an irrigation system not affect course appearance? If the course is new or a renovation is taking place, the irrigation work will be mostly on bare ground, so the appear-

ance will be about the construction, not irrigation. On existing courses during the irrigation system installation, all the sod for trenches and sprinkler and valve box installations is usually cut, lifted and replaced after the equipment is installed. Where pipe is not trenched, the pipe is pulled and as long as the pull lines are tamped back down with the right equipment, there isn't an issue. An irrigation system should be installed in an area or on a feature and when the work is complete, it should not be apparent the irrigation was ever installed. If it is obvious, you're using the wrong contractor.

Back to the course with the posted sign. The contractor did in fact need to apologize for the appearance. In the late fall/early winter, the contractor cut the frozen sod and lifted it off the main line trenches and did not put it back. They attempted to put it back this spring once it thawed out. However, it was a very late spring. Result: Most of the sod was toast and the trench line is brown or a mixture of green and brown. If the sod had not gone off in color, it had fallen apart and the trench was a patch work quilt of soil and poor quality turf. Instead of being hard to see, the trenches stick out like a sore thumb. And because the trenches were bare from the sod being lifted, the melting snow and spring rains eroded the main line trenches. Those are now restored, but without any sod available they were loamed, seeded and covered with straw mats to stop

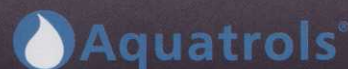


erosion. As someone plays the course, they keep coming across these hazardous areas of brown strips or straw matting. Not good for appearances.

If the contractor needs to apologize for the appearance of a system installation, then that is probably just one of many things that are going wrong or are wrong with the installation. You need to take a good look at all of the irrigation system work, especially the work that is being buried and you cannot see. Poor performance at grade most likely means poor performance below grade too. Take immediate steps to fix the issues and make sure you have a specification and contract that allows you to require work to be redone that is not correct before the irrigation project even starts. **GCI**



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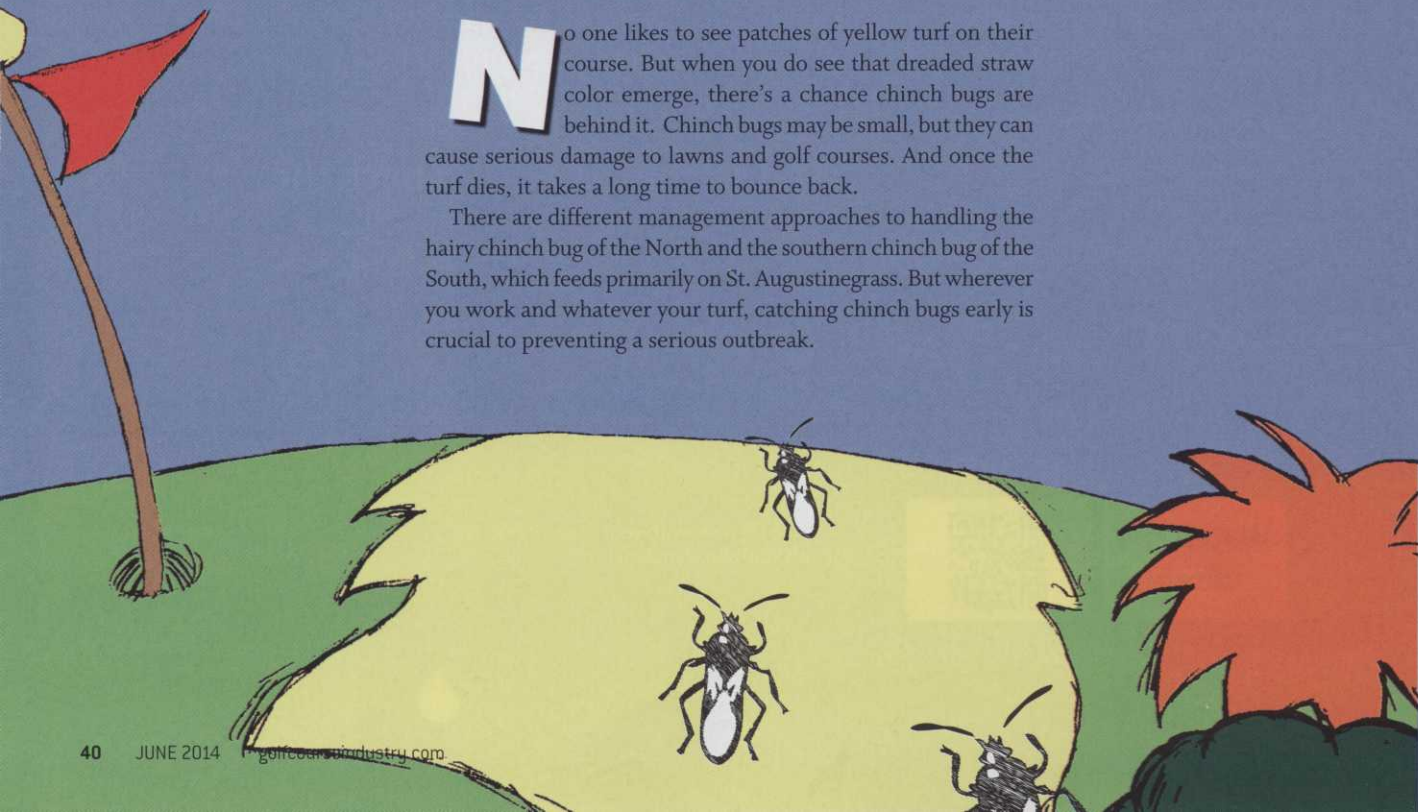
You're a mean one Mr. Chinch

5 things you may not know about chinch bugs that can help you better manage them in your turf.

By Molly McNulty

No one likes to see patches of yellow turf on their course. But when you do see that dreaded straw color emerge, there's a chance chinch bugs are behind it. Chinch bugs may be small, but they can cause serious damage to lawns and golf courses. And once the turf dies, it takes a long time to bounce back.

There are different management approaches to handling the hairy chinch bug of the North and the southern chinch bug of the South, which feeds primarily on St. Augustinegrass. But wherever you work and whatever your turf, catching chinch bugs early is crucial to preventing a serious outbreak.



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We spoke to some chinch bug experts who shared with us five surprising facts that will give you the upper hand over the dreaded warm-season pest.

1 CHINCH BUGS CAN BE CONFUSED WITH OTHER SMALL PREDATORY INSECTS

Overall, chinch bugs are easily distinguished from other turf pests. But some insects – such as false chinch bugs, minute pirate bugs and big-eyed bugs – often have been mistaken for chinch bugs.

The big-eyed bug “is a common predatory insect in turf, about the same size as a chinch bug,” explains Mike Merchant, Ph.D., an urban entomologist

with Texas A&M AgriLife Extension Service, in Dallas.

Big-eyed bugs can be distinguished from chinch bugs by their bulging eyes and more rounded body, compared to a chinch bug, whose eyes are small and body is long and narrow. The biggest difference between big-eyed bugs and chinch bugs, Merchant says, is that big-eyed bugs are beneficial insects to have on grass while chinch bugs aren't.

Eileen Buss, Ph.D., a chinch bug expert at the University of Florida, recalls one lawn maintenance worker in Florida mistook little black beetles for chinch bugs. “Then he mentioned he needed to get

his eyes checked,” she says. “I now remind applicators that their best monitoring tools are their eyes.”

2 THEY LIKE NITROGEN

Using proper amounts of water and nitrogen is crucial, says Scott Ferguson, Ph.D., owner of Atlantic Turf and Ornamental Consulting in Vero Beach, Fla. “If you have proper amounts of water and fertilizer, your turf can withstand a fair amount of chinch bug feeding and you won't even see visible damage,” he says.

Understand that fertilizing equates to giving chinch bugs better food, Buss warns. So it's important that nitrogen be

used in moderation. Although nitrogen helps grass grow and stay green, she says, “it can also help more chinch bugs survive, develop faster, and the females can lay more eggs.”

Overfertilizing leads to “all kinds of problems – because excess nitrogen favors the development of insects and diseases,” Ferguson says.

Damage is first evident in areas of drought- and heat-stressed turf. Superintendents should ensure turf gets adequate amounts of moisture, their irrigation systems are functioning properly and water is being distributed evenly, Ferguson says.

Chinch bug damage tends to

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False chinch bug adult and nymph on Bermudagrass.

be worse in hot and dry turf areas and stresses the importance of sensible irrigation practices, Buss says. An adequate amount of water, she says, "can help mask turf damage or help turf tolerate more chinch bugs before damage becomes significant."

3 SOUTHERN CHINCH BUGS CAN BE RESISTANT TO PYRETHROIDS

Pyrethroids alone may control chinch bugs, or they may not. It depends on the genetics of the local chinch bug population. Northern species are easily controlled by pyrethroids,

but pyrethroid effectiveness on southern chinch bugs isn't guaranteed.

While northern species are easily controlled by pyrethroids, southern chinch bugs "vary in their susceptibility to pyrethroids on St. Augustinegrass," Buss says.

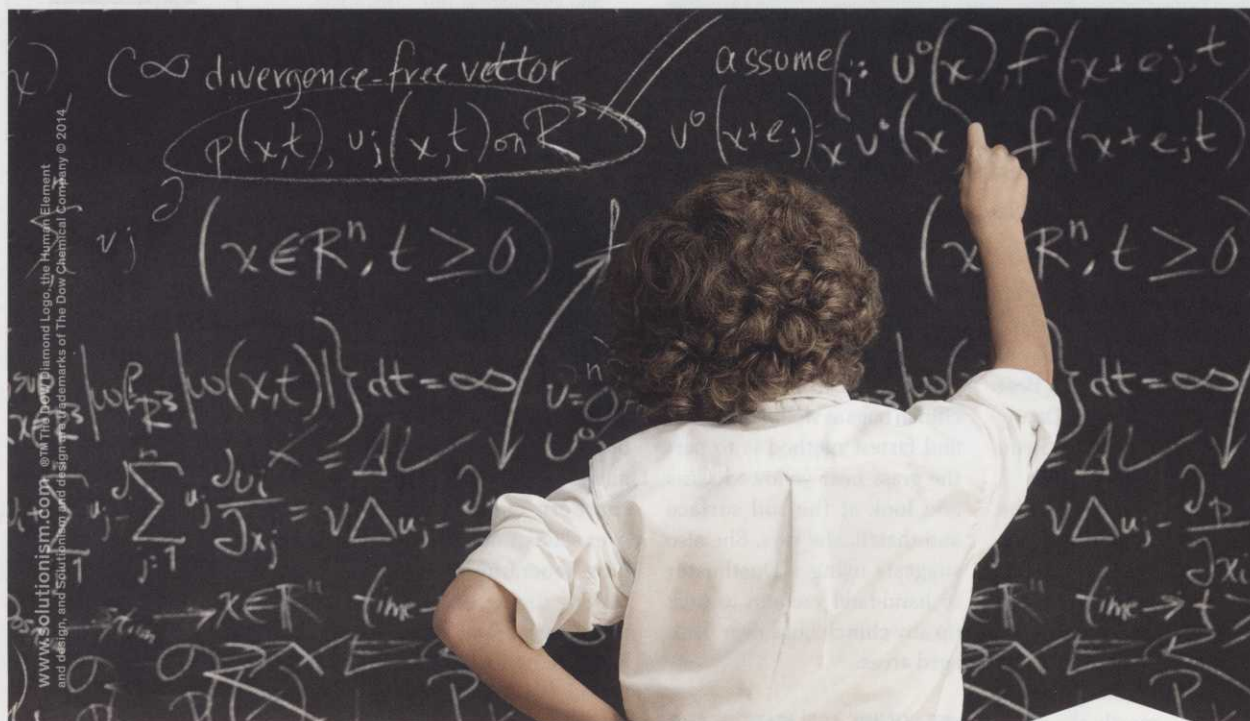
While pyrethroid resistance among southern chinch bugs remains, it's substantially lower than it was five to 10 years ago. And many professionals have found that tank mixtures of pyrethroids and neonicotinoids gives them good control.

Neonicotinoids such as Arena, Meridian and Merit "are very effective against chinch bugs," Ferguson says. "This

class of insecticide works very well and gives very good control of chinch bugs."

When a pyrethroid and neonicotinoid are used together, Ferguson says, the pyrethroid will give "a quick knockdown" of chinch bugs while the neonicotinoid will kick in and create longer residual control.

"One line of thought is that the combination is not a good idea, because the mixture is selecting for insecticide resistance in chinch bugs to both classes of chemistry simultaneously," Ferguson says. "So mixing a pyrethroid and a neonic is a good idea on one end and not such a good idea on another end."



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4 THE FLOTATION METHOD OF CONTROL WORKS

Inserting into the ground a coffee can with the top and bottom cut off may sound archaic, but even after decades of being practiced, this simple method still is the best way to count the chinch bugs in your turf and gauge the density of chinch bug populations, entomologists say.

Pound the can into the turf just far enough so it will hold water, then put water in it and

method.”

It's especially helpful in spotting young nymphs, and when you see between 15 and 20 of them per square foot, it's time to make a first application, he says.

Merchant says the flotation method was popular 25 years ago when he launched his career, and it's still reliable today.

If you don't see chinch bugs at first, “keep sampling,” Kline says. “Keep using that flotation



Dollarweed takes over a chinch-damaged area

use a probe to stir up the grass at the bottom of the water column. “It's the easiest way to find them. These insects float right to the top,” says Danny Kline, an entomologist at Penn State University.

In Pennsylvania and the Mid-Atlantic, tall fescues abound. Since hairy chinch bugs are drawn to them, the flotation method is a useful tool in catching chinch bugs early.

“They tend to attack fescues most of all – mostly the older fescues,” Kline says. “They’ll come out in the spring when temperatures average in the fifties, and the easiest way to find them is to use the flotation

method, and if you have them, treat them with pyrethroids.”

Buss says other methods can be used to find southern chinch bugs as well. The easiest and fastest method is to part the grass near yellowed areas and look at the soil surface and thatch, she says. She also suggests using a Dustbuster or hand-held vacuum to suck up any chinch bugs near damaged areas.

5 TIMING APPLICATIONS FOR HAIRY CHINCH BUGS IS EASIER THAN TIMING APPLICATIONS FOR SOUTHERN CHINCH BUGS

That's because northern chinch

For more online...

Looking for more information about chinch bugs? Check out the following online resources:

- “Research of Southern Chinch Bugs and Billbugs,” UF/IFAS Extension. Check out this YouTube video by entering bit.ly/1gzyShw into your browser.



- “Chinch Bugs in Turfgrass,” David J. Shetlar and Jennifer Andon – A four-page fact sheet published by The Ohio State University Extension. To access, enter bit.ly/1jwoJEU into your browser.



- “Resistant Turfgrasses for Improved Chinch Bug Management: University of Nebraska researchers document multiple chinch bug resistance in cool- and warm-season turfgrasses.” Tiffany M. Heng-Moss, F.P. Baxendale, R.C. Sherman, and T.E. Eickhoff – USGA sponsored research evaluates selected cool- and warm-season turfgrasses for resistance to chinch bugs in the Blissus complex, and documented the presence of multiple chinch bug resistance in these turfgrasses. To access, enter bit.ly/S0eKyO into your browser.

- “Chinch Bugs in Buffalograss and Zoysiagrass Turf.” This guide published by the University of Nebraska-Lincoln discusses the biology and management of western chinch bugs. To access, enter bit.ly/1gjnifY into your browser



- “Southern Chinch Bug Management on St. Augustinegrass” by Eileen A. Buss, assistant professor, Entomology and Nematology Department, University of Florida, Gainesville. To access, enter bit.ly/1jnZYI4 into your browser.



bugs tend to have more synchronized life cycles. The southern chinch bug, however, “has multiple overlapping generations each year,” making timing more difficult, Buss says. “Eggs laid inside leaf sheaths are physically protected from insecticides and hatch about seven to 10 days after being laid.” She adds that since southern adult chinch bugs fly only in extreme heat, populations may not move around much and inbreed.

While progress has been made in chinch bug control, further advances are needed. Buss, for one, says she would like to see new tools for chinch bug control make it to market.

While different strains of insect-pathogenic fungi have shown positive results in laboratory testing, she says, “...new chemistry that could be used in a rotation program would help turfgrass managers delay the development of insecticide resistance.” GCI

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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.

VANDALISM

Recent reports of incident evoke memories of defiant eras.

It seemed a throwback in time – media reports of serious vandalism on a golf course. This past April, a golf course in south central Wisconsin was targeted by thugs who caused serious damage that went beyond throwing flag sticks into a pond or defecating on a putting green. Golf cars were wrecked, equipment was destroyed and business was lost while staff put the facility back together. The criminals, if caught, will likely face felony charges. A golf course not far from there was vandalized a few weeks before, although the damage was not as serious.

In my experience, golf course vandalism peaked sometime in the early '70s through the '80s. Conversations with superintendents my age confirm that estimate, and subsequent generations tell me vandalism today is a rare event.

There was a lot of anger back in the '60s and '70s with the Vietnam War and the protesting that went with it. Sometimes this anger spilled over and was turned on golf courses, presumably trying to send some sort of message. Back then, many perceived golf (incorrectly) as a game of the well-to-do, and vandalism was a way to get back at them.

In the early '70s, our

16th green was essentially destroyed when covered with an agricultural herbicide that required excavation and removal of the top 16 inches. It was rebuilt, improved and covered by insurance money. It was also a wake-up call for all of us – and law enforcement – about how extensive and expensive golf course vandalism can be.

For a period of years, the first order of business each morning was a quick check of the course when I arrived to see how much damage we would have to repair before play started. Frequently, well-laid plans had to be modified to cleanup a mess or repair turf damage. It ranged from having our tree service send out a skyworker to retrieve a flag and stick from near the top of a tree to having to knit together an obscenity that had been carved into a putting green surface, hoping we could disguise the message.

At various times during that period, we hired rent-a-cops to patrol the golf course, which was nearly a waste of time and money. We convinced local law enforcement officials to increase their patrols and actually get officers out of the squad car once in a while. We installed extra lighting and had automatic locks installed on shelters (a fre-

“Maybe the vandalism problem I faced so often is now diminished in these times because our institutions and our society have changed. Young people seem more serious and less inclined to commit what they may view as environmental crimes.”

quent target). There were suggestions that we envelope the entire property in cyclone fencing, something that didn't happen because of cost and, of course, wire and bolt cutters. More than a few times, whenever I couldn't sleep, I would go to the course to do some patrolling on my own, always hoping I would not actually catch any vandals. I was fearful of inflicting some of my own justice, just like any former Army military policeman might be inclined to do.

We did catch a number of perpetrators and our experience led to a policy of supporting prosecution, juvenile or otherwise. Often the penalty was reimbursement for the damage, but we never let the vandal “work off” the damages. We didn't want that kind of individual in our sight.

Christmas was even a tense time. Our beautiful collection of evergreens was prime territory for those looking to steal a tree for a religious holiday.

Maybe the vandalism problem I faced so often is now diminished in these times because our institutions and our society have changed. Young people seem more serious and less inclined to commit what they may view as environmental crimes. I know that law enforcement has had a significant impact on the decrease of graffiti and less vandalism has coincidentally gone down as well.

And golf has undergone changes, too. I would guess it seems less of an elite game to society; credit things like the First Tee Program, competitors that look more and more like the population in general, and junior golf programs. Millions of kids have learned the beauty and value of golf courses.

Whatever the reasons, it is a bit of good news that has happened during a time when many aspects of golf have been headed the other way. Superintendents couldn't be happier about it. GCI



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by Steve Trusty

15

P

recise

19

K

now-how

Fine tune phosphorus and potassium in your turf with precision turf management (PTM).

Superintendents have practiced precision turf management (PTM) in rudimentary forms since the beginnings of modern agronomy. As such, greens and fairways are treated differently. When a superintendent recognizes different soils in specific areas, adjustments to applications are made to make sure the optimum amount of an input is applied to each particular area. Inputs include water, nutrients, soil amendments and plant health products. If a problem area is observed, treatments are determined to address that problem in that area.



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As the awareness of environmental stewardship increases, superintendents look for better ways to use inputs responsibly. As the public holds superintendents more accountable, the need to address concerns more accurately increases. PTM is one such tool. As our February cover story (see For More) pointed out, precision agronomy (PA) has been used quite extensively in agriculture for several decades. It is starting to gain interest as applied to turf (PTM) in a variety of applications.

PROS OF MAPPING

Today, improved GPS, sensors, multiple soil tests and new software allows superintendents to more accurately practice PTM. The site-specific information can be gathered and mapped for site-specific management, including determining fertilizer needs. When an area shows physical symptoms of nutrient deficiency, you are already behind. It will take much longer for turf to outgrow a deficiency than to respond to a need that isn't visible on the surface.

SPECIAL K

Phosphorus (P) and potassium (K) are the two most important elements to plant growth right after nitrogen (N). All plants need these elements to properly grow and turfgrass is no exception. The makeup of many soils includes enough P for established grass plants.

Some soils, especially sandy ones, do not contain enough P. It is a little different for new seedlings. Iowa State's Nick Christians says, "P is not mobile in the soil and the young plant's roots are not developed enough to go out and get it. The addition of P when seeding can be essential."

"Once the root system is established, the plant is very efficient about finding P in the soil," he adds.

According to Doug Soldat, University of Wisconsin, "P is most available at neutral pH (pH 7), so highly basic and acidic soils can be low in P." The only way to know for sure if more P is needed is through soil tests and, in some cases, support from tissue tests.

According to Virginia Tech's Michael Goatley, Jr., potassium is critical for water relations within the plant, serving as the "antifreeze" and "coolant" in plant cells.

"It has been positively correlated with improved drought and traffic tolerance in several studies," he says.

Turf managers have to realize that potassium fuels many processes within the plant, Carmen Magro says. "If we miss a single process that would have otherwise occurred if potassium was present at the right place at the right time within the plant, that has a great impact on the turf's performance," he says.

It is also important to ensure that the soil test interpretations are following the latest research results. "If the soil test says 'low' or 'very low' and the grass looks fine, have a tissue test to see how much of each is in the grass," Soldat says.

19

K

Phosphorus (P) and potassium (K) are the two macro nutrients for which this is particularly true.

PROACTIVE ENVIRONMENTALISM

Laws and regulations in parts of the country restrict use of many products. This is particularly true of phosphorus in areas with watershed issues. While some of these rules are not based on science, it takes science to justify the proper maintenance of the turf.

If soil tests indicate P is needed, it would be environmentally irresponsible to not apply the P, says Dr. Michael Goatley, Jr., professor and extension turf specialist at Virginia Tech. "However, any steps that can be made to ensure that P fertilizers are applied and remain in the turf canopy/rootzone are absolutely critical to protect water quality," he says. "Simple things like returning clippings, keeping them off any hardscapes, establishing low-input vegetation boundaries around water resources, spoon feeding P sources on highly leachable sand-based soils, collecting clippings at equipment cleanup sites and/or washing mowing equipment off in turf will all help."

PTM AND TECHNOLOGY

Carmen Magro, CGCS, Professional Ag, MBA, vice president at Stevens Water Monitoring Services, says as technology has grown, turfgrass managers

ENVIRONMENTAL QUESTION

Between the two, phosphorus has sparked the most concern. High levels can increase algae blooms in water ways and decrease water quality.

The problems can occur whether a fertilizer containing P gets into the water or grass clippings or other plant materials containing P find their way into it. "While turf fertilization is not a primary source of P runoff, our industry should continue to be leaders in environmental stewardship and use P fertilizer only when necessary," says Doug Soldat, University of Wisconsin.

Potassium has no negative environmental consequences, but as its price increases, it becomes more important to make sure you are not applying any more than is needed.

have a wealth of knowledge at their fingertips with only a few minutes of monitoring a day on greens, tees, fairways, or any other turf area of interest. With this technology, the demand for knowing these variables has grown in recent years, which has led to an increase in PTM.

"Being precise about what we apply and how we apply it should encourage everyone to utilize technology and techniques to allow for the precision to even take place," Magro says.

Soil tests are just one of the tools we use to determine P and K needs. Doug Soldat, associate professor and extension specialist, University of Wisconsin, says, "A soil test interpretation is only as reliable as the data behind it and we have a small amount of research behind our turfgrass soil test interpretations compared to the research that has been done in agriculture."

He adds, "Larry Stowell of PACE Turf, and Micah Woods of the Asian Turfgrass Center,

“Simple things like returning clippings, keeping them off any hardscapes, establishing low-input vegetation boundaries around water resources, spoon feeding P sources on highly leachable sand-based soils, collecting clippings at equipment cleanup sites and/or washing mowing equipment off in turf will all help,”

—Dr. Michael Goatley, Jr., Virginia Tech

have developed a system to determine what they call the ‘Minimum Levels for Sustainable Nutrition (MLSN).’ These minimum levels are substantially lower than the levels that are typically used for interpreting soil tests. The MLSN research suggests that we can grow healthy turf with less P and K than we thought.”

Magro adds, “If we are truly going to manage fertilizers and nutrients directly related to the turf’s true performance abilities, we need to know current conditions, trending conditions and variations across turfgrass sites easily and effectively. Managing turfgrass with precision turfgrass management practices in fertilization is still guesswork without insight to the needs, trends for needs or deteriorating issues.” He adds, “Remember that when we see symptoms on the surface or root system, those symptoms – whether discoloration, root/tissue loss, disease issues or just poor turf performance quality – resulted from some cause that occurred in the past few days, weeks, months or

even years.”

Remember, there are variables that affect the availability of P in the soil. Keep pH between 6 and 7 for best availability. P deficiencies are more prevalent in sandy soils, especially well irrigated ones. The pH may also be low in such soils. Mapping soil types, pH, organic matter to sand and other details will help you apply what you need just where you need it.

Precision applications in the proper places will help maintain a playing surface that pleases both players and financial planners. Not only will the turf grow better and provide superior biological filtration qualities, it may outgrow other problems, thus cutting back on the amount of additional inputs that would otherwise have to be applied.

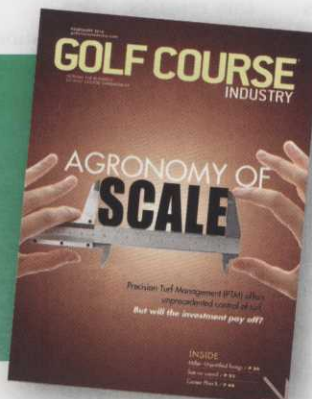
PTM is just one tool used to maintain turf in an environmentally responsible manner. **GCI**

Steve Trusty is a writer based in Council Bluffs, Iowa, and is a frequent GCI contributor.

FOR MORE

Check out GCI’s February cover story, “Agronomy of Scale” for more information on precision turf management (PTM). Just enter bit.ly/PnHJen into your browser to access the story.

Continuing the discussion of sustainability on the golf course, Dr. Micah Woods talks about the importance of using just the right amount of potassium. Enter bit.ly/1nuWszZ into your browser to access this podcast.



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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.

BUILDING A CASE FOR A BIGGER BUDGET

Three-step plan for getting what your course needs to present top conditions.

Your course needs a bigger budget to compete and meet demands for consistently top conditions. You could ask politely, but there's a better way. Here are three distinct steps.

PRE-SELL

Meet with management well in advance of the budget cycle to make sure you understand the facility's short- and long-range goals. Make sure your management knows the budget you're developing is designed to align with the direction it's taking the club.

Perhaps most important thing in this step is communicating that you remain dedicated to the club and will exceed expectations. In the days leading up to the budget presentation, have casual conversations with management about the work you're doing to analyze the competition. Let owners and managers know you've walked their fairways and met their superintendents and you know what the market requires.

DUE DILIGENCE

This is the heavy-lifting step because it requires that you develop a comprehensive agronomic plan that supports the quantitative and qualitative goals established by the board, the owners or the manager.

The budget you recommend should reflect that you have calculated every line-item. Don't guess. Have your assumptions and back-up ready to reinforce your recommendations. The budget also should reflect ways you intend to complement the club's high standards and member expectations.

What's more, the recommended budget should indicate a strong

understanding of the facility's strategy and competitive position. For example, if a goal is to raise green fees, then your budget should show what is required to improve course conditions to prove the value of the increase to members and customers.

Your due diligence should include feedback from focus groups comprised of key constituencies – women's group leaders, top players,

sound logic and anticipating changes that could affect the course and the budget during the year.

The plan you present should identify opportunities you have uncovered to accelerate goals and objectives, even if funding those opportunities stretch the budget. The budget should present – factually and not in a threatening manner – the consequences of underfunding.

“Describe what you want the course to look like, the types of compliments you want the course to earn, and the criticisms you plan to eliminate with your budget and actions.”

golf professional staff and longtime members – to learn what they expect from their experience.

THE PRESENTATION

The presentation might start with a review of the previous budget year, showing images that reflect the standards you will sustain and the challenges you intend to tackle in the next year. Present your budget proposal creatively. This is an opportunity to educate. Make your background and credentials (such as certifications) a part of your introductory remarks.

During the presentation, reassure management that you understand the facility's competitive position, long-term strategy and objectives. Also communicate that you understand membership and customer expectations and desires.

Show sensitivity to finite resources of people and capital. Communicate that you've taken a conservative, prudent approach to your budget, using

Describe what you want the course to look like, the types of compliments you want the course to earn, and the criticisms you plan to eliminate with your budget and actions. Show how changes to your practices – mowing fairways mid-afternoon to get golfers onto the course earlier in the day, for example – increases revenues.

When challenged, be appreciative of questions and the chance to clarify and inform. Don't take them personally. Instead, persuade the questioner of the importance of mission-critical actions. Set clear expectations and consequences. You might say, for example: “If we must make these reductions, I should reevaluate my plan to see how they will affect course quality and our ability to achieve the quality standards.”

The biggest reason budgets are not approved and people walk away disappointed is they don't respect what should be a disciplined process and the roles that various stakeholders play. **GCi**

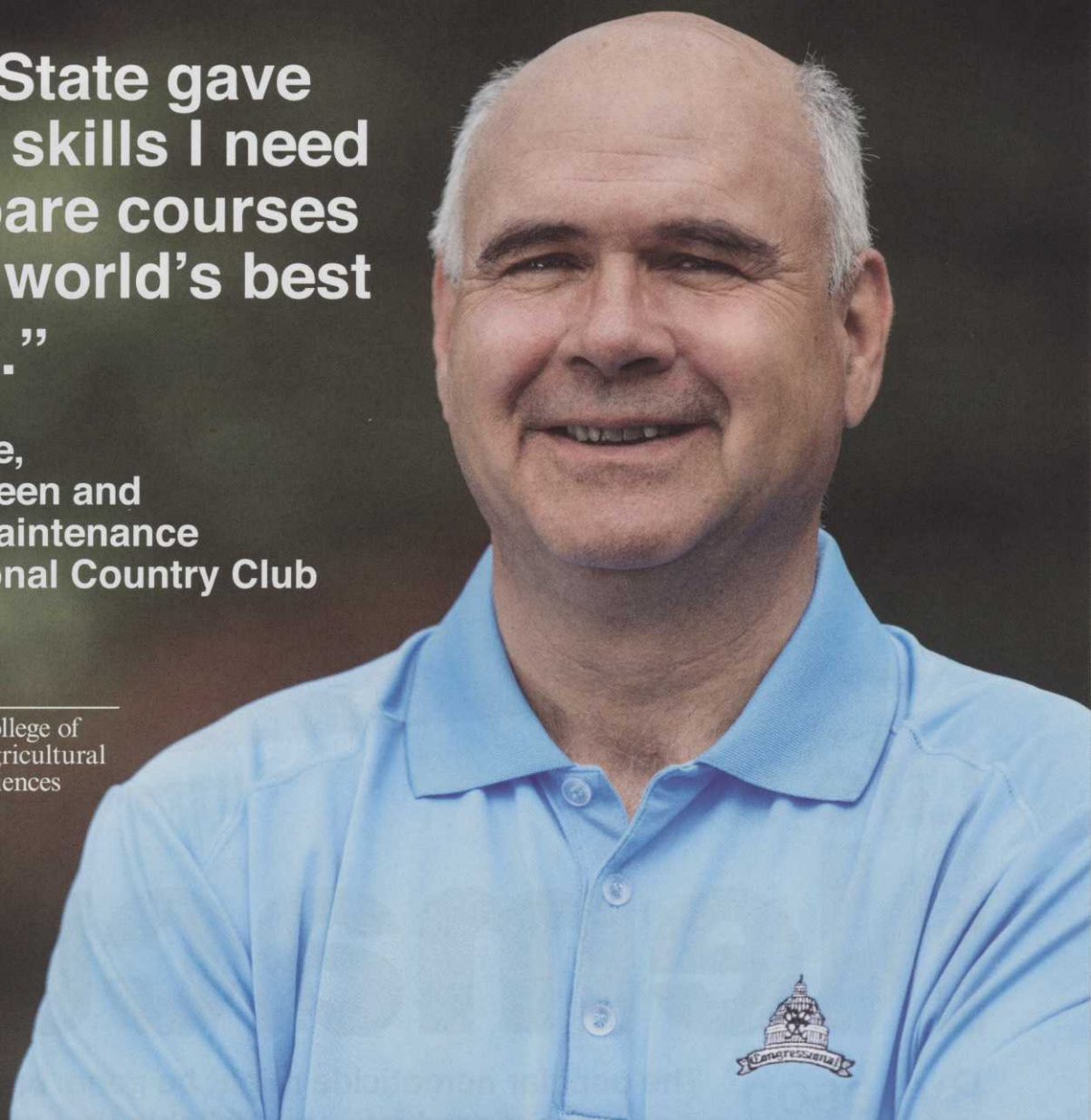
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Above-ground effects of sting nematodes – root feeding by high populations means the Bermudagrass can thin down to the sandy soil surface.



Life after Nematicur

By Jason Stahl

The popular nematicide might be gone, but a number of products are available that offer nematode control.

Superintendents who have used Nematicur to conquer their nematode issues no doubt shed a tear when the EPA banned it and began a three-year phase-out after a few applications too close to water bodies resulted in fish kills.

While existing supplies must be used by Oct. 6, alternatives have cropped up, creating a new generation of products to manage these pests.

Most experts, though, agree these products force superintendents to change their mindset, since they lack Nematicur's residual control. And none are considered a "silver bullet" capable of wiping out nematodes on their own. Rather, they're effective tools when used in a comprehensive program.

William T. (Billy) Crow, landscape nematologist at the University of Florida, has been researching new nematode

management options since 2000. One product he has found success with is Nordica, a biological from Bayer Environmental Science.

"I've had the best success with it as a seasonal preventative product," Crow says. "It's not good if you have a big nematode problem and it's June or July – it won't fix it. But if you put it out earlier, it will help prevent nematode problems during this stress period. I've

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PEST MANAGEMENT



Initial damage caused to Tifway Bermudagrass fairways by nematodes on a South Florida golf course begins in the spring and will continue to progress until midsummer. Bermudagrass thins and areas can progress to bare sand with time.

done a lot of trials with it over the last four to five years, and we consistently got improved root production applying it at the right times. And that's key for it to work well – applying it in early spring and early fall.”

Joe Steinlage, insecticide business manager for Bayer, says Nortica reflects Bayer's approach to nematode control. “We are more at a management stage of nematodes than we were with Nemacur or even Curfew to an extent, where Curfew can crash nematode numbers,” he says. “What we're now trying to do with these biologicals is protect the root zone in the presence of nematodes, as Nortica colonizes on fresh root growth and protects from nematodes feeding on the root tissue. None of these new products will be as harsh as Nemacur or Curfew, so we're trying to figure out how to incorporate the softer tools we have into a long-term solution.”

Crow advises superintendents who have had a history of nematode issues to apply a product like Nordica before the pests get active, stating the bacteria it contains produces metabolites that affect nematodes in different ways but mostly protect the

turfgrass root system.

“We have a number of more seasonal trials we've been conducting, but we've also been doing some longer term trials and getting really nice nematode suppression over a period of years,” Crow says.

Nordica will not offer a “quick fix” with significant short-term results. “People like to put something out, take a nematode sample and say, ‘Well, the nematodes are gone.’ But this product doesn't work that way,” Crow says. “It prevents the nematodes from feeding, and over time they'll start decreasing, but you won't see a big, immediate kill. In our trials, we consistently got improved root systems and, in the longer term, nematode suppression.”

When developing a nematode IPM program, Crow considers Nordica a foundational thing to do. “You put this out and help prevent nematode problems from developing later,” he says. “But you do have to use it more preventively. For everything we've done, when you put it out in the nematode stress period in summer, it doesn't work that well.”

Syngenta's Avid is another product Crow has found success with, although

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TIA?

it is not labeled for every state. In states where Avid can be legally used, it does well on putting greens, he says. Its active ingredient is found in a number of insecticides, but it also works well as a nematicide. However, it doesn't move well in soil, and is one of the reasons it had never been used to control nematodes in the past, Crow says.

"Syngenta started using it as a treatment for crop seeds, where it would coat the seed and protect the germinating seed for a period of time and let the plant get a jump on nematodes," Crow says. "But I've been getting good results on Bermuda greens in Florida

in controlling nematodes in the top two inches of the soil. It doesn't do much for nematodes that are down deeper than that."

Avid should be mixed with a wetting agent and watered into the soil immediately after application, says Lane Tredway, Syngenta's southeast technical manager.

"When we do that, we can get it down into the profile, nevertheless most of the nematode activity lies in the top inch or two of the profile," Tredway says. "That's where the majority of turfgrass roots are concentrated in the first place."

Unlike Nordica, which is a preventative, Avid works well

in summer stress periods. Crow recommends applying it when nematodes are at their worst.

"I do recommend applying it with a good soil penetrant to help it move through the thatch and get into the soil," he says. "But even with that, most will get caught up in the thatch and not much will get down into the soil. That's why we have to apply it at a high rate compared to what's used for controlling insects."

Crow recommends four sequential applications at two- to three-week intervals where enough of it can get down into the soil to control nematodes in the top two inches. Because of this, it will likely only control

root knot nematodes as they tend to stay in the top of the soil, but when July and August arrive and stinging nematodes go deeper into the soil, Avid won't work as well.

Avid is a product naturally derived from soil microorganisms and is permitted for usage in 16 states. The label recommends usage in two- to three-week intervals. Avid is legal in Florida as a restricted-use pesticide and must be purchased as part of the Avid and Heritage Multipak.

"It's a unique product," Tredway says. "It's very safe for the environment and has a very good environmental toxicology profile. At the same time, it's

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Below-ground effects of sting nematode – the roots are shallow and are necrotic/brown in color (dysfunctional and/or dead).

very potent against nematodes. It gives superintendents another tool to combat them. It is best used as a preventative, when nematode populations are low to keep them suppressed in the root system."

For something that does work deeper in the soil, Crow recommends MultiGuard Protect, a nematicide that contains furfural, a byproduct of sugar processing. "It's not water soluble, but the trick with the MultiGuard formulation is they've been able to get it to go into an emulsifiable suspension that you can get into water to apply it and get it down into the soil," he says.

Brandon Green, a technical specialist for Agriguard, supplier of MultiGuard Protect, says the product is a contact nematicide. "When MultiGuard, active ingredient furfural, comes into contact with the nematode, it quickly begins to

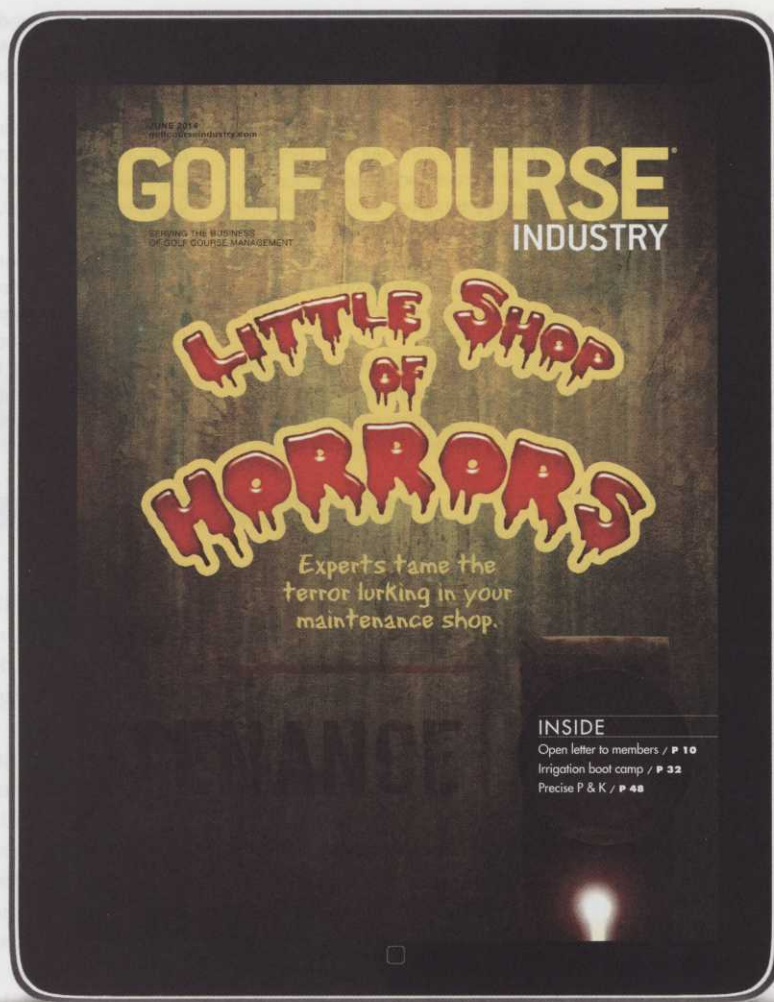
breakdown the cuticle layer," he says. "Cuticle degradation from furfural is the primary effect. The secondary effects that follow include reduced nematode respiration, movement, reproduction, and dehydration. Ultimately resulting in mortality and thus allowing the treated turfgrass to recover root mass and canopy density."

Unlike Avid, MultiGuard Protect tends to work better deeper in the soil. According to Crow, a single application won't do much, so several applications spaced at three-week intervals will generate better results.

"It's not the most consistent product, and if it's not applied properly, you can have some phytotoxicity with it, so I encourage superintendents to play with it a little on a nursery to get familiar with how to use it," Crow says.

Pre-wet the treatment area, about a ¼

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Nematodes: No Longer Just a Southeast Problem?

Nematodes have traditionally been a common problem in the Southern/Southeastern United States, but they apparently are becoming more of a nuisance in the Northern U.S., even Canada, says Rob Golembiewski, Ph.D., Bayer Green Solutions Team.

Why? It's not like they just miraculously appeared – they have always been there. But Golembiewski has a theory.

"A lot of it has to do with some of the heavier metal-type products used years ago and the residual activity on those. Even some of the older, harsher insecticides may have had an impact on nematodes," he says. "In my mind, in the northern tier, nematodes are becoming a stress no different than heat,

drought or disease, and superintendents need to be aware of it."

Golembiewski relates that as Bayer made its product available in the north last year, superintendents remarked that they didn't have a nematode problem. But by the end of last year, as he revisited those regions, a number of superintendents said they had thin turf that never fully responded to management programs and found they had nematodes after testing. Golembiewski then recommended a dual approach to these superintendents for controlling nematodes.

"You need to look at something that might have more of a knockdown effect if, in fact, you're not on a preventative program. You will have to look at something that will at least

arrest or put nematodes in check, but then also look at other biological products that can be incorporated into a regular management program."

After making their product available in the north last year, Golembiewski claims that while superintendents didn't apply it as early as they would have liked, they saw "phenomenal" response.

"One hundred percent of those who followed our guidelines said they intended to use the product again this year," he says. "Superintendents who are being proactive and getting out in front of this and incorporating these biological agents in their regular management programs are more likely to see success this season."



Warm-season turfgrass is highly susceptible to sting nematode damage because of large parasitic nematodes that will shorten the root system and reduce its ability to function normally by feeding at root tips.

inch, then don't irrigate again for 24 hours, Crow says. And don't put it out before a big rain because additional water will dilute the material.

"It has worked well for us in numerous trials," he says. "But again, it's not the most

consistent product. In some situations, it works well, and in others, not so well."

Since the loss of Nematicur, Green says no products have been introduced that do not have inconsistencies. Accurate pre- and post-irrigation is

"absolutely vital" to success. "One application doesn't quite provide season-long control," he says. "MultiGuard Protect requires more of a program-based approach. This is why we recommend three applications in spring and three in the fall, with applications being three weeks apart."

Ultimately, it comes down to where you're at, what nematodes you have and what they're doing, which is something Crow and his team are focusing on right now in their trials. "We're trying to see what the nematodes that we're trying to control are doing, and then use the products that work in that time of year on those particular nematodes," he says. "It's not just one thing that works best all the time."

Crow is concluding a three-year, USGA-funded trial examining calendar-based IPM programs where Nordica was

applied in late winter, MultiGuard in spring and Avid in fall. So far, he says the approach is yielding excellent results.

New products are forcing superintendents to alter their thinking, says Rob Golembiewski, Ph.D., Bayer Green Solutions Team. "None of these new generation products will have the soil residual activity Nematicur used to have, which means you'll have to make multiple applications or continue to reapply if you want to suppress, manage or control the nematodes to some extent. It's really about changing the mind-set of what superintendents used to do based on what these new generation control options can do. They will have to be part of a regular, ongoing agronomic program, no different than what you would do for diseases or other turf pests." **GCI**

Jason Stahl is a Cleveland-based writer. GCI's Guy Cipriano contributed to this article.



A solid solution

By using one pervious bunker liner, a superintendent explains how he solved an important problem on his course.

By Molly McNulty

The bunkers at Atlanta Athletic Club's Highlands Course are designed to championship caliber, with very severe, angled faces.

After a heavy rain or irrigation cycle, superintendent Tyler Andersen noticed the moisture would run off the faces and settle at the bottom of the bunker. The bottoms would then become wet and compact, while the faces would dry out and become fluffy.

As the sand dried on the face, mixed with disruption of play, the ball would embed on the angled slope of the bunker.

"As a staff, we needed to find a way to retain moisture in the faces of the bunkers so golf shots would hit and release

to the bottom of the bunker," Andersen says.

Andersen shares the process of finding a solution to this problem, long-term results and return on investment.

HOW DID YOU LEARN ABOUT THIS POTENTIAL SOLUTION?

We heard about the [Capillary Concrete] product in December 2012. They were having a demonstration at a golf course a couple hours away from

us. They had the mixture, all the aggregate, and actually installed the product into the bunker right there. We saw how easy it was to install on site. We were very interested in its moisture retention capabilities and how well the product worked on severe slopes.

WHAT WAS YOUR DECISION MAKING PROCESS IN CHOOSING THE PRODUCT?

We'd tried everything you can

"As a staff, we needed to find a way to retain moisture in the faces of the bunkers so golf shots would hit and release to the bottoms of the bunker."

—Tyler Andersen, Atlanta Athletic Club

possibly think of. So when we saw how Capillary Concrete could potentially solve our moisture problem on our bunker faces, we jumped all over it.

We did our first trial bunker – the most severely sloped – last July. It was the most notorious, problematic bunker for us. We felt like it was a good test run to try it on that bunker. We did a six-month trial before bringing it to our board of directors.

WHAT WAS THE COST – IN DOLLARS, TIME AND LABOR TO –IMPLEMENT THE PRODUCT?

The total project cost was about \$50,000, including labor, product and material costs, sand, drip irrigation tubing, wiring and miscellaneous costs. It was \$17,000 to \$18,000 for the entire amount of the product we used. Overall, it was less than we thought we would spend. We were able to achieve a lot more by spending a lot less.

WHAT'S THE RETURN ON INVESTMENT?

It would be safe to say that the return is fairly rapid. Not necessarily monetarily, but in terms of saving on the maintenance of the faces and on member satisfaction. You see a very quick return in terms of both of those things. And, I'm not so sure you can put a price on member satisfaction.

IF YOU HAD TO DO IT OVER, WOULD YOU DO ANYTHING DIFFERENT?

I don't know if we would do anything differently because of how well it's helped solved our problems. I'm interested to see its life expectancy. Does it last 15 to 20 years? But as of now, it's helped us solve a very demanding bunker problem. GCI



Travels With Terry

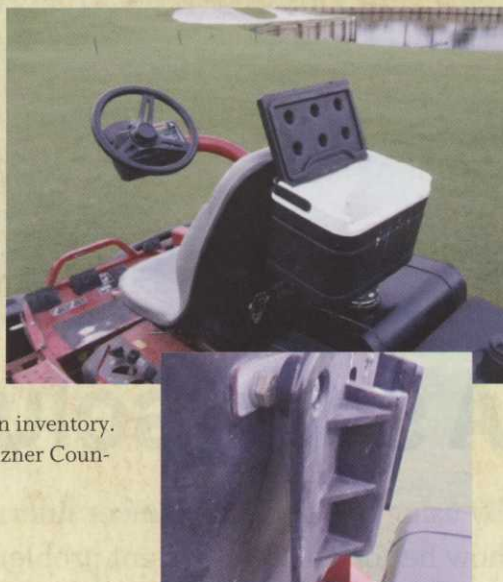
Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He shares helpful ideas relating to maintenance equipment from the golf course superintendents he visits – as well as a few ideas of his own – with timely photos and captions that explore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



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

EMPLOYEE BEVERAGE COOLER

The Club Car Caddy Master Beverage Cooler measuring approximately 10 by 7 by 10 inches (\$82) is mounted behind the operator's seat on the 2010 Toro Greensmaster 3000 Series Triplex greens mower for easy access. It has an excellent capacity for keeping employees bottles/cans and ice cold throughout the work day. The plastic cooler sleeve is bolted to the homemade metal bracket with sheet metal screws. The metal bracket is then bolted to the seat frame after the backrest cushion is removed. The plastic mounting sleeve allows the cooler to slide on and off for easy cleaning and refilling and for transferring it to other maintenance equipment. It took about two hours to build and the materials were in inventory. Erik Knudsen is the golf course superintendent at the Mizner Country Club in Delray Beach, Fla.



MODIFIED BACKHOE BUCKET

This 1980s Ford 500 Loader/16 Foot Backhoe Bucket was modified so that undesirable vegetation growing along the edges of the lakes and creeks could be removed easily. The frame is made of 2-inch metal angle iron that is about 3 feet wide and 3½ feet at its highest point. The stainless steel grates were recycled drainage grates that will not rust in the brackish water conditions and they were welded to the metal angle iron frame. The grates do a great job on the bucket of letting the lake and creek water drain through while holding the undesirable vegetation, which is then placed into a dump truck or turf truckster. It costs about \$100 for materials and about five labor hours to build. Anthony R. Persaud, golf course superintendent, at the North Sound Club in Grand Cayman, Cayman Islands. **GCI**



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

DIRTY LOVE

Last month in this space I penned a love letter to Mike Rowe, the ubiquitous TV and voiceover guy. To my utter amazement, he wrote one back to me. Here's the story:

I chose to write about Mr. Rowe because he'd caught my attention on Facebook with a remarkable reply to a young man seeking career advice. I also chose to write about this because it offered me the opportunity to quote his reply at length, thus filling much of the column. Some would call this practice laziness or even plagiarism. Me? I like to think of it as Hamburger Helper for busy writers.

Anyway, I wrote the thing, admired it for a moment, sent it to press and then got back to my regular dirty job.

A few weeks later I opened Facebook and started casually scrolling down until I noticed a post from Mr. Rowe. I was, as our friends across the pond say, gobsmacked:

I don't golf. Nothing against it, I just never got into it. Every so often I'll go to the driving range, drink a few beers, and aim for the guy in the cage who drives the tractor around, but that hardly qualifies.

However, my friend Scott loves to golf. He plays every day, and subscribes to magazines like *Golf*, *Golf Digest*, *Golf Magazine*, *American Golfer*, *African-American Golfer*, *Women & Golf*, *Golf Weekly*, *Golf Monthly*, *Golf Tips*, *Golf Getaways*, *Golf International*, *Golf World*, and *Today's Golfer*. He also subscribes to several publications that chronicle the internal workings of the golf course industry. I'm referring of course, to "*Golf Course Industry Magazine*," a publication that's "leading the on-line revolution in course management." (To be honest, I had no idea a revolution in golf course

management was underway, but the world is a tumultuous place, and it's hard to keep up.)

Anyway, Scott just informed me that I'm the subject of a very flattering article by Pat Jones, which appears in the current edition. I've just read the article, and Scott's correct - it's very flattering, and I want to thank Pat for including me in the magazine as well as the revolution. His article is based on my answer to a kid named Parker who asked for some career advice on this very page. For whatever reason, my reply struck a chord, and for the last few weeks my words have popped up in some rather unlikely places. But so far - this is my favorite.

<http://www.golfcourseindustry.com/gci0514-simple-hard-work-reward.aspx>

Thanks, Pat. I appreciate the kind words.

Sincerely,

Mike

PS. Keep your head down, and swing through your hips...

PPS. One slight correction, if I may. You write that I'm a "big fan of the Green Industry." In fact, I am not. I'm a strong supporter of environmental conservation, responsible stewardship, and all forms of energy. But I am not aligned with the color green, and somewhat skeptical of the industry that's grown around it. In fact, I prefer brown...

My first reaction, honestly, was "Holy sh*t!!!" This guy I admire very much had just given me the best back-handed compliment in front of his (get ready for this) 1 million Facebook followers. The post was shared more than 1,800 times and we had 30,000-plus views of the article on our website over the next couple of days.

About 96 percent of the comments

on his post (there were 1,150 of them) fell into one of two categories:

"Mike Rowe is a total hunk!" - This came from women (presumably) who loved the accompanying pic of Mike wearing a very eclectic golf outfit.

"Mike Rowe for President!" - This from lots of folks, who, like me, think he is a voice for common sense, hard work and good American values.

A few folks said nice things about my column, particularly my throw-away line that "This country needs way less Kim Kardashian and way more Mike Rowe." Not a bad turn of phrase, in retrospect. Even a blind hog finds a truffle once in a while.

Clearly, Mr. Rowe got a kick out of the fact that his original words had weirdly found their way into a golf course maintenance publication. However, he gently took issue with my statement that he's a friend to the "Green Industry." That is true if he doesn't like the big business side of our community. I am, however, positive that he is very much a friend to folks like you who do the dirty jobs associated with professionally managing, preserving and enhancing the American landscape.

What struck me most about the whole experience was how completely random it was. One minute I'm wrapping up a mundane day of slogging through sales spreadsheets and performance appraisals and the next minute I'm watching something I wrote blow up on Facebook. Go figure.

So, allow me to say thank you Mike for the lovely shout out, the kind words and the awesome traffic spike on the GCI website. And, best of all, thanks yet again for providing me with some yummy Hamburger Helper for another past-deadline column! GCI

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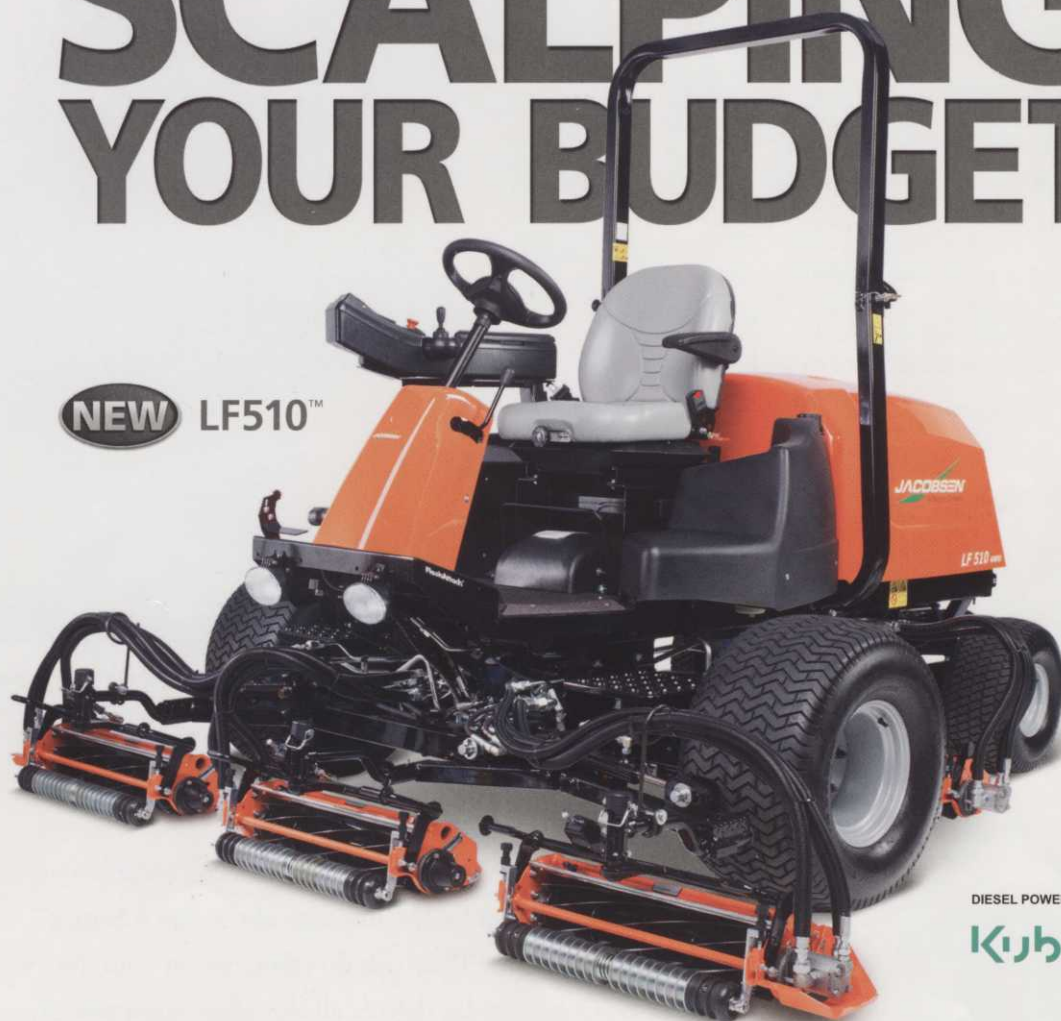


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