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OCTOBER 2012  
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# GOLF COURSE<sup>®</sup> INDUSTRY

SERVING THE BUSINESS  
OF GOLF COURSE MANAGEMENT

## CAN YOU DIG IT?

GCI's exclusive research on trends  
in renovation and construction.

### INSIDE:

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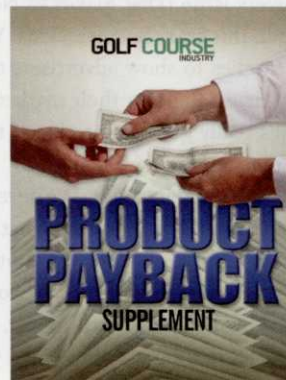
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## LOOKING AHEAD

The last three years have been a helluva lot of fun here at GCI's intergalactic headquarters. As I'm planning for next year and thinking about what we've done well and what we can still improve on, here's my scorecard for how I believe we're doing.

Serving readers is the bottom line for any magazine, so it's always at the top of my list. What have we done to help you do your job and live your life better? Well, for one thing, we've tried to make GCI reader-driven – quite literally. The vast majority of our print and online content is written by current and former superintendents and other experts who have their feet on the ground in the market every day. It's all about relevancy and hitting the topics you guys are really concerned about agronomically, professionally and personally.

I wake up every day feeling absolutely gobsmacked that we've attracted the likes of Bruce Williams, Tim Moraghan, Henry Delozier, Dr. John Kaminiski, Monroe Miller, Dennis Lyon, Terry Buchen and Ron Dodson to our editorial team. Those voices, that experience and their willingness to tell it like it is have been key to our success.

It's paying off. I'm very proud to say that in a readership study done last month, we learned GCI has the best cover-to-cover readership in our market. Nearly 47 percent of you said you read GCI cover to cover and 53 percent of you read every issue. That makes us No. 1 in readership in this crazy business, kids. Yes, we do those studies to show advertisers that GCI is a great investment for their marketing dollars, but it's really gratifying to know that what we're doing appeals to you guys.

We are in the content business. We develop great information and then figure out what the heck to do with it. In the old days, the content business consisted entirely of print. We would write, edit, print, mail and repeat. Now, we have at least a half-dozen platforms to get you info: print, website, digital edition, mobile app, social media, e-newsletters, video, podcasts, etc. The Superintendent Radio Network is a perfect example. Who knew that so many of you would use an iTunes-based network to

feed your brain with short conversations with experts and authorities around the industry? Love that thing!

In the next year, you'll also see us creating iPad-based publications for golf and the other markets our parent company, GIE Media, serves. In our most recent study of how superintendents use digital toys, we found 40 percent of you have an iPad or table device. The experts on such things tell us that will climb to 75 or 80 percent within a couple of years. If you're one of those folks who already has an iPad, go to the App Store and download "A Garden Life," a publication we developed for the garden center market, to see what the future looks like. It will blow your mind.

And that commitment to using communications technology is also paying off. In the same readership study, you guys said GCI is the leader in digital and web communications by a 2-to-1 margin over the closest competitor. Nice!

It's all too easy to sit in Cleveland or wherever and pretend we know what's happening in the market. Instead, we get on airplanes and come to you. We attend a ton of

conferences, regional shows, chapter meetings and national events just to listen to what you guys think and track the trends and topics that matter to you. We also brought readers into our offices this year to get their candid opinions about what we do well and what we stink at. The consensus was that we're at our best when we're leading the market and talking about topics no one else will touch.

The other way we connect is through social media. People think I spend my day on Facebook and Twitter. I wish. Instead, it's something our entire team does in little dribs and drabs throughout the day. But it's our job to stay on top of what's going and break news when it happens. But, social media also lets us bond with readers we haven't even met yet and create relationships that lead to great stories.

I'm perhaps most proud that the readers said GCI is their No. 1 source for new ideas, opinions and trends. That means we are connecting and that means we're doing things right. In the end, that's all that matters. GCI



**Pat Jones**  
Editorial director and publisher

# GOLF COURSE INDUSTRY

Serving the Business of Golf Course Management

Vol. 24 No. 10

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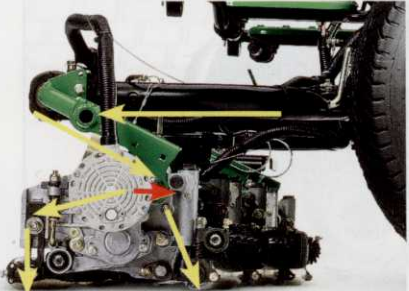


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## Remembering Stan

*EDITOR'S NOTE: News of Stanley Zontek's sudden passing in late August came at the very tail end of the September production deadline. Publisher and editorial director Pat Jones had just enough time to re-author his Parting Shots column to pay tribute to his friend. Pat's column generated a lot of feedback.*

I just wanted to let you know that I enjoyed your story about Stan Zontek. It is a tragic loss for our industry. We all loved Stan. Thanks so much for your kind words about our fallen brother.

**Mark Kuhns, CGCS**  
Baltusrol Golf Club  
Somerville, N.J.

All I can say is extremely well done. Thanks, Pat... tear in eye and gratitude in my heart.

We were lucky to have him and "The Game" was certainly lucky to have him.

**Kevin Davies**  
KDS Marketing  
Chester Springs, Pa.

Great article in Stan's honor. As always, you did us proud. Stan had a silver tongue... you, my friend, own the silver pencil.

**Matt Shaffer**  
Director of golf course operations  
Merion Golf Club  
Ardmore, Pa.

Your piece on Stanley was nicely done and reflected what he was about. He would have truly enjoyed and appreciated it.

**Kimberly S. Erusha, Ph.D**  
Managing Director  
USGA Green Section

You can read Pat's column, "For Stanley" by entering [bit.ly/PqNBzo](http://bit.ly/PqNBzo) into your Web browser.

## To make a donation

Stan Zontek's family has chosen a private burial in Cape May, N.J. Donations in Stanley's memory may be made to the following organizations:

### American Diabetes Association Stanley J. Zontek Memorial

PO Box 11454, Alexandria, VA 22312  
1 (800) 232-3472  
[www.diabetes.org](http://www.diabetes.org)

### PA Turf Research Innovation Fund Penn State University

c/o PA Turf Research Innovation Fund  
240 Agricultural Administration Building  
University Park, PA 16802

### The Turfgrass Information Center (home of the USGA Turfgrass Information File)

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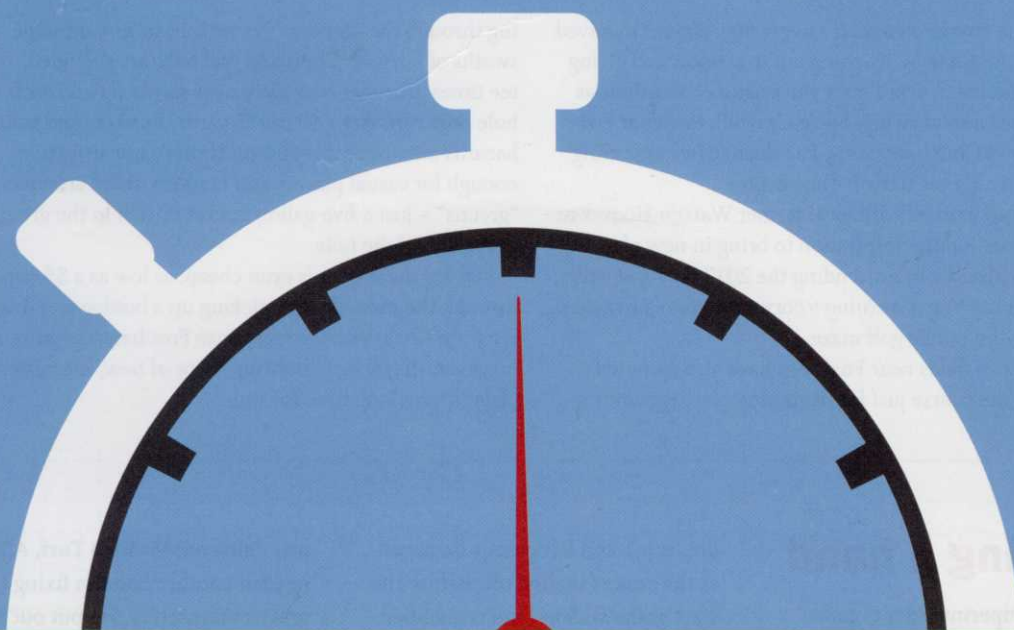


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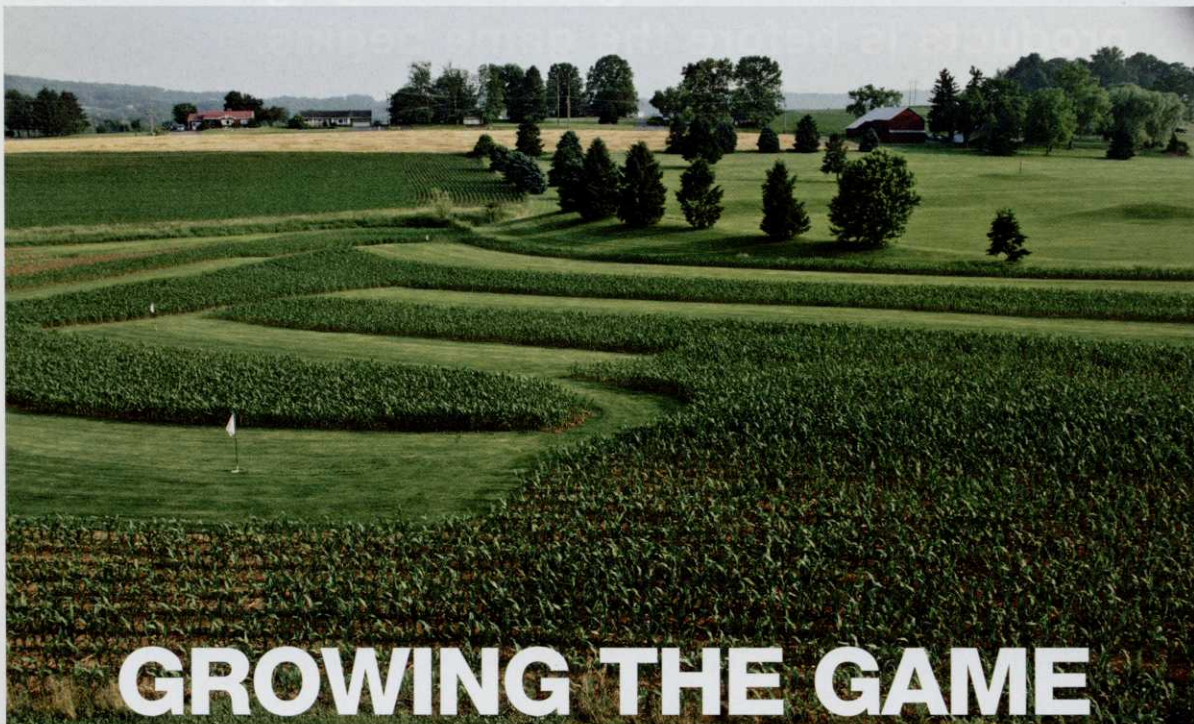
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\*Plant performance assumes the presence of disease pressure.

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## GROWING THE GAME

**S**ome course owners try to get new players involved in the game by reaching out to schools and giving kids a chance to experience the pristine conditions as they learn a solid swing. Steve Graybill, owner at Foxchase Golf Club in Stevens, Pa., does so by combining golf with a classic harvest-time event.

Graybill worked with local farmer Warren Hoover to put into action the inspiration to bring in new players he realized while attending the 2012 Golf Industry Show in Las Vegas: turning a corn maze into a five-acre, open-to-the-public golf maze.

The corn fields near Foxchase have also sprouted a nine-hole course just for beginning players, wind-

ing through the scenic stalks with 10 to 15-yard-wide swaths of fairway. Clubs and golf balls are provided, tee times are whenever the player shows up and each hole only runs from 40 to 125 yards. Bunkers and water hazards are noticeably absent. If that's not attractive enough for casual players and families, there aren't any "greens" – just a five-gallon bucket buried in the ground at the end of the hole.

Playing the course is even cheap, as low as a \$5 trip through the nine, though picking up a hotdog and drink is a little extra. With the response Foxchase has gotten, however, they'll be harvesting crops of new, interested players for a long time to come.

### Lending a hand

**A**ussie superintendents came together in support of a golf club that was vandalized earlier this year, helping to replace damaged turf. Victoria's Drouin Golf Club lost six greens when they were sprayed with Arsenal Xpress back in April.

Though superintendent Jason Allan tried to help the course weather the chemical onslaught, the herbicide

did its job and left greens damaged as the winter melted off. Before the start of the season (you remember that spring begins in September in Australia, right?), the club had to make the difficult choice to do some resurfacing.

Allan first got help from the National Golf Club, which donated more than 30,000 square feet of bentgrass turf, worth more than \$40,000. Once the replacement sod

was delivered by Anco Turf, Allan needed another hand in fixing the greens themselves. He put out a call for help, and more than 50 turf pros from area courses and volunteers showed up to make short work of turning the course green again. Not only were the greens repaired, volunteers also laid out the new 19th green, which had been in construction but stalled thanks to the vandalism.

# Catnapped?

There are scads of dogs riding along with superintendents, but cats have been earning their keep on the course for just as long.

But the disappearance of one feline has one golf course in a frenzy recently. The Palmira Golf Course in St. John, Ind., has more than 30 course kitties, keeping tabs on the small pest population and being friendly with players – they're all rescues, residing in the course's maintenance area.

"We take care of them," says Kelly Nicpon, course owner. "If we've got a cat on the property, we'll catch them and get them fixed. A lot of the time, the vet will clip their ear for us so we know if they leave and come back."

Among the clowder is Muffins, a white short-haired cat who hops up on golf carts for a ride or poses for a photo.



That is, she did until she vanished from the course earlier this season.

Though cats are known to wander, Nicpon suspects foul play. Out of all of the Palmira cats, none has ever been picked up by a predator.

"We think someone took her," says Nicpon, "because she was very affectionate. She would sit on a green or jump on a cart with somebody. She'd get on the tractors with the guys, sit on their laps and mow the lawn with them."

On July 8, before Muffins (also called Snowball) disappeared, the course received a phone call from a mysterious woman who was concerned that the cat was a stray. Nicpon says they reassured the caller that Muffins had a caring home – even in the past winter, they had arranged to have a tumor cut from her ear, leaving her with a very distinct look.

The very next day, the normally gregarious cat was nowhere to be found. Superintendent Bill Zientara let Nicpon know right away when one of his favorite cats was missing. They started by contacting press to get the word out when they remembered the woman on the phone.

Nicpon tried to go through the call log from the past day to track down the mysterious caller to follow that lead, but the number had vanished into the mass of phone calls the course receives daily. They've gone so far as to subpoena AT&T to discover the caller's number, and are waiting on that information to try to confront the potential catnapper.

"It's been in the paper, on Facebook, on the radio," says Nicpon. "Our next step is just to try to call the people who called and see if it was this woman or not. I don't know what will happen. Maybe she'll have a change of heart."

## If we told you... Well, we'd have to kill you

You wouldn't believe some of the new John Deere equipment and turfcare innovations GCI was privy to during big green's exclusive 2012 Feedback event.

Deere brought equipment dealers and golf course superintendents from around the globe to Duke University Golf Club to give their no-holds-barred opinions on five areas of turf equipment in various prototype stages. For example, it was super cool to ride a prototype of a... Okay, we've been sworn to secrecy about that. Regarding quality of cut, what knocked our socks off was the... Actually, our lips are sealed about that, as well, and if we say more Deere's product engineering team will probably put a hit out on us.

We did get Mike Koppen, Deere's product line marketing manager, who said, on the record, that the feedback events are extremely helpful in assisting Deere on the innovations they eventually bring to market.

"What we learn through these feedback sessions is whether we're 'go' or 'no go' on a lot of these innovations," he says. "We're also at an early enough stage on some of this equipment so that, depending on the feedback, we can go back and make the necessary changes before we introduce the equipment to another focus group at another time over the next year."

As for the health of the overall industry, Koppen says there's a lot of cautious optimism among superintendents and equipment dealers.

"2012 has definitely been an interesting year for the golf industry and for superintendents and dealers," Koppen says. "All indications are that rounds are up and supers are looking to make equipment investments. We're (forecasting) a steady climb, but (spending) will never be what it once was.

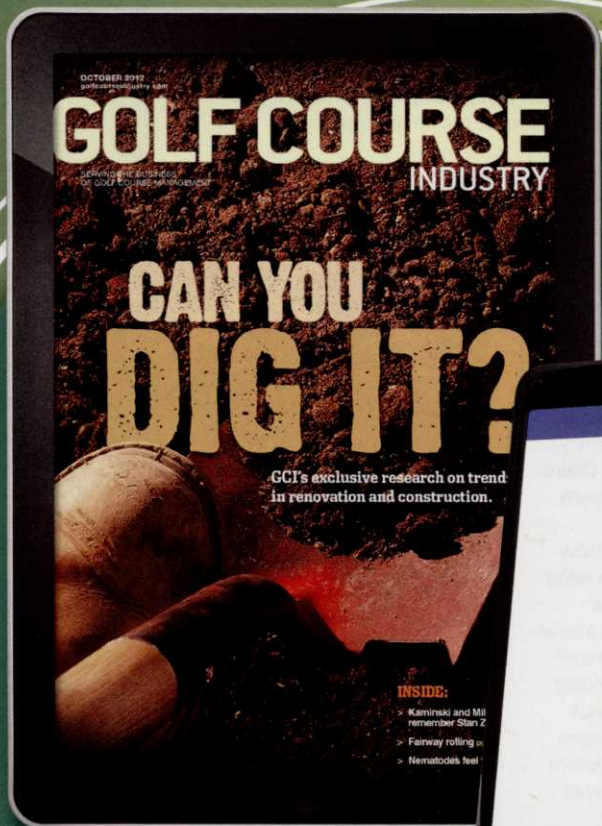
"Again, a lot of this remains to be seen," he added. "However, we're remaining optimistic."

Tier IV – the transition to new diesel emission standards – is this fall's hot equipment topic, Koppen adds.

"Each of the manufacturers are handling (Tier IV) in their own way," he says. "Deere has been working with other components of our enterprise – like our agriculture division – that have already gone through this transition. The bottom line is that the engines you're going to see in the future are fuel efficient and will have more electronics in them because you need to govern all of that exhaust before it's released. We'll be working with all of our dealers to train them and get them up to speed. The days of the simple diesel engine are gone."



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

## WE PLAY GOLF, THEY PLAY PERFECT

The calendar year is almost done, the “race to the FedEx Cup” is over, and it recently occurred to me that for the past 12 months I have seen nothing but perfect courses being attacked by the world’s best players. Is this really golf?

Think about it. The pros travel with entourages that include personal trainers, chefs, swing coaches, mental gurus, and a convoy of club and ball manufacturers who regularly tweak and refine the equipment that these golfers use. Their every request is answered, every wish fulfilled.

While it gives me hope that I might one day hit just one shot as purely as they strike nearly every one, their skill and privilege cause me to pause and consider: Is this really golf? Could the game’s finest actually play on the same types of courses and under the same conditions you and I face each and every round?

If you tuned in any week of the year, be it the smallest-market event or one of the majors or the Ryder Cup, you were witness to the results of heroic efforts put forth by superintendents and crews who were able to create excellent playing conditions. Not a week went by that we didn’t see – and they didn’t play – perfect conditions (weather permitting, and even then, a challenged course was given time to heal while the golfers were able to repair to the dry, warm comfort of a locker room).

I see these phenomenal players and perfect courses and I’m motivated to get out there and play myself. But what I have come to realize is that while they may be playing perfect golf, it is not real golf.

When I head out to play on any given day I have almost no idea what conditions I’ll find. That applies to green speeds, bunker conditions, height-of-cut, rough (or not), mowing

patterns – you name it. I’m lucky enough to travel across the country consulting, giving speeches, meeting with superintendents and others and, of course, playing. When I head out to a course whether it’s in Los Angeles or Lincoln, from Portland, Maine, to Portland, Ore., I know I’m going to encounter a wide range of conditions, grasses, set-up philosophies, and putting greens. It’s part of my personal challenge, and in all honesty, part of the fun. As a result, I never complain because I understand the difficulties that every superintendent has to deal with. Furthermore, I’m happy just to be out playing.

Superintendents, in particular, shouldn’t put so much pressure on themselves, and their crews to create **superhuman conditions**.

You think today’s PGA Tour player likes going from bent grass to Bermuda, from fluffy white sand to coarser darker grit, from one length of rough to another? Not really. Do you think that same pro could handle the conditions that we real golfers experience from week to week?

Not a chance.

They putt well because the greens are the same speed, week after week. Yes, they face rare exceptions such as at the two Opens or the Masters. But, what if they – like we – encountered different green speeds from hole to hole on the same course? You’d witness a nuclear meltdown right then and there.

I had the honor of working for Byron Nelson in the 1980s building Las Colinas Sports Club outside of Dallas. I remember him saying how impressed he was by the consistency of conditions the players faced week in and week out. That was in 1983.

Mr. Nelson said that in his day players would hit into bunkers on purpose because sand was more predictable than the green surrounds. He said that just a few feet off the green you could end up in anything “from a gopher hole to a tree root.”

Players today still hit into bunkers, but that’s because they find the sand explosion one of the easiest shots in golf.

On some of the courses I’ve played, neither the bunkers nor the green complexes are good. Get in the sand and I might find rakes, rocks, footprints, cigar butts, and everything except smoothly, properly raked

powder. A member of a private club recently said to me, in all seriousness, “I thought those rakes were for the grounds crew to use!”

Yet, despite the radically improved conditions (to say nothing of equipment), the scoring average on the PGA Tour has barely dropped. In 1945, Mr. Nelson’s scoring average was 68.34; in 2000, Tiger Woods averaged 68.17.

What else does the Tour player find? Teeing grounds are perfectly mown, level, and striped, plus the stripes point directly where the ball is supposed to go. Most “real” courses favor the philosophy espoused by Pete Dye, who used to aim tees wherever he wanted and say, “Let the golfer figure it out.”

What do I find? Different grass types hole to hole; varying soil firmness from fairways to approaches to putting greens to bunkers. The

(continued on page 79)

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# CAN YOU DIG IT?

**GCI's exclusive research on trends  
in renovation and construction.**

“ In the last six months – and really the past couple of months – we have been getting calls asking us to assist in small, spur-of-the-moment maintenance projects such as rebuilding a tee complex, replacing grass in a green-surround or rebuilding a couple of bunkers.”

– Bob Lohmann, Lohmann Golf Designs



**D**espite the lack of a full economic or industry recovery, U.S. golf courses have not been content to sit idle.

Courses have been active, engaging in any number of construction and renovation projects during the last three years, including tee and green projects as well as correcting drainage and irrigation issues. Industry experts point out that many of these often small-scale projects – outside of costly major renovations or rebuilds – stem from reasons that don't necessarily follow a course's master plan.

In August, GCI, via the online service SurveyMonkey, asked its readers about the types of recent construction and renovation projects taking place at their facilities and how those compared to those from three years ago. The data was broken down and analyzed to track trends and make correlations between all respondents, public (46 percent of respondents) and private (54 percent of respondents) courses.

Compared to three years ago, 38 percent of public and private courses report an increase in spending on renovation and construction projects in 2012. And while nearly half (46 percent) of public and private golf courses reported their 2012 capital spending budget remained static, nearly a third (32 percent) reported a boost in their funding, according to GCI research data. Courses reported, on average, earmarking around 20 percent of their overall 2012 capital spending budget for construction and renovation projects.

To add some context, the average capital budget in 2012 was \$160,724 with around 15 percent (\$25,000) allocated to renovation and construction projects, according to GCI's 2012 State of the Industry research. In comparison, equipment purchases made up 55 percent of 2012 capital spending, major irrigation upgrades made up 6 percent and infrastructure and building projects made up 5 percent, with "Other" projects – for example, tree removal, flood remediation, driving range projects, clubhouse landscaping and pond maintenance – making up the remaining 16 percent of capital spending, according to the research.

From this data, GCI extrapolates that there's a latent market of more than \$200 million for renovation, construction and remodeling projects in the U.S. golf market.

GolfScapes architect and GCI columnist Jeffrey Brauer

**“ I am not sure that a full renovation pays back in this market. Whereas 10 years ago, you could spend \$5 million to \$8 million (on a renovation project) and get it back in increased play.”**

**Jeff Brauer, GolfScapes**

## **IN-HOUSE ADVANTAGE**

**JUST SLIGHTLY MORE THAN HALF (53 percent) of golf course facilities responded they planned to do any renovation or construction work using in-house labor and expertise ( see "Doing the work"), according to GCI research. However, 63 percent of public courses were more apt to do the work in-house, while 62 percent of private courses indicated they would hire a builder/contractor to do the work.**

Whether to hire an outside firm or do the work in-house is an age-old question that will probably never have a definitive answer, says Justin Apel, executive director of the Golf Course Builders Association of America (GCBA).

"It is short-sighted to say there's one correct answer," he says. "We see clubs that have enough staff and in the off-season will have them involved in small construction projects to keep them busy."

He has also seen instances of construction projects bid with the caveat that the maintenance staff be utilized by the contractor to defray some of the costs. The bottom line is whether the existing personnel can handle the work without other areas of the course suffering.

"Taking ownership in your project and using your staff's talent and the facility's equipment is an opportunity for costs savings," he says. "However, you need to plan what component of the project you have the time and expertise to complete, and what component is better off left for a professional golf course builder."

"I've heard countless successful projects where the course staff prepared the project area or are on hand to assist with the labor aspect of a project," he adds. "A combination contracted and DIY project can be a win-win and ensures a successful result to any course project."

says the research parallels the trends he's experiencing and observing in the market, everything from full renovations to "cosmetic"-type improvement projects. However, he adds that in the current economic climate few courses are sold on the lasting impact a full-renovation project. According to GCI research, fewer than 10 percent of courses were engaged in any type of large-scale renovation.

"I am not sure that a full renovation pays back in this market," Brauer says. "Whereas 10 years ago, you could spend \$5 million to \$8 million (on a large-scale renovation project) and get it back in increased play.

"The days of a nearly open checkbook are gone," Brauer adds. "Although, there are some stories among architects that the ultra-wealthy clubs were never really hurt by the downturn."

Regardless of economic trends, weather and precipitation anomalies, or the number our rounds being played during the season, a golf course's infrastructure continues to age and at some point needs to be addressed if the course's leadership intends to have a viable facility, says Justin Apel, executive director of the Golf Course Builders Association of America (GCBA). Courses addressing these upgrades has played a major factor in the

recent uptick in construction work, he says.

"Many of these upgrades have been put off as long as possible," Apel says. "The competition for play and retraining memberships has been a driving factor on several projects that have come across our desk."

So how are courses investing the money they have to spend? Bob Lohmann, ASGCA, Lohmann Golf Designs, Marengo, Ill., and a frequent GCI contributor, has seen very little consistency in the types of projects his firm has engaged in the last year.

"It's kind of all over the board," Lohmann says. "In the last six months – and really the

past couple of months – we have been getting calls asking us to assist in small, spur-of-the-moment maintenance projects such as rebuilding a tee complex, replacing grass in a green-surround or rebuilding a couple of bunkers. These types of projects are \$50,000 to \$75,000 expenditures and usually address a 'pet' project of a superintendent or a greens committee and a realization from supers that they have the money in the budget to cover it."

According to GCI research, the most popular projects *du jour* are bunker and tee box construction and renovation and drainage projects. These trends remain consistent across both private

## SPENDING

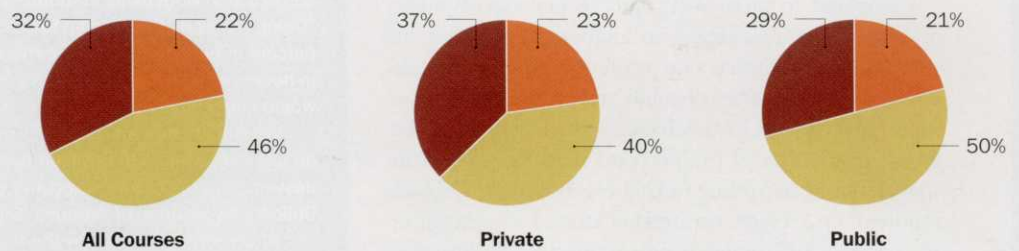
AROUND A THIRD (38 percent) of golf course facilities were spending more money in 2012 on renovation and construction projects than they did a year ago and three years ago.

Not surprising, private facilities were investing more frequently than public courses during those time periods, according to GCI research. However, three years ago, nearly half (40 percent) of private facilities cut these budgets compared to 21 percent of public courses.

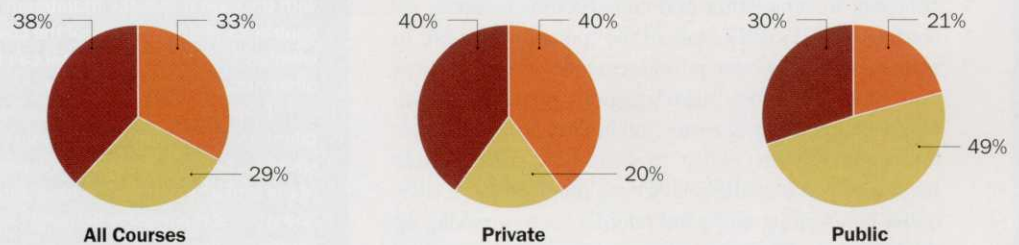
On average, courses are earmarking around 20 percent of their overall capital spending budget for construction and renovation projects, with private courses spending more (24 percent) and public courses spending less (16 percent).

Capital spending budget for renovation/construction projects: 2012 vs. 2011

Down Flat/Unchanged Up

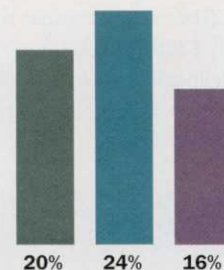


Capital spending budget for renovation/construction projects: 2012 vs. 3 years ago



Percent of 2012 overall capital spending budget earmarked for construction/renovation projects?

All Courses Private Public





and public, with the exception of an emphasis on irrigation system upgrades with private courses and cart path projects with public courses (see "Dig in," page 19).

"Cost-reduction projects remain about the same as three years ago, with bunkers leading the way," Brauer says. "At the same time, there is a small uptick on image-changing renovations, but they work hard to target spending to as little as possible to achieve the results."

Irrigation and drainage projects have been popular because these projects typically are the most

needed with courses trying to determine better ways to manage their water, Brauer says.

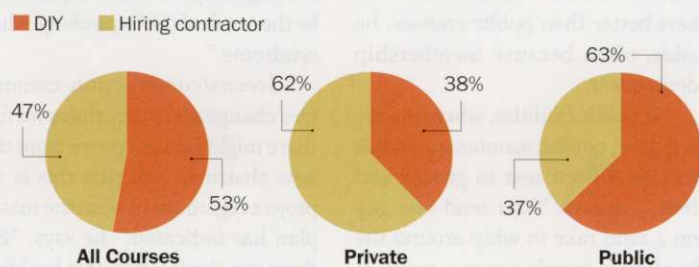
On the other side, courses report little interest in devoting money to maintenance facilities or other allied buildings. Likewise, courses report very little support for "environmental" additions or upgrades, such as installing an equipment rinse/wash pad. Apel speculates that the actual investment into "environmental" additions might be more frequent, but that these projects are actually a portion of another project, or that they were pre-existing improve-

## DOING THE WORK

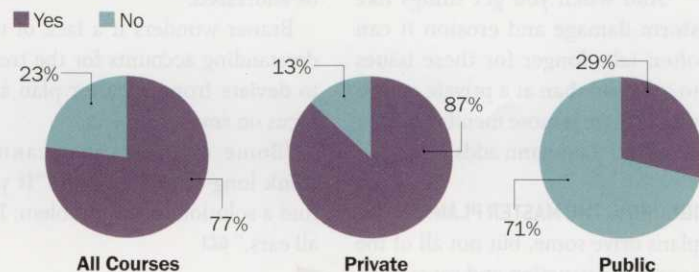
RESPONDENTS WERE SPLIT nearly evenly between whether they would do construction and/or renovation work or hire out to an outside firm. The data indicates the majority of private facilities (63 percent) would hire a contractor while more than half (63 percent) of public courses would opt to do the work in-house.

However, if contracting out the work, more than three quarters of respondents (77 percent) indicated they would hire a builder certified by the Golf Course Builders Association of America. However, private courses were more likely to choose a GCBAA-certified contractor than a public course, according to the data.

### Are you doing the work yourself, or hiring a contractor?



### Would you use a GCBAA-certified contractor for a future project?



Source: GCI research

# THE CLEAR CHOICE

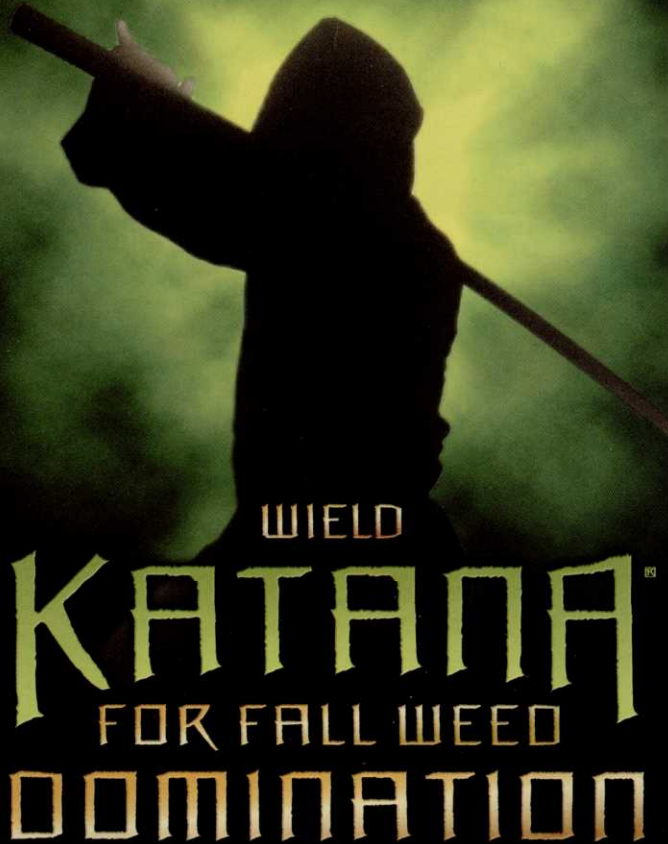


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ments made outside the scope of GCI's research. For example, a new maintenance facility built five years ago had "environmental" components as part of its overall design. The research only takes into account projects over the last three years.

**PUBLIC VS. PRIVATE.** So how do these trends break down between public and private courses?

Compared to 2011 spending, 37 percent of private course and 29 percent of public courses reported spending more in 2012 on renovation and construction projects. Likewise, this same trend is observed when compared to spending three years ago, with 40 percent of private courses and 30 percent of public course reporting an increase in spending. Altogether, these project investments represent, on average, about a quarter (24 percent) of a private club's and 16 percent of a public club's overall capital spending budget.

In general, public courses are investing in bunker projects because bunkers tend to get the least attention at these facilities, Lohmann says, especially those courses with minimal maintenance budgets. Private courses will maintain bunkers better than public courses, he adds, often because membership demands it.

"At public facilities, where money is tighter, bunker maintenance tends to take a back seat to greens and tees," he says. "You send one guy on a sand rake to whip around the bunkers a couple times a week. It doesn't take long for neglected bunkers to become bigger maintenance problems.

"And when you get things like storm damage and erosion it can often take longer for these issues to get fixed than at a private course where there is more member/player scrutiny," Lohmann adds.

**IGNORING THE MASTER PLAN.** Master plans drive some, but not all of the recent construction and renovation projects taking place on courses.

In fact, the research indicated that about a third of the time did any of the recent construction or renovation projects coincide with the scope and/or direction of the facility's master plan.

The trend with courses is to focus on smaller projects and not comprehensive master planning.

Instead of master plans, Lohmann's firm has been doing more smaller "asset-management plans" which are more about identifying future maintenance concerns or small cosmetic changes that can be completed in-house and stretch the dollars and cents of small investments.

"Clubs are still wary of making big investments in an economic climate that remains iffy," Lohmann says. "Long-range plans generally center around large-scale investment projects."

And small, spur-of-the-moment projects might be an indication that clubs are starting to have some extra money to slowly start reinvesting. "But it is taking baby steps... and they want to get all they can out of that money, hence the reluctance to invest in planning," Lohmann says.

Apel speculates that this trend of moving away from master plans may be the result of the "squeaking-wheel syndrome."

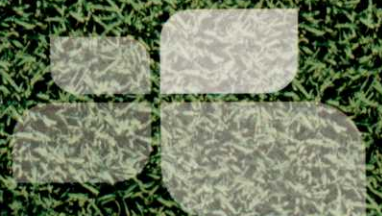
"Greens/construction committees change and many times we find there might be a pet peeve from that new chairman and that this is the project regardless of what the master plan has indicated," he says. "But there are times when this backfires and that new irrigation system that was just installed falls victim to a greens renovation and has to again be addressed."

Brauer wonders if a lack of understanding accounts for the trend to deviate from a master plan and focus on smaller projects.

"Some members just cannot think long-term," he says. "If you find a solution to this problem, I'm all ears." **GCI**

*Mike Zawacki is editor of GCI.*







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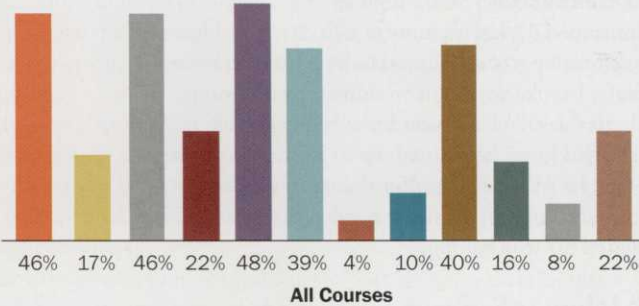
# DIG IN – THE PUBLIC-PRIVATE BREAKDOWN

Bunker work is the most popular type of construction projects taking place on golf courses, followed closely behind by work on tee boxes and drainage improvements. Aside from complete course renovation and reconstruction, which only 8 percent of respondents indicated they were undertaking, the least popular projects involved regrassing, clearing, earth-moving and grading work.

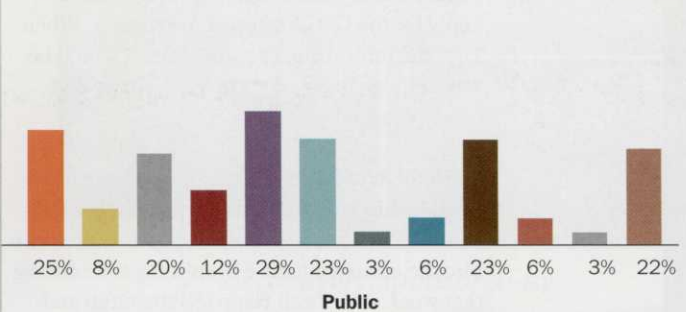
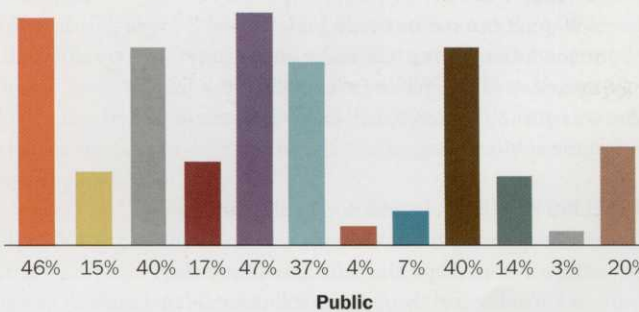
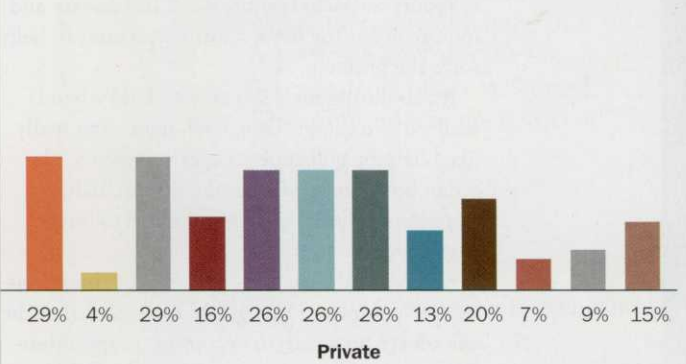
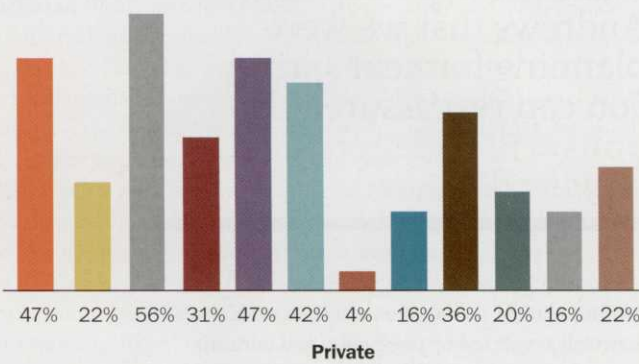
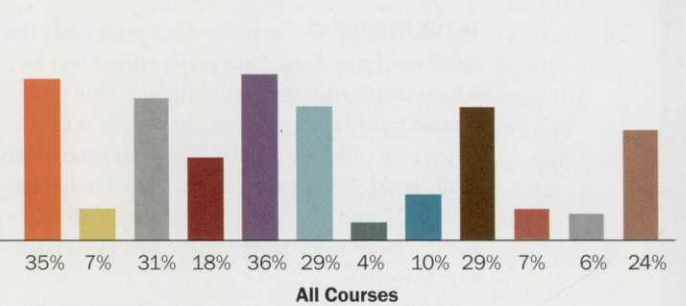
When examining the project private and public courses were engaged in, more than half of private courses (56 percent) gave drainage work a top priority, followed by bunker and tee box renovation and construction (47 percent), but also including with nearly the same frequency (42 percent) irrigation system upgrades. Similarly, public facilities placed a priority on bunker (47 percent) and tee box (46 percent) work, followed by drainage improvements and cart path projects (40 percent).

It's interesting to note that only about a third of these projects are part of a course's master plan.

**Type of construction/renovation projects recently undertaken?**



**Construction/renovation projects that are part of a master plan?**



- Tee boxes
- Clearing, earth-moving, grading
- Drainage
- Greens construction/renovation
- Bunker construction/renovation
- Irrigation system upgrade
- Environmental upgrade (rinse washpad or other)
- Maintenance facility, building structures
- Cart paths
- Regrassing
- Complete reconstruction/renovation
- Other (please specify)

Source: GCI research



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

## STANLEY J. ZONTEK

**T**he recent passing of Stan hit me harder than I had expected. Shortly after being introduced to him by my mentor, Dr. Peter Dernoeden, I had formed one my greatest friendships. Whether it was drinking a pint, finding a job or traveling the world; Stan was always there for me.

**IN THE BEGINNING.** I actually don't remember the first time I met Stan. I am pretty sure it was as a Penn State undergraduate student. However, it wasn't until my graduate school days at the University of Maryland that Stan and I started to really bond. My research project was funded by the USGA and Stan would often stop in to find out the latest information about bentgrass dead spot infection.

During his visits to numerous courses in the mid-Atlantic region, Stan would often call me to report suspected outbreaks of the disease and inquire about the latest control measures to help solve the problem.

It was during my years at Maryland when I realized two things. One, how much Stan really liked helping golf course superintendents. The other, how much information Stan actually stored in his head. He never seemed to forget anything.

As a Master of Science student, my intentions were to complete my degree and go back into the work force on a path to becoming a superintendent or possibly an agronomist for the USGA. Stan saw this passion and encouraged me to apply for the USGA internship program. When I got the internship, I assumed that I would be traveling for the week with Stan, but he had other plans.

**FORGING RELATIONSHIPS.** Stan was all about relationship building and my internship would be no different. Instead of having me travel with him, he arranged for me to split my time during that week with Keith Happ in Pittsburgh and Darin Bevard in Maryland. After that week, I had increased my network and friendships by two.

After completing my Ph.D. in 2004, I took my first position in academia at UCONN. Knowing that I wasn't familiar with New England, Stan immediately stepped in and put me in touch with

the regional USGA agronomists in the Northeast. Shortly after my arrival, Jim Skolurski invited me to travel to regional golf courses with him to get the lay of the land and meet some regional superintendents.

Again, more friendships were made.

**CAREER SUPPORT.** Stan's support of my career continued during my time at UCONN and I have to admit he was influential in my return to Penn State. I spoke with him on numerous occasions about the tough decision I was facing and although I knew he wanted me to go back to Penn State, he would never offer that advice directly. It wasn't until after I made my decision that he shared his true feelings.

Although Stan will not make the trip back to St. Andrews that we were planning for next spring, you can rest assured that pints will be raised and flowers delivered.

Even after I accepted the position, Stan continued to be influential in my career. He was very well respected by the faculty and administration at Penn State and was awarded the 2007 Outstanding Alumni Award from our department. When it came time to ask for letters of recommendation for my tenure, he once again volunteered to assist. When I was granted tenure, Stan was one of the first to call and congratulate me on the achievement.

**TRAVELING WITH STAN.** In addition to all of the local career support that Stan had provided me over the years, it was perhaps his inclusion of me in his overseas trips that had the greatest influence. Stan is well-known for his travels around the world and particularly his infamous trips to St. Andrews.

For years I heard about the great times he had spent with various greenkeepers in the region including those at Loch Lomond, St. Andrews, Castle Stuart and many more. Even more impor-

tant to him were the stories and relationships that he built with those not affiliated with golf or turfgrass.

One of those relationships was with the owners and staff at his favorite hotel in St. Andrews – The Russell. In 2007, I had my first introduction to exactly what this meant when he invited me to travel with him to the “Home of Golf.” He was a meticulous planner and expert host of trips. Anytime you traveled with Stan he oversaw every detail, which allowed his traveling companions the ability to sit back and just take it all in. Upon our arrival in St. Andrews and The Russell, we were personally greeted by Helen (the manager) and a quick pint at the bar.

The next day, the first order of business was to head to the local florist (Jamie’s) and purchase flowers for the “ladies of The Russell.” Whether it was bringing flowers to his friends at The Russell or sending random packages of Twizzlers to the staff of BIGGA, Stan always thought of others.

Dr. Kim Erusha sums it up the best: “Stanley often said this was a people business and it was about building relationships.”

**UNDERSTANDING STAN’S INFLUENCE.** Between 2007 and 2010 I made five trips with Stan to the UK. During that time, I was a sponge. I took in as much as I could and often just sat back and watched Stan hold court with numerous people on each trip. I don’t really believe I fully understood the impact Stan had on exposing me to St. Andrews until I took my first trip there without him this past July.

Although I wasn’t able to get a room at The Russell (there was a national Saxophone Congress in town), numerous Greenkeepers stepped in to find us accommodations. Arrangements for talks were made and even a round of golf at the Old Course. Despite not staying at Stan’s favorite hotel, I did stop in to say hello and was greeted by that same warm welcome from Helen and the staff as I had been during my first visit 5 years prior. It was then that I realized all that Stan had actually done for me.

After hearing about Stan’s death on that Tuesday morning, one of my first calls was to Andy Campbell, one of his closest friends at St. Andrews. Since then I have shared numerous emails with Andy, Helen and his many friends in that part of the world. It doesn’t matter where you live or how you knew Stan, it is clear that he had a large impact on many people’s lives.

**SAYING GOODBYE.** Although Stan will not accompany me when I make the trip back to St. Andrews next spring, you can rest assured that pints will be raised and flowers delivered. I may even have a fudgy donut or two in his honor.

Stan, I can count the number of people who have greatly influenced my life on one hand and you definitely make that list. I cannot thank you enough for all that you’ve done for me. I will miss you and will do my best to carry on some of the traditions that you started and shared with me over the years. Go Golf! **GCI**



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## ALUMNI UPDATE

“Two ideas had an immediate impact on me and our facility.

The first was from Dan Meersman of the Philadelphia Cricket Club. He incorporated a ‘meet-and-greet’ into his weekly or daily activities. He would bring members into his maintenance facility and let them express their thoughts on the conditioning of the course. This allowed his team to be able to identify with the members’ concerns and the members to get face time with his team. I immediately incorporated that into our regime. The other idea was hearing Steve Drake talk about blogs and how they can be utilized as another avenue of communication. After Steve’s discussion, other attendees chimed in on their experience and I was able to see the value of having this tool. After getting back from the SBI, I immediately created a blog and started posting. The response was phenomenal!”



Matt Boyce  
Golf Course Superintendent  
The Princess Anne  
Country Club  
Virginia Beach, Va.



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# ON A ROLL

What's good for greens has got to be good for fairways, right? Merion GC's Matt Shaffer experiments with fairway rolling to reduce turf stress and improve overall health.

by Bruce Williams, CGCS

**E**instein said the definition of insanity is doing the same thing over and over and expecting different results. The world needs people who make it a habit to think out of the box. Thank God we have them.

Over the years, I have seen a variety of cultural practices come and go and even a few revived that were used half a century ago. One of those cultural practices is turf rolling. Turf rolling was most often utilized in the spring or during construction. I can remember always seeing a small roller and a large roller at every golf course I visited. I would also see three gang rollers used to roll larger areas of turf throughout the 20th century.

In the parts of the country where there was heavy frost we would often see some heaving of the soil and this created uneven putting surfaces almost every spring. Rollers were used to smooth out the putting surface prior to the first mowing in the spring.

Rollers had taken on many forms, and most rollers were about 3 feet wide and filled with water to have greater

impact. Even after rolling I remember using a Toro Series IV walking greens mower – with a masonry block in the basket – that was used prior to the official first mowing of all of the greens. This prevented scalping and gave a very smooth surface when topdressing since topdressing frequency was much less.

Rollers took on many forms and I have seen vibratory rollers, small construction rollers and everything in between.

As greater demands for high-level conditioning arose, there was a tendency to take practices like rolling and expand them to other areas of the golf course like tees and approaches. Some of these practices have evolved into use on fairways as well and fairway rolling has followed suit in that evolution.

**CONCEPT.** Over the years, I have had the pleasure to know Matt Shaffer, director of golf courses at Merion Golf Club in Havertown, Pa., very well. Matt is one of those cutting-edge guys who does not always wait for the newest pieces of equipment and latest trends to develop. Matt is at the forefront and works with

quite a few equipment manufacturers, universities and plant-protectant companies to develop his conceptual plans into realities at Merion GC.

Through following former and current research on disease development, Matt realized there were a variety of benefits to greens rolling. One of those benefits was the reduction of disease pressure even in an area like Philadelphia that is known for turf damage through disease.

As the demand for excellence at Merion increased there were several cultural programs that expanded beyond the greens and out onto the approaches leading to the greens. One of those cultural practices was the rolling of turf. Matt noticed a reduction in disease pressure on the approaches, which started to make him think that there was potential for doing the same on fairways. All of this fit nicely into an integrated pest management program that utilized rolling to aid in reducing fungicide applications to Merion's many acres of fairways.

**DEVELOPMENT.** The amount of equip-

As demands rose for high level conditioning, practices have evolved to include fairway rolling.





Sal Rizzo: "We built a small model and worked on the steering for what seemed to be forever. We were positive that when turning on the green there should be no damage. It took four months alone just to perfect the steering."

ment and labor required to roll fairways would surely be cost prohibitive. Only greens rollers were commercially available a year ago. So a concept had to be taken to the right people to develop a prototype of a roller that could be wide enough to make the process feasible. It also had to be mobile enough to move from fairway to fairway with little or no reason for an operator to get off the machine.

Matt says he contacted every manufacturer he could think of to build this machine and nobody wanted to take on the project of designing this machine. Matt and Sal Rizzo from Salsco had done business for many years. When Matt asked Sal if he had any interest Sal agreed to take a look at the project. They set a time to meet and discuss the project.

Present at that first meeting were Paul Brandon, sales manager for Finch (the local John Deere dealer) and Dick Owen,

a Salsco golf equipment salesperson. Combined there was well over 100 years of experience in golf and turf equipment and maintenance at this gathering. They made a wish list of the things they wanted the machine to do. Nobody knew what it should look like – only the things they expected from it.

As Sal drove home the next day and thought about this new machine he began to get excited about the project. As he drove the machine started to come together in his mind.

Sal told me: "I have no choice once I start the process... the whole machine must be done in my mind. I install every nut and bolt, every link and bracket, investigate all the stress points, the whole unit. Then I drive it and use it in my mind to work out any weak points.

"Once I'm happy with the unit in my mind, I begin to lay the concept out to the R&D people at Salsco," he adds.

After they picked apart the base design they called in the AutoCAD guys. At this point the yellow pads come out and the base unit begins to take form.

"We built a small model and worked on the steering for what seemed to be forever," he says. "We were positive that when turning on the green there should be no damage. It took four months alone just to perfect the steering. Sal estimated that the first machine had at least \$350,000 in design and production time. We used components and technology from other machines we build and the unit began to take shape."

When they introduced the Tranz-Former at Merion GC to the same group who attended the initial meeting the feedback was extremely positive. This machine performed better than expected. "When we brought the prototype to Matt you would have thought it was his first child," Sal says. "He loved everything about it."



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**IMPLEMENTATION.** Through prior experimentation the team at Merion GC had ascertained that a significant reduction in an aggressive dollar spot infestation had occurred when rolling approaches.

Early versions of a fairway roller were created with a five-plex, but eventually the Salsco prototypes were put into action on a regular schedule. With the new fairway rollers it was decided to operate the new machines on a regular schedule. Fairways are rolled at the rate of 4.5 acres per hour and the turf team has the system down pat.

Fairways at Merion GC are mown on Monday, Tuesday, Thursday and Friday each week. Fairways are rolled on Wednesday, Saturday and Sunday. Additional cultural practices impacting fairway conditions are the use of topdressing sand at the rate of 15 tons of sand in two applications per year.

**RESULTS.** As they say “the proof is in the

pudding.” All of the development of this new machinery would have been for naught had there been no measurable results. During the summer of 2011, Shaffer told me that “I have not applied any fairway fungicides in 280 days and that alone will allow us to develop an effective calculation for a realistic time for return on our investment in the machinery.” In 2012 fairway fungicide applications were utilized on a 21-28 day schedule but at a much lesser cost than previous years. Any visible dollar spot was less aggressive and smaller in size with the rolling.

Side benefits have included a noticeable thatch reduction. The sand topdressing may be adding to that effect, but it is all good. Matt says when he looks at the actual height of cut for the fairway turf, through

a prism, it is .010 inches less than before fairway rolling. This has resulted in greater member satisfaction with a tighter lie while not sacrificing the health of the plant with a lower bench height of cut. Utilizing the newer cultural practices on fairways it is hoped that fairway aeration can be minimized in the future.



Shaffer

**THE SCIENCE.** Some of the genesis of the fairway rolling concept not only came from the trial-and-error concept and practical trial and error, but also from the science and research behind the concept.

Dr. Thom A. Nikolai, turfgrass academic specialist at Michigan State University, has been performing lightweight roller research since 1993. His observations about the numerous benefits that regular rolling provides were the impetus for the resurgence of the mechanical practice. Those benefits include decreases in dollar spot, brown patch, and

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localized dry spot while increasing green speed. Many of his findings have been summarized in a recent article published in the summer issue of the Michigan Turfgrass Foundation publication of NewsNotes.

Masters student Paul Giordano reported that increasing the frequency of rolling significantly decreases the incidence of dollar spot. Beyond the research at MSU that proves rolling decreases dollar spot, Rutgers University research has also shown that anthracnose can be decreased with regular use of lightweight rolling. These are surely the two largest challenges for maintaining disease-free turf in the cool-season regions of the US.

While reduction of morning dew and a healthier sward of fairway grasses may be a key component of disease reduction, Giordano's research indicates that changes in the microbial population caused by rolling are most likely the key. Michigan State

is performing rolling research on fairways and athletic fields. We can expect to see more research results from Michigan State in the upcoming years.

**SUMMARY.** Could it be that we are seeing another case of history repeating or reinventing itself? Practices like rolling of fairways, that were once utilized, are coming back into modern turfgrass maintenance. Science and rationale are behind the new direction to improve fairway conditions.

While it took an investment of \$350,000 to roll out the first machines Sal Rizzo indicated that he is selling his units in the range of \$35,000, which makes them affordable for a variety of golf courses.

Each facility must do its own homework as to what cost savings might be evident. It is hard to place an exact value on overall improved fairway conditions, but if you could calculate items like reduced fungicide

applications and less hand watering it is easy to see how long this may be a prudent investment.

Time will tell if this becomes a trend. Salsco is taking orders and units used at a major earlier this year have created buzz and became the impetus for Brigham Young University to order one for their sports turf.

Shaffer continues to be on top of his game and always striving for improvement on his golf courses. With fellows like Shaffer taking a need and developing the concept it opens the doors for creative people like Sal Rizzo to invest his time and money into new technology that will only improve over time. **GCI**

*Bruce R. Williams, CGCS, is principal for both Bruce Williams Golf Consulting and Executive Golf Search. He is a frequent GCI contributor.*

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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](mailto:groots@charter.net).

## ABOUT STAN

*“An event has happened, upon which it is difficult to speak, and impossible to be silent.” — Edmund Burke*

I was mowing the lawn when Cheryl told me Stan Zontek had died. I was so surprised and stunned I had to stop and sit down. The profound sadness that swept over me was an emotion usually only felt when a close relative dies. Today, I’m still thinking about Stanley. He was an exceptional influence on my career and my indebtedness remains with me even though I’ve been retired for years.

Many people have noted they never heard anyone say anything negative about Stan. The reason is there are likely thousands of superintendents, like me, who benefited from his experience and intelligence. His advice ranged from how to grow *Poa annua* to preparations necessary for a major tournament. I knew a colleague who was sound and capable in his ability to manage a golf course but had gotten into some trouble with course conditions. The green committee met with Stan on a Saturday morning; his advice was unequivocal and blunt for all involved. They took it, almost to the letter, and the results were positive and obvious, a job was saved, and a course returned to normal.

In my case, I talked for a year about a new irrigation system and a new shop, but it fell on deaf ears. I asked Stan for some suggestions. During the next TAS visit, he merely noted, “This club really needs to replace this inadequate shop facility.” It happened the next year. A couple of years passed, and he repeated the same admonition about our irrigation system, with the same results. Stanley brought credibility and trust to these TAS visits with club officials, and used them to move the club to make important investments. And in the instance of

our green committee members, they really liked him.

Stanley possessed great quantities of common sense. His course visits were practical and down-to-earth. He didn’t make recommendations that were obviously not within the financial reality of our club. This came from the fact that his father was a superintendent. That also endeared him to us. He knew the life we lived and the profession we worked.

More than a few times I had told Stanley how grateful I was for his **positive influence**. I feel relieved, also, putting these reflections into words for others to read.

Many of us who met “Stan the Man” through the USGA Green Section developed a personal relationship with him as well. Back in the 1980s the Wisconsin Turfgrass Association was raising money to build a turfgrass research station for our land grant university. Stan came to our Wisconsin Hospitality Room held during the GCSAA Conference and, like the good sport he was, bought a raffle ticket for a drawing we were having. He won! He immediately stood on a chair and auctioned his winning prize. Then he auctioned his necktie and went on to anything else he could lay his hands on. People went crazy and he left with that famous impish smile on his face. He fattened our building fund considerably that night.

Not too many years ago we drove to the GCSAA Conference and when we got within 10 miles of Merion we called Stan’s office. This was a

time when cell phones were new. We struggled with dropped calls, wrong turns and some marginal directions, but Stan talked us there. We called when we left to thank him, and he talked us into quickly driving to Washington, D.C. to see the brand new WWII Memorial. His directions were great, but he didn’t mention anything about parking. When we saw him at the conference and told him our tale of a towed car in D.C. at night, he couldn’t quit laughing. He referred to us as “Cheesehead Hicks!”

And there was no one more adept at telling jokes on himself, especially

those making reference to his ethnicity. His sense of humor was as big as he was. I’ve also heard tales of his trips to Scotland for golf and fun.

Stan was in demand as a speaker, and although I probably had heard him 100 times I always wanted to hear him again. The articles he wrote throughout his career make me wish he had written a turf book. It would have been a best-seller. The respect he earned over his long career with the Green Section led to his selection as a GCSAA DSA recipient. I sat in the front row when it was presented, clapping loudly and grinning ear to ear.

It is not fair that he died so young, but it never is. He didn’t have enough time on earth to enjoy the retirement he had certainly earned and was close to taking. But it is fair to say his was a life well lived.

Stan will be sorely missed, but never forgotten. **GCI**

# GOLF COURSE INDUSTRY



# PRODUCT PAYBACK

SUPPLEMENT

## Calcium can help in many ways!

**C**alcium, the forgotten nutrient! Yes, calcium is getting more and more respect now than in years past. It used to be that NPK were the only fertility things on the minds of turf managers, but in recent years, calcium has become the “fourth” nutrient and is beginning to be seen nearly as important as NPK. Especially at key times of the year, such as spring, mid-summer and fall.

### Why so much calcium?

On our soil tests, we see calcium taking up most of the room on the soil colloid. This is the natural cycle in the soil. Calcium is dominant and the soil colloid will want to bond with it. This calcium is rarely available as a feeding/amending nutrient to the plant or soil structure. To properly amend the soil and feed the plant, more calcium must be applied.

The key to amending the soil properly, which basically means conditioning salts in the soil, you must apply the proper volume of available calcium in the proper form for the type of soil and conditions that exist at your facility.

### VERDE-CAL Products can provide the proper calcium source.

pH can fluctuate due to many reasons in the soil structure. Low pH (low calcium) due to the excess of hydrogen and aluminum in the soil will need to be amended very carefully. This excess hydrogen and aluminum need to be released from the soil colloid and must be done so with a calcium carbonate source (typically High Cal Lime).

A product like VERDE-CAL, enhanced Calcium Carbonate, will provide immediately available calcium in a carbonate form to

properly amend and condition high hydrogen and aluminum levels in the soil. The result is a quick and long lasting pH adjustment. The beauty of a product like VERDE-CAL is that it will penetrate the soil profile due to its soluble calcium characteristics and product design. VERDE-CAL does not need any mechanical incorporation at all. It is designed to break down quickly with irrigation and move into the root zone. All while utilizing less product and less labor to achieve great results.

Effluent water, high sodium, high magnesium, high pH and tight soils require proper amending as well and require a calcium sulfate source. Typically gypsum (calcium sulfate) will be recommended for these issues in the soil.

A product like VERDE-CAL G, enhanced Calcium Sulfate, allows the proper volume of soluble calcium sulfate to penetrate the soil profile. This will condition the soil and flush/balance salts that may have become harmful to your turf growth and plant health.

VERDE-CAL G breaks down with irrigation and moves into the soil profile with no mechanical incorporation required. This results in a long lasting effect of thoroughly conditioning soil of harmful salts such as sodium and bicarbonate. Tight soils also begin to loosen and oxygen and water start to balance. VERDE-CAL G allows for less product, less labor and quick longer lasting results vs. traditional forms of calcium sulfate.

### It's all about volume!

Volume of available nutrient is the key to properly amending and conditioning any soil.

Traditional forms of calcium,

such as lime or gypsum require high rates, excess labor, and incorporation into the root zone. These old time sources also are very messy to your golfers and to your equipment. They work great on the farm, but not on the golf course with existing finely manicured turf.

Products like VERDE-CAL's line provide the proper volume of essential calcium in sulfate or carbonate form. VERDE-CAL products are very cost effective, budget friendly and user friendly. No mess, no incorporation and great soil tests are the result of using VERDE-CAL products. If particle size is important, you will find that the VERDE-CAL products homogeneous particle sizes work great with the lowest height of cut up to fairway height as well.

Products like VERDE-CAL's line will allow any turf manager to successfully accomplish all three of these needs to the turf and root zone. Do this successfully and the end result is better, stronger, healthier turf!

Many products today simply do not contain enough soluble calcium to provide adequate conditioning of the soil. The end result is that these inferior products become expensive to use and simply “maintain a problem in the soil.” They cannot be expected to release enough calcium in its proper form to overcome a soil problem!

Understand your soil tests. Compare the last several tests and look at your product choices. Are they working?

Finding a great product like VERDE-CAL's line up of calcium products allows you to utilize budget dollars better and provide outstanding results in your soil and turf.

# Time is Money

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# Affordable Turf Color

Joe Lara, Product Manager, Becker Underwood

**F**irst drought conditions. Then severe tropical storms with too much precipitation. Now predictions of severe winter weather. Turf professionals agree there has been no shortage of environmental challenges from Mother Nature.

Experienced golf course superintendents bring a wealth of agronomic knowledge and proven techniques to successfully manage through these challenges to create enjoyable experiences on the golf course.

One technique that has caught the eye of many turf managers is the use of permanent colorants. Superintendents are successfully integrating them into their management programs with greater frequency, ranging from monthly greens fertility and pest protection programs, to broad course coverage for improved turf quality and visual appeal.

Throughout the US, specifically in the southern regions, many superintendents have been exploring turf colorants as both a complement and an alternative to overseeding. What the early adopters are finding is that turf colorants are helping stretch their labor and input costs, and reduce or eliminate course closure time ... all without sacrificing playability and visual appeal.

Transition HC was created to meet the needs of superintendents who want to achieve high quality turf color throughout the fall and spring transition periods.

Last fall, innovative superintendent David Yanez (The Grand Golf Club in San Diego, CA) wanted a better turf colorant that would produce a more natural-looking green color to complement his transition program. He evaluated other products, but was dissatisfied with the

blue color they left on turf. Yanez implemented a program with Transition HC in lieu of overseeding, and in the process created a regional buzz among other superintendents.

As his warm season Bermuda turfgrass moved into dormancy, Yanez began making Transition HC applications at a light rate to improve color uniformity and appearance. Over the course of several weeks, he made follow-up applications at increasingly higher rates.

When the turf went fully dormant, Yanez made a few touch up applications with Transition HC. Not only did the transition look completely natural, the untreated rough areas provided a striking color contrast to the treated fairways, which was exactly what Yanez wanted. And the applications helped him meet his objective to set up the warm-season turfgrass for better spring emergence without the competing

cool season overseed.

Turf colorants like Transition HC can be used in a variety of ways to meet the aesthetic and agronomic objectives of turf professionals. Superintendents have discovered a number of ways to use Transition HC on their course.

## Overseeding Complement

Disguise mottling and uneven growth for uniform turf color with applications throughout the fall and winter growing seasons

## Alternative to Overseeding

Reallocate labor and input money spent on overseeding programs to other pressing areas of course management. Eliminate fall overseeding to reduce competition from cool season turf, and improve spring emergence of warm-season varieties.

## Affordable 30-Day Color

Create a custom color look on any golf course. Monthly applications of Transition HC are easy on the budget and provide the timing and flexibility needed to succeed on a budget.

Becker Underwood has been a trusted manufacturer of high quality professional turf management products for over 30 years. Creators of the industry-leading Green Lawnger® turf colorant, superintendents and professional turf managers recognize the value, quality, and consistent performance delivered in every Becker Underwood branded product.

*For more information and resources about turf colorants, visit [www.beckerunderwood.com](http://www.beckerunderwood.com).*



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## BEST SAND GIVES BACK TO THE COMMUNITY THROUGH MINERALS & ENVIRONMENTAL EDUCATION.

The Fairmount Minerals and Best Sand culture of sustainable development, including educational outreach, has deep roots. More than 750 employees bring their motto of 'Do Good. Do Well.' to life with a sustainable development mission of People, Planet, and Prosperity. Every decision is viewed through the lens of this mission statement.

When a company commits to contributing to the world's social, economic, and environmental needs, the company can realize greater performance. The spectrum of sustainable development—from waste elimination to energy efficiency to wellness initiatives and more—is vital to the Fairmount Minerals determination to reduce the global environmental footprint.

Public outreach, including regular volunteer activities and education, is a priority for Best Sand family members. More than 1,600 community residents attended the Best Sand Party in the Pit mine open house and zero-waste event in Chardon, Ohio, recently. The 65 fifth graders from Grant Elementary in Willoughby, Ohio, toured the mine and learned about sand

mining. The students also toured the nearby Walter C. Best Wildlife Preserve. The family of Walter Best, founder of Best Sand, a Fairmount Minerals company, donated the property to the Geauga Park District.

"Our Best Sand team looks forward to reaching out to the community and being an educational resource," said Cristine Lewis, Ohio regional sustainable development coordinator for Fairmount Minerals. "This is the 'people' part of our mission, and we're all proud to be recognized by an environmental steward in mining."

That recognition includes the most recent honor. Best Sand earned an Honorable Mention for Public Outreach at the Interstate Mining Compact Commission (IMCC) 2012

Minerals Education Awards in Asheville, North Carolina, May 1. The prestigious award recognizes Best Sand for its "dedication to minerals and environmental education." The Ohio Department of Natural Resources nominated Best Sand for the award.

"Best Sand's public outreach has helped the community better understand mineral production, environmental controls, and uses in society," said Gregory E. Conrad, IMCC's executive director. "The facility's outreach represents the educational commitment we encourage in the mining industry."

The Best Sand mine produces sand that is trusted around the world. A high number of leading golf courses, for example, choose this sand whether for:

- a new course
- renovation work or
- maintaining existing bunkers.

The high-quality sand offers firm ball support and consistency. The company crushes larger silica stones to create this very angular, premium bunker sand.

Best Sand is the right choice.

***"Best Sand's public outreach has helped the community better understand mineral production, environmental controls, and uses in society."***





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This high-quality bunker sand delivers firm ball support and consistency, season after season. An off-white color reduces glare and gives Tour Grade 535 a natural, premium look. Its consistent size, texture, and quality ensure long-term playability and quick draining to eliminate puddles and crusting.

- Sub-angular grain shape conforms and adheres to bunker slopes
- Sized to provide the firmest ball support
- Non-crusting surface requires less raking
- Washed to remove impurities and organic material
- Meets USGA Specifications

## Tour Grade<sup>®</sup> Signature Series Bunker Sand

Manufactured by crushing silica stones, this angular bunker sand adheres to the steepest bunker faces giving you the highest penetrometer reading for stable ball support, while still allowing for excellent playability. Superior quality, consistent texture, and white in color, Tour Grade Signature delivers the consistency you need, by providing the look and standard of play your golfers demand year after year.

- Sized to provide the firmest ball support
- Quick draining to eliminate puddles
- Non-crusting surface requires less raking
- Washed to remove impurities and organic material
- Meets USGA Specifications

A blend of Tour Grade 535 and Tour Grade Signature Series is also readily available.



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# How do bunker liners save labor dollars and improve playing conditions?

**T**he use of bunker liners has increased for two main reasons. Bunker liners save money by reducing the daily cost of bunker maintenance and they improve playing conditions by keeping bunker sand more consistent and contamination free.

## Labor Savings

Maintaining bunkers can sometimes be 15-20 percent of the daily labor costs on a golf course. This number can increase after rain events due to the need to repair washouts, pump water from bunkers due to clogged drain lines, and to eliminate silt contamination.

Additionally, the playing conditions in the bunkers following a rain event may not return to normal for several days until the sand dries out.

Generally, washouts occur in bunkers when sand is displaced by the water flowing along the floor of the bunker as it travels to the drain lines. When a bunker liner is installed, it creates a separation layer between the bunker subgrade and the bunker sand.

During rain events, water passes through the sand and flows into the bunker liner where it can travel into the drainage system. This keeps the sand protected from washouts, free from subgrade contamination and reduces or eliminates the need to pump bunkers. As a result, valuable labor dollars can be focused on other areas of the golf course.

By using a product like SandMat, it's not uncommon to save enough money in labor to actually

pay for the cost of the liner within three years. That's a very good return on the investment.

## Improved Playing Conditions

When the bunker sand stays clean and drain lines are free of subgrade contamination, the consistency of the sand remains the same for a long time. Even after rain events, the sand remains playable without the need to cultivate the sand. Simply grooming the bunkers is all that is required to maintain ideal playing conditions.

## Product and Installation Considerations

There are various types of bunker liners on the market but the most cost effective product for sand stabilization, drainage flow and contamination prevention is a high lofted geotextile liner like SandMat. Several grades of products are available to meet site slope and design considerations. These geotextile products can be installed easily without the need for specialized equipment and can be installed at any time of the year without weather limitations.

When considering the use of a geotextile bunker liner, look for a few key things:

### 1. Roll width of the product.

A wider roll will install faster and have fewer seams, require fewer staples and have less waste.

**2. Staple or fastener options-consider using a high quality fastener to secure your liner to the subgrade.** Galvanized staples are going to last much longer than

ordinary sod staples.

**3. Edge detail-what is the final look of the bunker edge and how will you be maintaining it?** Is the lip grassed over or is there an exposed soil edge? Terminating your liner so it works with the edge design is an important consideration. Ask the product manager for ideas on edge details.

**4. Machine raking vs. hand raking?** It's important to realize that the sand condition in newly lined bunkers is going to be significantly different than before. Maintenance practices should be different as well. The use of a geotextile bunker liner will help eliminate the need to cultivate the sand to keep it playing consistently. Since the sand doesn't move after rain events, the need to rake as often is reduced. Most would agree that hand raking is the preferred method of maintaining a bunker, but as long as the cultivation teeth are removed from mechanical rakes and the sand depths are monitored regularly, mechanical raking is a fast and safe option.

**5. Ask questions.** Call the product manager and talk about your current challenges, maintenance practices and project consideration requirements. When installed and maintained properly, bunker liners will be a good investment for both labor savings and improved sand conditions for a long time.

Bunker sand and the cost to get it to your course is expensive. Protect your investment, maintain ideal conditions and save labor with a bunker liner like SandMat.

# SandMat – the right tool for the job

**SandMat** is a revolutionary product that has been engineered for superior drainage and erosion control. Used by high profile courses around the world, **SandMat** is the professional's choice for bunker lining.

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- Cordless **Flashlight** with pivoting head (UB18D)
- Hitachi Carrying Bag
- Kit includes 2 rechargeable batteries



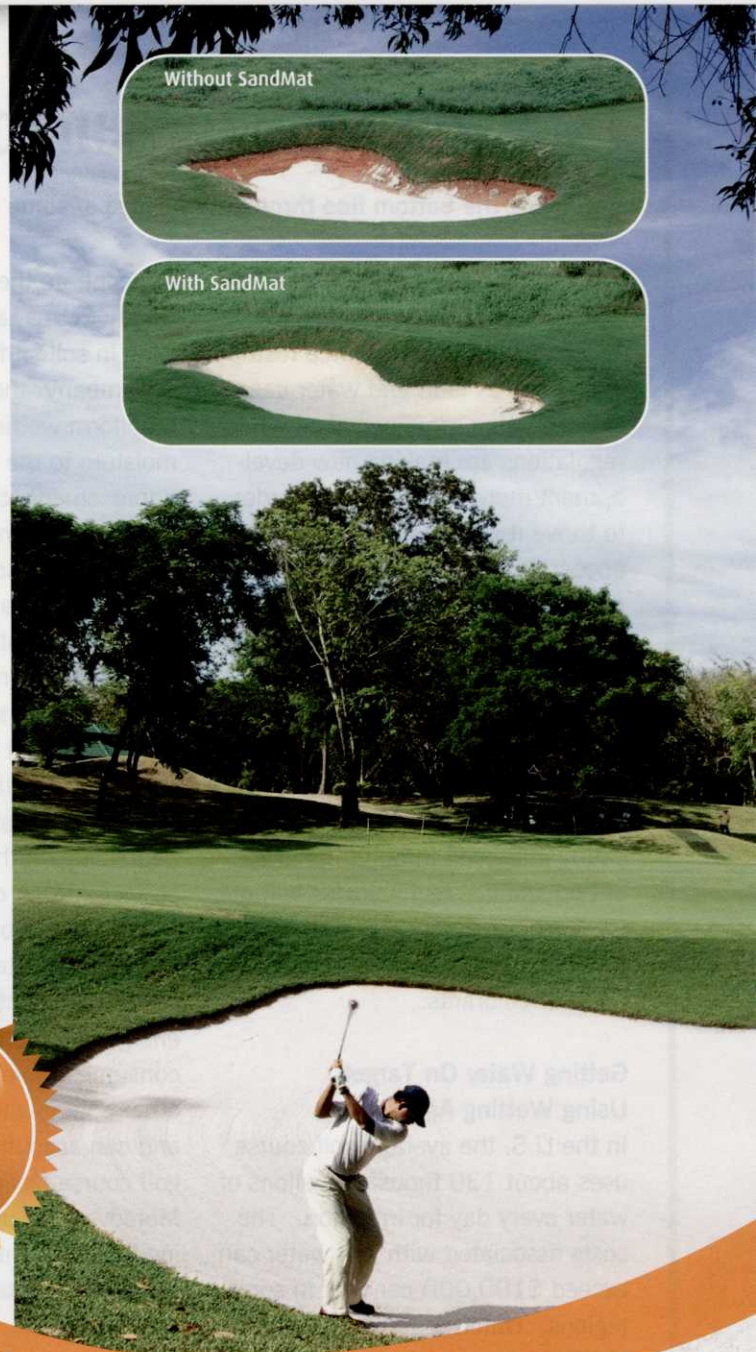
Minimum order quantity applies while supplies last. Available in Canada & USA only. See SandMat.com for details.

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# Can you save 'green' by being green?

Improving the bottom line through the usage of some easy-to-implement sustainable solutions

**S**ustainability is a hot topic in Golf Course Management these days. Resource restrictions such as land and water use are becoming more prevalent while regulations are making new development more prohibitive. In order to thrive it is necessary to not only accept this new working environment but embrace the challenge of seeking out new methods to use resources more efficiently.

The GCSAA+ has identified four key sustainability focus areas, three of which (Water Use, Energy Use, Pollution Prevention) can be significantly improved through the usage of two additive technologies without the need for significant capital investment – namely wetting agents and turf colorants.

## Getting Water On Target Using Wetting Agents

In the U.S. the average golf course uses about 130 thousand gallons of water every day for irrigation. The costs associated with this water can exceed \$100,000 per year in some regions. Unfortunately a large part of this water never gets to the root-zone and is wasted as run-off due to a hydrophobic soil layer; whereas in other areas this water will pool resulting in overwatering which in turn can result in disease formation and additional fungicide usage.

“Quite often the surface tension of water simply isn't low enough

to penetrate the soil profile” says Randy Petrea, a scientist specializing in soil surfactants at Milliken & Company “the key is to develop a uniform wetting front to deliver moisture to the rootzone; such improvements can reduce water usage significantly”

One of the most exciting recent developments according to Mr. Petrea is the introduction of multi-branched wetting agents, “Over the past 5 years the versatility of multi-branched wetting agents have provided the ability to tailor a surfactant that can hold water or depending on the configuration a surfactant that can move water uniformly throughout the soil profile”.

Reduced water usage also has other cost benefits such as less energy and labor. Water pumping consumes more energy than any other equipment on a golf course and can account for 50% of a golf course facility's energy usage. Moreover, the use of hand watering is a labor intensive activity that can be eliminated through effective watering.

## Getting More From Less With Turf Colorants

Consumption of fertilizers, pesticides, herbicides, and fungicides can quite often total multiple tons a year for a typical golf course. If overused these additives have detrimental effects, both to the turf and

to the bottom line.

Uniform coverage is essential in these applications and usage of a colorant as a spray pattern indicator (SPI) is a simple method of identifying spray areas. Many types of SPIs are available but staining is best avoided by using a 100% non-ionic, polymeric colorant such as the industry leading Blazon® product.

Another growing application of turf colorants is for turf enhancement through coverage of missing chlorophyll color or dormant or discolored grasses for either spot treatment or improving appearance of a course later into winter.

The result is reduced maintenance cost for winter relative to over-seeding, and a rapid rebound from dormancy as there is no competition from temporary winter grasses. From a sustainability perspective this is a preferred solution to over-seeding as less water, fertilizer, and pesticides are needed for treatment.

## Final Thoughts

Every golf course faces it's own unique set of challenges. A number of wetting agent and colorant variations are available and it is important to work with suppliers to identify those products that are ideally suited to your application needs.

# Green is more than just a color

With a 100-year tradition of sustainability leadership, Milliken not only delivers the colorants, turf paints and spray pattern indicators with the performance you've come to expect, our innovative products can help you have less impact on the environment and more impact on the beauty of your facility.

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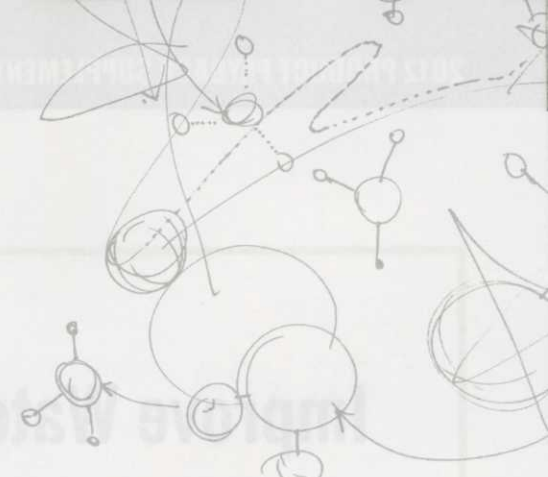
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# Improve Water Quality on Your Course

**F**rom irrigation ponds to the club house, Otterbine offers a variety of products and services to support the needs of the golf market.

Otterbine surface and subsurface aeration systems provide the industry's highest independently tested oxygen transfer and pumping rates to maximize the consumption of excess nutrients and naturally treat the causes of poor water quality, leaving ponds healthy and clean.

Otterbine Aeration Systems provide solutions to improving water quality on golf courses worldwide.

## Maintain Irrigation Ponds

Irrigation ponds left unmanaged can lose 1-5 inches or (2.5-5 cm) of storage capacity a year due to sludge build-up, let alone the damage it can cause with clogged pumps and irrigations systems. High nutrient levels in irrigation ponds can also lead toward turf damage, while poor water quality will often lead toward foul odors, fish kills, unsightly aquatic algae and weeds. The costs and time associated to repair damage can add up quick affecting your bottom line. Otterbine offers both surface and subsurface aeration systems providing options to the superintendent and the design of the course.

## Manage Effluent & Reclaimed Water

As the demands on water resources continue to escalate, along with the costs of obtaining potable water - many are considering new ways to acquire sources of irrigation water. The high nutrient levels of effluent water must be treated prior to use in irrigation and the impressive pumping and oxygen transfer rates of Otterbine's High Volume and Air Flo 2 systems are an ideal match for these ponds.

Otterbine's Sunburst, Gemini and Saturn units will also provide plenty of aeration with the added benefit of a surface spray for aesthetic enhancement.

## Control Algae, Odors & Fish Kills

Introducing oxygen into the water column is the most natural solution to pond and lake management and effectively controls algae, aquatic weeds, and foul odors leaving ponds and lakes healthy and clean.

## Sustain Natural Habitats

Aeration is able to consume excess nutrients that are harmful to ponds and their inhabitants. Providing an environmentally friendly solution to improving water quality, the use of Otterbine aeration systems supports healthy aquatic habitats for fish and wildlife, while creating naturalized landscapes to be enjoyed by members and guests.

## History Of Otterbine

In the late 1970's Chuck and Terry Barebo recognized the need for aeration equipment beyond aquaculture and industrial applications, and Otterbine was introduced to golf. Partnering with family businesses and equipment houses throughout the U.S. and internationally, friendships and alliances have evolved over the past 40 years to make Otterbine the leading aeration and fountain product found on golf courses throughout the world.

## Otterbine's on the Golf Course

For more information and testimonials on how Otterbine's benefit the golf industry visit us online at: [www.otterbine.com/golf](http://www.otterbine.com/golf)

Improving Water Quality Above and Below...



Before



After



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## Redexim North America: Breaking barriers to better turf

**R**edexim North America is a leader in the design and development of professional turf equipment produced specifically for aeration, seeding, top dressing and environmental maintenance. With marketing operations in over 50 countries in the world, it has the largest range of equipment in its sectors, supported by a worldwide network of authorized distributors.

The Redexim North America corporate office is in Fenton, Mo., with its parent company and central engineering base in Zeist, Holland, with sister companies in England and in Australia, supported by manufacturing in the USA, UK, Holland, Italy and Hungary. The Group's philosophy is to supply to each market with products that meet local needs.

"These products are designed to withstand vigorous use in all conditions, and are backed by a distribution network that can handle technical, parts and service back-up that is the best available in the industry," said Paul Hollis, executive vice president of Redexim North America. "Investment in new product development and research into finding better methods of grounds care/maintenance is a major objective of Redexim North America to ensure that we remain the world leader in meeting the specialist needs of the turf and ground care markets."

Redexim North America was formed as a corporation in Pennsylvania in 1997. For 17 years prior to that, Redexim equipment had been imported by a sales agent in the Scranton area. "Since the beginning, we have experienced tremendous growth in the company, expanding into synthetic turf and other markets, while staying with our core philosophy," Paul said.

"We lead the way with products like Verti-Drain, Verti-Core, Verti-Seed, Verti-Quake, Verti-Knife, Over-Seeder, Easy Spread, and Turf Tidy. These unique and trend-setting machines are the most advanced turf management tools on the market, recognized for performance, quality, durability and customer satisfaction. All Redexim products pass the toughest test of all – the test of time.

"The quality construction and advanced design of Redexim products are backed by the best after-the-

sale service program in the industry. Our distributor network, the finest in the world, guarantees spare parts availability to keep your equipment running. Redexim North America has become a leader in golf course and turf management equipment by supplying the best machines money can buy, and by listening to the people who use them. Forging strong relationships with customers, built on trust and respect, is essential to our promise of quality."

Paul went on to say, "Innovative design, craftsmanship, and heavy-duty construction make Redexim products the standard of quality in the turf management marketplace. We know what our customers need – machinery that performs well, saves time and offers value. The market-leading range of Verti-Drain's and other fine equipment have outsold and outperformed all competitors for over 30 years."

Redexim products have been used by golf course superintendents in the four major championships, and by sports turf managers in championship venues for the NFL, MLB, NCAA, IOC, FIF, UEFA, and the World Cup.

In the coming year, Redexim North America plans to launch its walk-behind power plant called the Carrier, which can work with seeders, aerators, verti-cutters and a multitude of other small three-point mounted equipment. In addition, Paul told us that Redexim North America is planning the exciting introduction of a new high-speed deep-tine aerifier called the Bullet in two sizes later this spring or summer.

"While we have no crystal ball to foresee the future, our hopes are that we see the world economy to pick up and strengthen existing revenue streams. Further expansion of our factory-direct store, Redexim Turf Products, as an alternative to conventional distribution is on the drawing board, as well as additional investment in our agriculture divisions, Tortella North America and Parmiter North America, while the agriculture market continues to be booming," Paul concluded.

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# Redox Turf Proves Less Isn't Just More ... It's Better!

**R**edox Turf Proves Less Isn't Just More... It's Better! Golf course superintendents are constantly under pressure from three fronts: agronomically, to produce vibrant, healthy and quality playing conditions; economically, to produce positive results profitably; and environmentally, generating visible results while faced with the demand for lower inputs and reduced impact on ground and surface water.

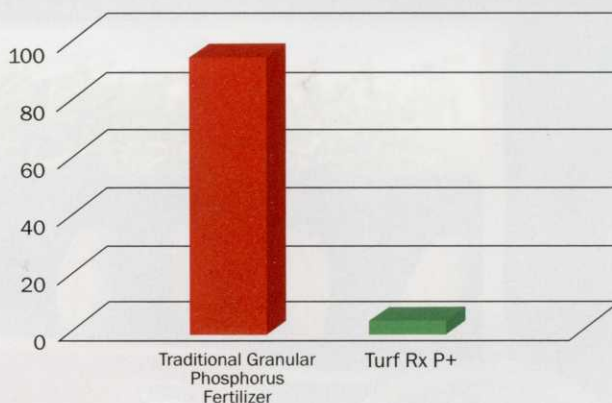
Lower nutrient inputs – particularly phosphorus and nitrogen – is not simply a fad that superintendents can expect will fade away. While most people educated in agronomy understand the need for nutrients to generate quality turf, it is also understood that the nutrients need to be kept from leaching into ground water.

Through the development of high-efficiency fertilization solutions, Redox Turf provides protected, complexed nutrient molecules, preventing “tie-up” in the soil.

With superior effectiveness, and dramatically lower application rates, Redox Turf allows you to be environmentally responsible without sacrificing conditions.

The result is more effective uptake by the plants and dramatically lower inputs, protecting ground water from potential ecological harm.

## Phosphorus Inputs



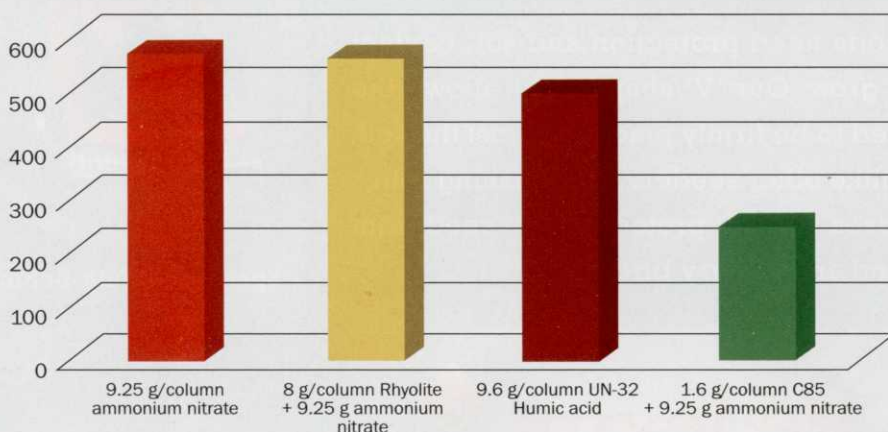
Much of today's conventional product chemistry was developed decades ago with simple product chemistry in mind, often neglecting the agronomic requirements that may be necessary for optimum plant growth.

The science of Redox focuses on Agronomic Chemistry centered on four primary considerations: The agronomic needs of the plant, potential soil and plant interactions, interactions of the elements in solution and finally, product chemistry. In essence, we address the question of product formulation in a reverse order of the traditional approach.

The result is plant nutritional solutions that work, and work effectively together, to produce healthy and high quality turf.

On golf courses across the nation measuring by all relevant standards, including Visual Quality, the use of Redox Turf has continually shown to be agronomically, economically and environmentally advantageous.

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## Tools for Fall Clean-up and Cultivation

Superintendents face many challenges going into the Fall season. The first major challenge is debris clean-up from falling leaves, pine cones, pine needles, etc. Cool season grasses need to be aerified, verticut, etc. And some Superintendents use this time of the year to mow native areas before going into the winter months. **Wiedenmann** manufactures several pieces of equipment to aid in these processes.

For aerification, Wiedenmann manufactures several models of **Terra Spike** deep tine aerifiers. These deep tine aerifiers will obtain the depths needed to break through any black layer, thereby reducing compaction that increases water, air, and nutrient exchange to the roots. As a result, root depth will increase causing healthier leaf production and improved resistance during stress conditions. The full range of Terra Spikes by Wiedenmann accomplishes these goals while offering the user the correct size, depth, and speed of machine to meet their specific needs. A variety of tine options, both solid and coring, are available as well as multi-tine blocks for tighter hole spacing. Wiedenmann has worked for decades to develop the technology to offer **the fastest deep tine machines on the market**. The Terra Spikes are very durable and user friendly, offering a variety of features such as the Quickset adjustment of the entry angle and of the depth, the VibraStop and PowerPack anti-vibration and absorption systems, the Quickfit tine mounting and extraction system, the ATC (Advanced Tine Control) system offered on the GXi HD, Turf Retainers, Safety Guards, Rear Rollers, Tight Hole Spacing, Ballast Weights, Windrows, etc.

For debris clean-up, Wiedenmann offers several tools, including the **Mega Twister** blower which swivels 270° on the ground while producing 14,000 cfms of airflow while creating very little noise. Another tool for debris clean-up is the new **Super 120 M** turf sweeper which is a self-contained sweeper that efficiently collects leaves, debris, aeration cores, etc. Due to its compact size, it can be maneuvered on and around greens and tees as well around other tight areas. It is also ideal for cart paths and hard surfaces.

The Super 120 M has a 48" working width and a 2.1 cubic yard capacity. It is powered by a Honda GX 240 gasoline engine and can be pulled by most vehicles. Once collected, the debris is easily removed with a manual discharge lever. The bigger brothers to the Super 120M are the **Super 500** and **Super 600**. The Super 500 can be equipped with a brush head, like the Super 120M, or with the multi-purpose sweeper/flail/verticutting head that is also used on the Super 600. Not only do the Super 500 and Super 600 do a superb job with wet and dry debris clean-up, they also perform some mulching of material while sweeping and collecting. The airflow is so great that the multi-purpose sweeper head does not come in contact with the surface. Once collected, debris can then be deposited into a dump truck or other container by using the high dump feature allowing dumping up to 83" off the ground.

For mowing native areas, the **Super 500** and **Super 600** with flail blades are the ultimate tools for mowing native areas and collecting the clippings in one pass. The flotation axles and robust design of the Super 500 and Super 600 allow for operation in difficult areas. Debris can be dumped in a container or dump truck by using the high lift feature of the Super 500 and the Super 600.

For removing excess thatch by verticutting, the tools of choice are the **Super 500** and the **Super 600**. The Super 500 and Super 600 will verticut and collect the thatch in one pass, which allows for verticutting without making a mess. Verticutting becomes a one-man, one tractor operation. Most golf courses are required to close while using a typical verticutter due to excessive mess and the necessity of using many resources for clean-up. With the Super 500 and Super 600, one can verticut during play with optional spacing of ¾", 1 ½", or 2 ¼". In addition, both the Super 500 and Super 600 have a high dump hopper that will lift up to 83" high.

For more information, please contact  
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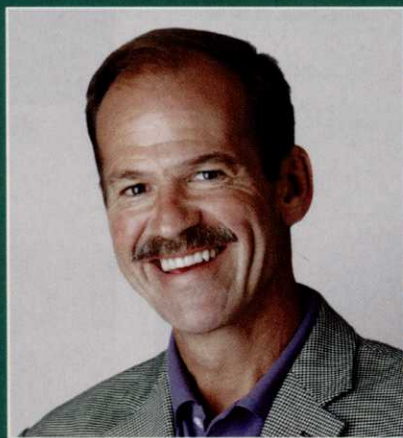
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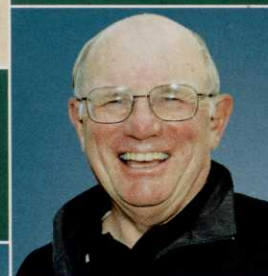
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# feeding frenzy



Your fall fertilizing program has a direct impact on spring turf. Superintendents share their strategies that get their turf fed and in top condition.

BY RICHARD SKELLY

**H**ow does one best approach fall fertilization after an extremely dry and hot summer? No doubt this issue is on the minds of many superintendents around the Southwest and Midwest. All experts GCI talked to agreed fertilizer with higher levels of potassium and phosphorous is the way to go, but when you're talking 30 to 60 acres of coverage, that can get downright expensive.

Most every superintendent knows the importance of keeping good logbooks and records of how much was applied to the turf

on what dates and how, but what do you do after a weather season like this one, marked by the most extensive drought and excessive heat since the Dustbowl of the 1930s?

Tim Nielson, the superintendent at Creekmoor Golf Club in Raymore, Missouri, not far from Kansas City, says in his 10 years of being a superintendent, he's never witnessed such a dry spring and summer. Creekmoor is an 18-hole semi private facility built in 2006 that opened in 2007. Nielsen has zoysia fairways and bent grass tees and greens.

"I haven't seen anything like



have a large lake to draw water from and our irrigation system is fairly state-of-the-art; the coverage is pretty good.”

Despite the extreme weather around Kansas City and other parts of the southwest and Midwest – notably Arizona, New Mexico, Utah, Colorado, Texas, Iowa, Nebraska, Kansas, Missouri and parts of other states – Nielsen says he’s not changing his fall fertilizing routine.

“I typically go for the second week of September every year. This year, I’m not going to change anything. The temps look like they’ll be in the low to mid-80s so I’m not too concerned with that,” he says, adding that Creekmoor’s irrigation system will provide the water for the fertilizer to take, “but obviously, if this drought continues into the fall and winter, it doesn’t bode well for next spring.”

At Creekmoor, Nielsen reports his roughs thinned out a bit in the heat, but that’s about all he lost. He’ll have to do some over-seeding there.

“I can tell you what I should have done, considering how dry it was,” Nielsen continues, “it seems to me like the drought started well before 2012. It was dry last fall, and it was dry in the spring and this spring when we were trenching a line, digging down three feet, I noticed it was super dry, and realized right then and there I should have been using more water in the spring.”

“If there is one tip I can offer about fall fertilizing, it’s that if you are seeding, you need to put down a high phosphorus fertilizer and be sure you maintain your soil moisture,” Nielsen says.

Assuming the worst case scenario, that his area of Missouri is in for a dry fall and winter, Nielsen says he will “look to water deeper into the profile in the spring and make sure I build up the moisture there.”



If you are seeding, Creekmoor GC superintendent Tim Nielsen recommends a high phosphorus fertilizer and maintaining adequate soil moisture.

Brad Gray, the superintendent at Mission Hills Country Club in Kansas City, Mo. has been in a superintendent role for 12 years. He oversees a classic walking course that was designed and built by Tom Bendelow in 1914. Mission Hills was redesigned by Keith Foster in 2006. Bendelow also designed Medinah Country Club, site of this year’s Ryder Cup matches.

“This has been a terribly hot and dry summer,” Gray says, “but what’s unusual about it is it’s always kind of hot and humid in Kansas City. But this year it’s been hot and dry, almost like New Mexico or Arizona.”

Gray has bentgrass greens, zoysia grass tees and fairways. The roughs at Mission Hills are fescue and bluegrass blended with *Poa annua*.

“Right now we’re out there aerifying and over seeding the roughs. Then we’ll fertilize on schedule the second week in September,” Gray explains.

“We came through the summer the best we’ve ever had as far as maintaining cool season turf grass. We’re in a drought, yet I’m on city water, so anything we use we buy and we’ve had no restrictions on our water use. We had all the water we needed, but that came with pretty high water bills.”

The lack of rain put extra stress on approaches to and from cart paths, Gray says, so in those places he did some extra application of phosphides and some foliar “at the in and out places next to our cart paths.”

Pressed for advice to other drought-hassled supers, Gray

says: “Raise your mowing heights, if possible. That’s a way to save money and if you do have access to the water, maybe just try to cool the plant through the day, giving it quick spritzes from the irrigation system.”

Gray says the men and women on his maintenance team do their mowing in the morning and spent afternoons syringing and otherwise irrigating certain stressed areas at Mission Hills.

What if there is no relief in sight, and an equally dry winter is expected?

“I won’t alter my plan next spring,” Gray says.

“Every super should be tweaking their management and maintenance practices all the time, there might be a few things I tweak but it won’t be much different in the spring.”



“Hopefully, where possible, the superintendents are using irrigation in conjunction with their fertilization programs. Once there is rainfall, eventually the whole turf grass plant is much better hydrated.”

— CHARLES “BUD” WHITE

Charles “Bud” White at the USGA’s regional office in Dallas, says superintendents with warmer weather Bermuda and zoysia grasses need to go with a more phosphorus and potassium in late summer and early fall to help these grasses have better winter tolerance.

“When Bermuda grass goes dormant in the fall, it’s much more susceptible to winter kill, so the fertility plan should be geared toward trying to offset the chance of winter kill affecting the grass too much. That should be the focus for people who use warm season grasses, or the golf courses primarily in the South,” White explains.

“With bent grasses we advise a similar scenario, a little more phosphorus and little more potassium for the same reasons of trying to establish root growth and rebuilding a healthier plant,” White adds.

In Dallas, Sept. 4 was the area’s 31st day of 100 degree plus temperatures, White says, noting “normal” for Dallas is 18 days per year of 100 degree plus temps. Last year, Dallas had a record-setting 71 days of 100 plus temperatures, “and this year,



Warmer weather Bermuda and zoysia need more phosphorus and potassium in late summer and early fall to help with winter tolerance.

we’ve had another hot summer, not quite as bad as last year, but almost equally as dry.”

White says the drought area as he understands it includes all of Texas, Louisiana, Arkansas, Oklahoma, New Mexico, Colorado, Nebraska, Iowa, Kansas, Missouri and Tennessee, “and this year it was very difficult, it even went on into the Carolinas and Georgia.”

“Hopefully, where possible, the superintendents are using irrigation in conjunction with their fertilization programs. Once there is rainfall, eventually the whole turf grass plant is much better hydrated,” White says.

“It’s going to take several inches of rain to get the soil back to where it was, and in some places in the drought states there’s been several inches,” he adds. “That’s why we recom-

mend potassium and phosphorus to rebuild a strong root and rhizome system.”

Dr. Richard White, a professor of Turfgrass Physiology and Management at Texas A&M University in nearby College Station, Texas, says a good time for supers with cool season grasses to fertilize is once there’s a break in the hot and dry weather.

“The challenge is some of your superintendents are dealing with warm season grasses and some are dealing with cool season grasses,” says White.

“My recommendation is as long as hot dry conditions of summer have moderated, that’s when you should look to fertilize. If you can, wait for somewhat cooler fall temperatures.” GCI

*Richard Skelly is a freelance golf writer based in Spotswood, N.J. and a frequent GCI contributor.*



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## GOLF'S GRAND DESIGN

One of the American Society of Golf Course Architects ongoing missions is to foster public awareness of the profession. In August, they unveiled their newest effort, and hit a home run. Both Golf's Grand Design, the Public Broadcasting television special and the companion book of the same name are excellent additions to the field of golf course architecture. Both chronicle the stories of the surprisingly small cadre of golf architects over more than a century in America.

The project was the brainchild of current ASGCA President and Golf Digest writer Ron Whitten, who worked with WNEB, the PBS affiliate in Buffalo, N.Y., to make the program, with funding by the Robert J Stansky foundation and support from the ASGCA foundation. Over the years, ASGCA has produced technical papers, articles and books about the profession, but TV is obviously the biggest media available used to date. The fact that PBS was interested in showcasing golf course architecture speaks volumes to the awareness that has come to golf architecture.

The show premiered on Aug. 3 in most markets, but several aired it later in the month. If you missed it, the PBS website has many related clips – mostly interviews with architects like Nicklaus, Doak, Fazio, Cupp, Coore, Crenshaw and David Mclay Kidd.

The show is an hour-long recap of the leading movements and ideas, together with the short lived fads in American golf course architecture. It touches on how the craft emerged and grew in America, starting with the early Scots and English who knew the craft and taught their local assistants, who gained experience and eventually struck out on their own. It covers the transformation to American architects like Charles Blair McDonald,

Donald Ross and A.W. Tillinghast before WWII, and Robert Trent Jones after the war. It then highlights the best architects of the last 50 years and the trends in architecture from “total site manipulation” to “minimalism.” It helps the viewer understand the passion today's architects bring to the projects awarded to them, and provides small glimpses into the golf architect's mind-set using interviews with top architects, intelligent narrative, and stunning video.

It is well done and my only complaint is that an **hour isn't enough** time to capture much beyond the highlights.

It is well done and my only complaint is that an hour isn't enough time to capture much beyond the highlights. However, as familiar as I am with golf design history, even I picked up a few tidbits.

That's where the “old school” companion book of the same title comes in. Authored by Cupp and Whitten, it fills in the gaps created by television time constraints. They converse as experts and friends in over 30 short, and easily digested chapters that you can read separately. Each chapter focuses on a different architect, project and backstory about the architect and architecture. Most contain copies of the original design sketches of the architect, showing the variety of methods used. Cupp and Whitten explain the project and challenges via their inside knowledge as authors and architects to provide deeper analysis of the architectural thought process.

It is a collection of fascinating stories about an eclectic bunch of not more than a few hundred golf course architects worldwide, who come from diverse backgrounds. While the largest

group comes from landscape architecture training, others come from fine arts, engineering, agronomics, business, law, and of course, Tour players. Each brings unique insights, but must learn the other skills used daily by golf architects, which include a mixture of artistic work in dirt with large machines, golf knowledge, and grounding in less sexy design principals, such as drainage, agronomics and circulation. They must consider the proposed – or in renovations, existing– maintenance

regimen. After that, golf architects need the engineering ability to put it all together, plus background in construction to design in “constructability” on a reasonable schedule.

The combination of very different creative people, individual sites, and more challenges result in an ever-widening variety of design styles, which beckon golfers to a new challenge.

The inherent interest by nearly every golfer in the design of the playing fields is why Golf's Grand Design is so long overdue, and of interest to so many, including those golfers those who think that given the chance, they could and would create a great golf course. It takes a bit of thought to design a golf course, and greater vision to build a great one. This documentary sheds some light on the real process.

For golf architecture fans, the documentary is an entertaining show, and the companion book may be a better read. Even if you missed the broadcast, the books stands alone and the book form lets you go over the interesting parts again to absorb the ideas behind America's golf courses. **GCI**



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# LIKE A GOOD MENTOR

Mentoring great assistant superintendents is as much a skill as keeping your turfgrass disease free. Doing it well puts the future of the golf course industry in good hands.

BY JASON STAHL

**K**en Mangum learned a lesson about managing people early on in his career. He was fresh out of college and gung ho on being the hardest worker on his golf course maintenance crew. In the morning, he would mow nine of the greens, while a co-worker would mow the other nine. He would routinely be done by 9 a.m., ready to start on something else, while the other guy wouldn't finish till 11 a.m.

"I talked to my boss about it because I thought it wasn't right," says Mangum. "He asked me what I would do with the guy, and I said I think I would have to fire him and hire someone else who could do a better job. He told me I should probably look a little deeper before doing that."

Turns out, the "other guy" couldn't read or write and could only operate a walking mower or a trimmer because he couldn't drive. But he never missed a single day of work and supplemented his minimum wage income by selling golf balls he found on the course.

"My boss said, 'He's one of the most dependable guys I have, and

you want to fire him?' I said, 'I think I'd like to reconsider,'" says Mangum.

The lesson Mangum learned? Not everyone is going to be a superstar, but everyone can contribute. Also, that learning how to deal with a variety of different people is key to success as a superintendent.

As director of golf courses and grounds at Atlanta Athletic Club with almost 40 years in the industry, Mangum has managed and mentored his share of people. And when it comes to mentoring assistant superintendents, he says the ideal "students" are those with a strong work ethic and a desire to learn.

"They can't come from a standpoint of, 'I already know it all,'" he says. "It's what you learn after you know it all that counts."

Mangum believes it also pays for an assistant superintendent to be inquisitive and a believer in a better way of doing things.

"I still think, even today, that there always has to be a better way, no matter what we're doing," he says. "You should never be satisfied with what you did last year. We have a saying around

here that the only constant thing is change. If we can't change something we did last year, then we aren't looking hard enough at ways to improve."

So what makes an ideal mentor of assistant superintendents? Clearly, not everyone is cut out for the job. But Mangum believes it starts with being a true professional yourself with a solid track record of integrity and honesty.

"Most likely, those people who are that way were mentored by someone who also was like that further down the line," says Mangum.

Even though assistant superintendents' responsibilities have significantly expanded today from what they were, say, 20 years ago, Mangum believes the fundamentals of mentoring them haven't changed. The one thing he has always not done is tell them what to do.

"I want them to figure it out themselves," says Mangum. "I say, 'Well, how would you solve it?' Their way may not be exactly the way I would do it, but that's not the issue. The issue is getting the job done. So we go back and forth, and maybe I learn some-

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thing and they learn something.”

By making assistant superintendents part of the problem-solving process, Mangum empowers them and also lets them make mistakes – another important part of the mentoring process.

“How do you make good decisions? How do you gain valuable

experience? By making bad decisions,” Mangum says.

Even though there are more turf school graduates than there are job openings right now, Mangum believes there will always be room for the “good people.”

“People who are marginal and don’t have the dedication and

So what makes an ideal mentor of assistant superintendents? Clearly, not everyone is cut out for the job. But Mangum believes it starts with being a true professional yourself with a solid track record of integrity and honesty.



**“You’re the coach. Early on, someone you initially placed in the outfield may watch the infielders and develop. Eventually, as they acquire new abilities, you can move them into the middle infield. And boy, are you a proud individual when they move on to coach another team.”**

ability will struggle,” he says.

Like Mangum, Marc Davison, superintendent of Green Bay Country Club, believes that one of an assistant superintendent’s biggest downfalls when starting out is being a “know-it-all.” He has found some are a little overconfident coming out of college, and there are lots of little things that can’t be taught in school that they still need to learn.

“So a lot of times you have to rein them in a little,” says Davison. “But that’s the beauty of having a 30-year veteran mentoring you. He has been through all of those ‘little things’ – dealing with the grounds committee, the board of directors, the golf committee, etc. Still, assistant superintendents can’t have this mentality of, ‘I’m in charge and I don’t care what the membership says.’ We have to maintain the course, but we have to do it in cooperation and coordination with what the membership wants.

Like Mangum, Davison doesn’t believe in dictating his own way of doing things but encouraging the assistant superintendent and the rest of his team to come up with solutions themselves.

“I let them explore on their own,” he says. “I’m not a real decisive guy, so when I have to make a decision, I get my top guys together and talk things out. I don’t keep a hierarchy. We’re all at the same level, and I want to hear what everyone has to say.”

Davison likes to give authority to assistant superintendents he’s mentoring, but he says you have to gradually build up to that and not load too much onto them right out of the gate.

“A guy right out of college at his first assistant job is not going to feel comfortable leading a crew for weeks on end, but eventually they understand the routine and you can start letting them coor-

dinate things,” says Davison.

As an example, if Davison is rebuilding his bunkers, he might put his assistant in charge of a certain part of the task – the sand removal, drainage tile or edging. In his mind, giving them the authority shows them that not everything has to be his way.

“I want them to know that I don’t think I’m any better than them, and I think they appreciate that,” says Davison.

Davison also prescribes to a tactful approach to mentoring assistant superintendents, especially if he notices something he doesn’t feel is right. The last thing he wants to do is discourage them or squelch their authority by calling them out in front of the crew.

“I might pull them aside and say, ‘Hey, I think we need to change cups today, but I don’t see it on the board,’” Davison says. “It’s all about doing it in an appropriate way.”

Also like Mangum, Davison believes in the power of making mistakes. He feels that assistant superintendents can learn more from their failures than their successes. And their mentors should expect failures so they’re better equipped to deal with them when they do happen.

“Whoever is doing the mentoring needs to understand that their assistant is going to fail,” he says. “They shouldn’t get alarmed if they do fail or go in the wrong direction. It’s not the end of the world.”

Brian Sullivan, director of Belair Country Club in Los Angeles, has a rather frank opinion of how some of the assistant superintendents he has mentored might characterize their former summers under his tutelage: hell.

“But most tell me a couple years later that it was one of the best summers of their lives,”

says Sullivan of the mentoring process. He believes a good mentor leads by example, acts and behaves like a professional, and is willing to spend the time and resources necessary to develop another individual.

A good student, says Sullivan, is one who has a desire to learn and attempts to be the example.

“They’re at work early and ask questions late,” says Sullivan. “They may not know the answers, but they desire to find them.”

Sullivan tells the story of one former assistant he mentored who stayed so late he used to have to go find him in the dark to lock up the shop. Another superintendent once asked Sullivan about what kind of worker this assistant was, and Sullivan replied, “I would never ask him to dig anything for fear that he would bore through to China.

Attitude and experience are also important in an understudy, says Sullivan, along with the proper education. “An education is the catalyst for success in the marketplace,” he says.

Still, Sullivan acknowledges that not everyone is the same, a nod to Mangum’s lesson on people management. Each assistant up for mentoring has different attitudes, thresholds and desires. But Sullivan says developing them is akin to baseball.

“You’re the coach,” he says. “Early on, someone you initially placed in the outfield may watch the infielders and develop. Eventually, as they acquire new abilities, you can move them into the middle infield. And boy, are you a proud individual when they move on to coach another team.” **GCI**

*Jason Stahl is a Cleveland-based freelance writer and frequent GCI contributor.*





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## FIVE FINANCIAL INSIGHTS

**A**s the 2013 budget season gets underway, owners, operators, superintendents and managers are finding that knowledge is far more valuable than a calculator or spreadsheet. If you have budget responsibilities, here are five insights to help you map your facility's financial plan.

### LOCAL MARKET UNDERSTANDING

**TRUMPS MACRO VIEW.** Most facilities rely on macro-level research – the number of rounds played and the ebb and flow of the golfer population – as leading performance indicators. While research from PGA PerformanceTrak and the National Golf Foundation help elucidate this kind of information, understanding local market data is more important. Readily available U.S. Census Bureau data, for example, reveals shifts in population, household earnings and consumption that help you gauge your market's health and vitality. Golf trends have remained soft and demonstrate the "slow leak" that NGF CEO Joe Beditz has warned of for years. But growth is more likely for facilities that have better and more actionable data to support their investment in programs or capital improvements. Local knowledge is a competitive advantage.

### MEMBERSHIP OPTIONS GENERATE

**INCREASED REVENUES.** Barring a significant economic reversal, 2013 membership sales will improve over 2010-12 levels, and more likely where facilities offer membership options.

Although traditional equity memberships have fallen into disfavor at many clubs, club membership – the desire to be a part of an exclusive group with common interests – remains attractive across diverse market segments and geographies. The trick is to offer flexibility that encourages consideration. For example,

many clubs are adding new members through local marketing and programs that promote low-risk, easy-to-access memberships. Non-equity, non-voting memberships that require a one-time joining fee are attractive in many markets. While the price range varies by market, the value is in attracting and keeping dues-paying members.

Discovery or trial memberships are also a useful method for attracting potential members who want to try the club before making a financial commitment. Trial memberships often offer attractive joining fees and dues that are similar (if not the same) as regular dues. In addition to discovery memberships, international and generational memberships are finding market support.

**"Management teams can reduce this cost escalation through careful consumption control and procurement practices."**

### RECRUITMENT AND RETENTION PLAN-

**NING SUSTAIN GROWTH.** Programs such as the PGA of America's Golf 2.0 initiative are building interest and attracting players. Recruitment, which requires constant attention and effort, is a part of most clubs' business plans. In 2013, savvy operators will focus on retention, including tactical solutions for retention – rewarding participation based on predetermined targets and competitions that reward the customer who plays the most rounds.

**COSTS FOR CONSUMABLES AND PETROLEUM-BASED PRODUCTS WILL INCREASE.** Corn prices, which are

trending upward following a drought-ravaged 2012 harvest, will drive up costs for everything from syrups and oils to meats and poultry. Fuel prices will escalate and be affected by events such as Hurricane Isaac, which shut down several refineries for short periods. While U.S. fuel costs remain low compared to most oil-consuming industrialized countries, price increases impact all goods and services delivered to your facility.

Management teams can reduce this cost escalation through consumption control and procurement practices. Participating in procurement programs, which take advantage of volume-purchasing, can partially mitigate cost increases. If in doubt, ask one of the large procurement services to show you how much it charges customers for certain products and then compare your costs.

### OVERHEAD COSTS TIED TO INSURANCE

**AND COMPENSATION WILL GROW.** Until the new Club DNA program launched by the Club Managers Association of America is readily available, insurance costs at most clubs will continue to increase. By rewriting the risk profile of your club – the strategy behind the new CMAA program – many facilities will reduce their premiums.

Most alert club leaders have developed a compensation strategy within the club's overall business planning model. Many clubs deferred bonuses and pay increases for a year or two during the depth of the recessionary cycle. But most have begun to acknowledge the critical and competitive importance of retaining top-performing employees. As such, overall compensation for the club segment will increase in 2013; the turnover of poor performers and continued reductions in force will be used to combat these increased labor costs. **GCI**

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**A**t the Zarco 66 station in Lawrence, Kan., a revolution is being fueled. Alongside other blends of gasoline is E15, an ethanol and gasoline mix recently cleared by the EPA for commercial sale.

A mix of 15 percent ethanol and 85 percent gasoline, E15 jumps above E10 in the race to reach the Renewable Fuel Standard's alternative fuel goals. E15 proponents call it an accomplishment for American energy independence – green industry pros see it otherwise.

Even though the fuel burns

cleaner than E10 or straight gasoline, smoothing engine knocking, reports show it can damage off-road vehicles and small engines. It's approved for light-use vehicles from 2001 to the present, but the fuel could find its way into tanks and engines it's not made to power and do major damage.

**READY OR NOT.** E15 stems from the Renewable Fuel Standard, created under the Energy Policy Act in 2005, as a mandate that ethanol, advanced biofuels and cellulosic fuels be blended into gas at certain levels by goal years.

"The underlying assumption

of the Renewable Fuel Standard, gasoline usage will continue to increase forever, and the E85 flex fuel fleet would grow and expand just didn't happen," says Kris Kiser, Outdoor Power Equipment Institute (OPEI) president.

Kiser's biggest concern isn't whether the goal is met, it's that the fuel was rushed to the market without enough testing on engines, light-duty vehicles and otherwise. "The two officially sanctioned tests were done by the Department of Energy and the National Renewable Energy Laboratory," he says. "They tested 28 engines and four engine classes

of (OPEI's) 900 classes that are regulated. Everything failed. The Department of Energy tests on small engines – each of the 28 engines had either performance irregularity, failure, unintentional clutch engagement, it had some kind of problem."

Scott Zaremba, president of Zarco 66, Inc., where E15 has made its debut, doesn't see the testing the same way. "The report I've seen was a large engine manufacturer testing auto engines," he says. "They had failures with 15 percent, but what they forget to tell you is they also had failures on straight gasoline. When

## What you need to know about the new ethanol blend.

By Kyle Brown



you look at the reports, they say 'could' or 'may.' There's nothing that says 'will.'"

Based on those reports, EPA determined the fuel safe for general use in some vehicles and moved forward on granting partial waivers for vehicles from 2001 and newer in 2011. Green industry pros, the oil industry and others questioned those waivers, and took the issue to the U.S. Court of Appeals.

"Our concern was that the language of the Clean Air Act says that when the EPA issues these waivers, the waiver needs to apply to the entire market," says Patrick Kelly, senior policy advisor for the American Petroleum Institute. "The Clean Air Act, as amended in 1990, is pretty clear that the EPA has the authority to issue a waiver of the CAA that says that 'This fuel blend is essentially deemed similar enough to the fuel that the vehicle was tested on for emissions that it's

acceptable for use in the marketplace.' But E15 potentially puts some cars over the limit in what they're able to tolerate. The fuel is not suitable for all engines in the fleet."

The U.S. Court of Appeals didn't directly disagree with that Aug. 17, but it did rule the associations didn't have the proper standing to raise the appeal in the first place, on question by Growth Energy, a representative of ethanol producers. The fuel would see the market.

**MAKING THE BEST OF IT.** With the waivers, the EPA cleared the fuel to reach consumers. It can be sold on its own at stations, or using blender pumps. "So for the consumer now, you've changed the fueling paradigm, which has existed in this country since the internal combustion engine was introduced," says Kiser.

However, the waivers didn't come without guidance for those

filling up – a Misfueling Mitigation Plan was reviewed by EPA in March, including a label to be posted at pumps listing restrictions for the fuel. "That's right on the dispenser," says Zaremba. "It says that E15 is only for 2001 and newer cars, trucks and SUVs. That's it. We make sure that it's prevalent so customers can see and understand that. Education is the No. 1 thing we try to do every day."

The label bars use in other vehicles, boats and gasoline-powered equipment, but buyers at the pump might not follow guidelines or be equipped to make that choice, says Kelly.

Though Zaremba tries to provide that education with the sale, he wants the manufacturers to help make the issue disappear in the future, he says.

"E15 is not approved to run in the small engines. We need to make sure today they are not using higher than an E10 blend. We

don't want them to put something in one of their engines that is not approved," he says.

**LOOKING FOR OPPORTUNITY.** Though it's raised questions for green industry dealers and consumers, like any market change, the introduction of E15 has also created products opportunities.

"Fuel treatments are springing up all over the place. We have two that just became members of OPEI," says Kiser. "Now you have a bunch of guys getting ready to put boutique fuel on the shelf, like Stihl and Briggs & Stratton. It's expensive, but it's safe – there may be a trend toward that."

Beyond fuel treatments, Zaremba says there's the potential for future engine builds. "They're going to have to change some components in their engines to make sure they don't have any issues with ethanol fuels," he says. "They could em race what it's doing, and make sure what

## Locally strong

**W**hen Troy Karlin, partner at All-N-1 Landscape in Lawrence, Kan., needs to refuel his Ford Ranger, he looks for a local Zarco 66 station, where he can find one of the few places in the U.S. that E15 blend gasoline is currently sold.

"We are huge fans of Zarco 66 and Scott Zaremba," says Karlin. "We'll use it every chance we get. I will personally go out of my way, and I've kind of instructed my guys to do it every chance we get on every piece of equipment."

Though he knows some equipment can be damaged by the ethanol-based fuel, he uses it where he's able, along with biodiesels for some of his fleet. A voided warranty isn't much of an issue to him, he says, since his equipment is already past that point, he says.

"We've looked into it and our warranties are already expired. So we don't care about the warranty," he says. "We don't have any brand-new equipment. So if the warranty's already past, we like the ecological benefits."

Karlin's All-N-1 has company goals that lean toward environmentally friendly practices, with green roofs, rain gardens and edible landscaping. But while

the cleaner-burning E15 comes closer to meeting that aim, there's a larger concept at work for him.

"For me, it's about strength in our community by relocalizing, and getting some fuel security in the community and for our local farmers," he says. "If we can develop a local market, they'll have options."

That goes along with one of the reasons Scott Zaremba is the first to market with E15 at his Zarco stations, he says.

"I've watched over the years as our country has been held hostage for the most part by transportation energy that comes from overseas," he says. "So I said, 'Why in the world would we not want to pursue products that one can be overall better for the environment and also be able to produce the jobs locally with locally based products?'"

E15 may not be the perfect fuel, and needs more testing to reach the broader market of vehicles and any small-engine use, but starting the movement to work with manufacturers to develop engines to better handle alternative fuel is part of that process, he says.

"We need to be thinking ahead and we need to be moving forward," says Zaremba. "It's not infinitum, and it's not going to be around and available always."

they're manufacturing will embrace whatever's coming down the pipeline, because we don't

know what we're going to be able to produce next as the price of oil stays high."

"Most everybody has a product that's warranted to E10," says Kiser. "In relatively short order,

you'll see people saying, 'We have an engine product that runs on E10 to E20. If you want to be safe in the marketplace, buy my product.' There's opportunity."

But dealing with E15 in the short-term and handling alternative fuels with the RFS in the future means an active role in working with the EPA and the government to make certain that the right tests and goals are set in place. "Talk to your congressman and your senator, tell them to clean this up. The underlying statute – tell them they've got to fix it," Kiser says. "EPA is essentially following the law, forcing into the marketplace this biofuel." **GCI**

*Kyle Brown is assistant editor of GCI and editor of Green Industry Supply Chain Management.*

## 3 Keys

**When working with small engine equipment, here's what consumers need to know about how E15 can be used:**

**1** Read and follow the owner's manual. The hope is that dealers and distributors will draw folks' attention to it, that their machine is an E10-designed machine and its warranty would only cover up to E10. Any fuel above that may damage your equipment and void your warranty. The manual is crucial in preventing some unfortunate product testing. "What they need to know is what products can be used with that piece of equipment, and that information is going to come from the manufacturer," Zaremba says. "Right now, EPA has not said it's appropriate for those. But we don't want people to test it on their own. We want to test it in a lab and make sure there's not an issue."

**2** Don't put any fuel containing more than 10 percent ethanol (E10) in small engine products, unless the machine is built to handle it. Don't assume that the fuel used for a vehicle is the same as the fuel used in a gasoline can. "The engines are very susceptible to ethanol," says Kiser. "It phase separates faster, it absorbs water, and it stales twice as fast. This is not something you can leave in your machine or even in your gas cans."

**3** Check the gas pump to be sure that it is dispensing E10. Some gas pumps may offer both E10 and E15, or have blender pumps that dispense mid-level ethanol fuels for flex-fuel automobiles. "You potentially have somebody coming up with their car and what they've got on the trailer, and generally, people like to just slip their card once," says Kelly.

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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 with offices in Pepperell, Mass., and Huntersville, N.C., that designs golf course irrigation systems throughout the world. Reach him at [bvinchesi@irrigationconsulting.com](mailto:bvinchesi@irrigationconsulting.com).

## TO PHASE OR NOT TO PHASE?

The costs of a new or renovated irrigation system in today's day and age are substantial. Basic 18-hole systems easily start at \$2 million and rise rapidly from there.

That is a hefty number to finance, raise or assess and can cripple a facility's cash flow for years. Many courses can just not afford that kind of one-time expenditure.

One option most golf courses want to consider is a phased approach to the installation of an irrigation system that is spread out over several years. Management believes that by phasing an irrigation system installation, they can reduce financing and assessment costs by using capital funds and budgets spread over several years. Although phasing of the irrigation system is always discussed and considered, very few irrigation systems are actually installed in phases.

When considering the upgrading of an irrigation system there is, in most cases, a water supply/pumping component and an irrigation component. Although it may be convenient to install the two components at the same time, it is common to do the irrigation and water supply/pump system work in separate phases. This works well as they are usually different types of contractors installing this type work and interference with play on the water supply/pumping system end is minimal.

The biggest decision is whether to do the water supply/pump system work first or the irrigation system work first. That decision depends on the course, the age of the system, course politics and how much indiges-

tion one or the other is causing you.

Remember, water supply/pump system improvements are basically invisible to a membership. As such, they see their money being spent, but don't see the benefit. Doing the irrigation system first shows the membership the benefit, but then you run the risk of not ever getting to the water supply/pump system phase.

So what are the issues with irrigation system phasing?

First, it will cost more. It's hard enough to get a project approved

So when you start a project **phasing sounds like a good idea**, but when you delve into what will really happen, phasing becomes less attractive.

without the costs being higher. There are several reasons why the costs will increase. Material prices continue to climb despite the depressed economy and lack of golf course irrigation system sales.

Although the commodity items – such as wire and pipe – do not always increase, the hard goods – for example, the manufacturer specific Hunter, Rain Bird, Toro equipment – seem to increase every year. Unfortunately, once you start a phased irrigation project, you are also locked into the manufacturer for the future phases and you have lost the competitive bid advantage for those additional phases which can increase costs. Additionally, fittings and valves seem to increase in price annually.

Labor is a little more volatile and is

very dependent on the economy and the amount of irrigation installation work that is out there in a given year.

Labor costs have come down from the highs of the last decade, but they have started to creep back up over the last two years.

In addition, every contractor has mobilization and demobilization costs associated with every project – bringing equipment in and out, storage units, office trailers, dumpsters, and even portable restrooms. If the system is installed at one time, you incur

these costs only once. However, a two-phase project doubles mobilization costs and a three-phase project can triple that price. Mobilization costs are approximately 5 percent of the contract amount per phase, so phasing increases costs substantially.

Secondly, as time goes by irrigation system equipment evolves, improves and changes. Manufacturers come out with new and improved equipment just as various products are discontinued as technology advances. The more phases to an irrigation project, then the better chance these technology changes make existing equipment obsolete. Not only could you end up with a mishmash of sprinklers or unmatched controllers, but when the system is complete, it can be considered technically obsolete as the newer

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equipment has already out paced your existing system.

In fact, this scenario occurred with many systems installed in 1990 and 1991 as the systems were considered obsolete by 1992. It only took two years for the technology to turnover.

Lastly, the longer you spread out a project the more it interferes with play and a golfer or member's personality.

Memberships at private clubs and certainly players at public courses quickly tire of construction activities. The longer you draw out the construction period, the more it will impact play, reduce revenues and increase the amount of bitching and complaining from the membership.

If your course is under construction a certain number of people will just go play somewhere else. The last thing you want to do when you're spending this much money is to reduce revenues. If you spread the construction out long enough, then you run the risk that those members

will never come back.

If you have no choice but to phase the irrigation system installation there are a couple of key things to keep in mind.

The first is to develop a plan. It is important to know where you are going and what the future phases will look

equipment can escalate in any given year. For example, 3 percent to 5 percent a year would be a suggested percentage maximum increase.

So when you start a project phasing sounds like a good idea, but when you delve into what will really happen, phas-

**Remember, water supply/pump system improvements are basically invisible to a membership.** As such, they see their money being spent, but don't see the benefit.

like so you do not end up having to redo areas that may have just been installed a few short years ago. An irrigation master plan helps you from making expensive mistakes.

Contain the escalation of the hard goods by writing into the first-phase contract a maximum amount that the Hunter, Rain Bird, Toro or other named

ing becomes less attractive.

When phasing an installation make sure you include all of the costs that will be incurred to make educated decisions.

Also keep in mind that if you have to manage the irrigation upgrade project, then doing it all at once is going to be a whole lot easier and that's worth something, too. **GCI**

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# Staying the COURSE

Superintendents share their experiences with bionutrition programs to help relieve turf stress.

## SCORCHING SUMMER

Scottsdale, Ariz. is a Mecca for "snowbirds." These mostly-retired folks flock to the upscale desert community to enjoy the warmth of the bright sunshine during the dark days of winter. But in the summertime, Scottsdale sizzles under relentless heat with temperatures regularly reaching well above 110 degrees.

To shade golfers from the winter sun, golf course architect Jerry Nelson specified a multitude of eucalyptus trees when Pinnacle Peak Country Club was built in 1976. Today, the trees tower 50 feet or more over the course. "Trees this large are uncommon in Phoenix," says Steve Garner, superintendent at the course for the past 10 years.

As the population in the Southwest grew, night temperatures rose and water became more and more scarce – to the point that some of the thirsty trees declined and died. So far, so good as far as the bentgrass and greens and Bermudagrass tees, fairways and roughs go, but water issues are a part of life in the desert.

"The Water Wise 2014 program will be coming out soon," Garner says. "One thing for sure – they

probably won't be giving us more water."

Adding to Garner's challenges are the small tees. "The course was remodeled in 1996, and tees were undersized or just not built right, so we have been renovating them a few at a time each year," Garner says.

Of course, renovations and major projects are usually confined during the hottest time of the year after the snowbirds fly home. Garner is always looking for ways to speed up turf establishment during the scorching summer.

One of his suppliers offered him a sample of Performance

Nutrition's Z.One T&O 250. LidoChem, the parent company, manufactures this Clinoptilolite zeolite product in several formulations. T&O 250 is enhanced with three KaPre products, which offer humic substances, amino acids, organic extracts and beneficial microbes.



In summer, Scottsdale sizzles under relentless heat with temperatures reaching well above 110 degrees.

"He asked me to use the Z.One on half the tee so I could see how it worked," Garner says. The combination of water retention and soil nutrients did the trick. "The turf rooted three or four days earlier on the treated half. It turned out great." Garner used it at a rate of 250 pounds per acre and raked it into the sand under the sod when rebuilding the tee.

Garner was so pleased with the results that he incorporated Z. One T&O 250 into another turf project.

"I redid the collars around the greens; the Tifdwarf tends to decline after annual overseeding. So we resodded and will just paint them in wintertime," he explains. "The quicker you get sod established, the better it will be."

## TOUGH CONDITIONS

While the recession pummeled the golf course industry hard across the country, Florida was especially hammered. A report released June, 2012 led by Yale University professor Jacob Hacker found that Florida suffered some of the worst economic losses in the nation.

Juliette Falls Golf Course in Dunnellon, Fla., was designed as an amenity for a luxurious community of dazzling, spacious homes. Steve Keller came on board in 2005 for early construction and grow-in and opened the course in 2007. Designed by John Sanford, this Certified Sliver Audubon International Signature

Sanctuary was named one of Golf Digest magazine's best new courses in 2008.

Then the luxury home market collapsed, and the cost to maintain the magnificent course became prohibitive.

The course owner asked Keller to cut back further and further – as close to zero input as possible. Overseeding the Jones dwarf Bermudagrass on the 12 acres of greens, tees and collars and the 419 Bermuda roughs and fairway ceased. The budget for fertilizers and pesticides was gutted.

Rhizoctonia zeae struck the course with vengeance. Clemson University research indicates the

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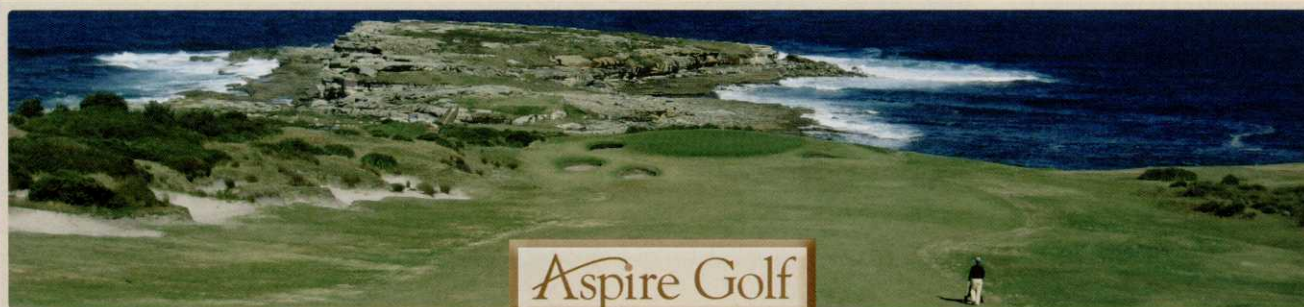
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Juliette Falls GC is built on a sandy site, which creates a nutrient-retention problem.



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disease thrives when fertility is reduced, especially in frequently irrigated sand-based greens with shallow-rooted dwarf Bermudagrass.

"The course is built on a very sandy site," Keller explains. "Nutrient retention has always been a problem."

The lack of funds for course maintenance finally took its toll. Conditions deteriorated to the point of losing greens. The owner realized that some sort of budget was necessary to maintain live turf. He and Keller worked together to minimize spending while maximizing results.

Like all superintendents, Keller is constantly asked to try new products. "My sales rep, Glen Thompson, is a friend and was a superintendent himself," Keller says. Thompson's recommended

a line of "green" products that developed healthier turf to ward off diseases, LidoChem's Performance Nutrition products.

He tried KaPre RemeD8, specifically created to enhance nutrient uptake with a blend of humate extracts, microbes, enzymes, amino acids and more. The improvement in the health of the turf was soon apparent. Encouraged, he tried the Pennamin fertilizers, also enhanced with organics, as well as Vibrant foliar fertilizer and KaPre ExAlt, designed to remediate problem soils.

"There's two or three other superintendents in this area, and we often bounce things off each other," Keller says. "We've all seen results."

While Keller says he still "sneaks in a few fungicide treatments," his program has paid off.



Keller estimates a bionutrition program costs a third of a preventative spray program on his tees and greens.

He estimates that a bionutrition program costs a third of what a preventative spray program on his tees and greens.

And the course conditions? How about making the shortlist of GolfWeek magazines "2012 Best Courses You Can Play"?

"We took a big step back and it took three steps forward to recover," Keller says. "But we're in such good shape now!" **GCI**

*Helen M. Stone is a West Coast-based freelance writer and frequent GCI contributor.*



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## ECOLOGICAL LITERACY

In 1944, noted conservationist Aldo Leopold wrote: “Acts of conservation without the requisite desires and skill are futile. To create these desires and skills, and the community motive, is the task of education.”

In January 2003, the National Science Foundation released a report of its Advisory Committee for Environmental Research and Education that found “in the coming decades, the public will more frequently be called upon to understand complex environmental issues, assess risk, evaluate proposed environmental plans and understand how individual decisions affect the environment at local and global scales.” The committee called for the creation of a scientifically informed citizenry and pointed out that this will require a “concerted and systematic approach to environmental education grounded in a broad and deep research base that offers a compelling invitation to lifelong learning.”

Now, nearly a decade after that report and 70 years after Leopold’s statement, the question is: “Is the public any more ecologically literate than they were 70 years ago?” To my way of thinking the answer is a resounding “No.” This is not only a sad state of affairs, but it is dangerous to our future and, of course, to the future of golf.

In the course of a lifetime, an individual will accumulate environmental knowledge from a combination of school, the media, personal reading, family members and friends, outdoor activities, entertainment outlets, and a wide range of other professional and personal experiences. For a few motivated individuals, this can eventually add up to an accomplished environmental literacy. But for most Americans, it falls far short. Most people accumulate a diverse and unconnected smattering of factoids, a few – sometimes totally incorrect

– principles, numerous opinions, and very little real understanding. Research shows that most Americans believe they know more about the environment than they actually do.

That is why 45 million Americans believe the ocean is a source of fresh water; 120 million believe spray cans still have CFCs in them even though CFCs were banned in 1978; another 120 million people believe disposable diapers are the leading problem with landfills when they actually represent about 1 percent of the problem; and

often soul-soothing, outdoor play. The age-old pattern of children spending hours roaming and playing outside is close to extinct due to a combination of electronics, cyberspace, and parental efforts to keep their children indoors and, in their minds, safer.

While the simplest forms of environmental knowledge are widespread, public comprehension of more complex environmental subjects is very limited. The average American, regardless of age, income or education, mostly fails to grasp essential aspects

For golf course managers, this **sad state of affairs** is an opportunity. The opportunity rests with the need for course managers to “talk the talk” of conservation and environmental management, not just walk the walk.

130 million believe hydropower is America’s top energy source, when it accounts for just 10 percent of the total. It is also why very few people understand the leading causes of air and water pollution or how they should be addressed. Years of data from Roper surveys show a persistent pattern of environmental ignorance even among the most educated and influential members of society. And an unknown number of people – some playing golf on your golf course – believe golf courses are nothing more than manicured hazardous waste sites.

A more recent and disturbing phenomenon also warrant careful attention. It is perhaps best described in a book by family expert and author Richard Louv (2005) as widespread “nature-deficit disorder.” Louv is among a growing number of analysts who see unprecedented pattern changes in how young people relate to nature and the outdoors. As kids become more “wired” than ever before, they are drawn away from healthful,

of environmental science, important cause/effect relationships, or even basic concepts such as runoff pollution, power generation and fuel use, or water flow patterns. For example:

- About 80 percent of Americans are heavily influenced by incorrect or outdated environmental myths; and
- Just 12 percent of Americans can pass a basic quiz on awareness of energy topics.

For golf course managers, this sad state of affairs is an opportunity. The opportunity rests with the need for course managers to “talk the talk” of conservation and environmental management, not just walk the walk. The bottom line is the average American is dumb as a rock when it comes to conservation and environmental management. They generally don’t know the difference between bentgrass and moss. It is in the best interest of golf and golf course managers to establish and implement an education approach aimed at raising the ecological literacy of your patrons. **GCI**

BY JEFF NUS, PH.D

# Still Stinging

University of Florida research compares Bermudagrass and seashore paspalum cultivars for their abilities to tolerate nematodes.



“ I am often asked by golf course superintendents if a particular cultivar is resistant or has fewer problems with nematodes than other cultivars.”

**T**he crucial component of any turf pest control strategy is to use turfgrass cultivars that have the greatest genetic resistance to that pest. After all, if the turf is genetically resistant to certain diseases or insects, there is less dependency on fungicides and insecticides to keep the turf

healthy. Can the same strategy be used for nematodes?

That is exactly what University of Florida scientists wanted to know. According to a 2005 field survey of Florida golf courses by Dr. William (Billy) Crow, associate professor of nematology at the University of Florida, 87% of those courses

had potentially damaging levels of plant-parasitic nematodes (1). With the loss of NemaCur (fenamiphos) in 2007, questions regarding nematode resistance in turfgrass cultivars

are more important than ever.

With funding from the USGA Turfgrass and Environmental Research Program, Dr. Crow and his colleagues, Dr. Kevin Kenworthy (assistant professor

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Plots of both Bermudagrass and seashore paspalum were planted in 2008 at University of Florida turfgrass research plots. Nematode counts were taken from soil samples at the time of planting and every 90 days during the growing seasons of 2009 and 2010.

of plant breeding) and graduate student Wenjing Pang, initiated studies to evaluate Bermudagrass and seashore paspalum cultivars for their abilities to resist nematode infestations (2,

answer those types of questions. Use of plant resistance and tolerance is the most long-lasting and environmentally friendly method for controlling pests.”

In May 2008 and April 2009

health was determined by evaluating root lengths and turf density every three months throughout the growing season (2, 3, 4, 5). Results of the studies showed that the change in

Celebration (27%), Floradwarf (32%), Tifway (33%), and TifSport (93%). However, although TifSport Bermudagrass appeared to be more effective at suppressing the reproduction of sting nematodes in the field, the population of spiral nematodes increased 123-fold in those same TifSport plots (2, 4).

The study revealed not only differences in nematode populations between Bermudagrass cultivars, but also differences between Bermudagrass and seashore paspalum. Seashore-paspalum was a more desirable host to spiral nematodes than it was for sting nematodes. The population densities of spiral nematodes increased 177-, 106-, and 214-fold, while sting nematodes decreased by 69%,

“Nematode species composition and population density depends on lots of factors, including the content of sand, silt, clay, and organic matter that is present in the soil, depth to the water table, compaction, drainage, and presence or absence of natural enemies.” – DR. WILLIAM CROW

3, 4, 5). “I am often asked by golf course superintendents if a particular cultivar is resistant or has fewer problems with nematodes than other cultivars,” explains Dr. Crow. “I really wanted to have some research results to

through 2010, two field studies were conducted. Nematode populations in each plot were recorded on the same day the plots were planted. Soil samples were collected every 90 days after planting, and turfgrass

sting nematode populations on Bermudagrass plots depended on the cultivar. Populations of sting nematodes increased in Champion (37%) and Mini Verde (40%), but dropped in Tifgreen (4%), TifEagle (18%),



96%, and 86%, respectively, in the seashore paspalum cultivars Aloha, SeaDwarf, and Sea Isle I within two years (3).

Although seashore paspalum is less affected by sting nematodes, it is more susceptible to damage by spiral nematodes. In other words, choosing seashore-paspalum over Bermudagrass is largely a tradeoff from sting to spiral nematodes. "Both species are damaged by sting nematode, but seashore paspalum has a more vigorous root system that makes it more tolerant than Bermudagrass," says Dr. Crow. "This is why you often see seashore paspalum contaminants outgrowing Bermudagrass in sting nematode-infested areas. However, seashore paspalum is more susceptible to damage from spiral nematodes, which rarely damage Bermudagrass."

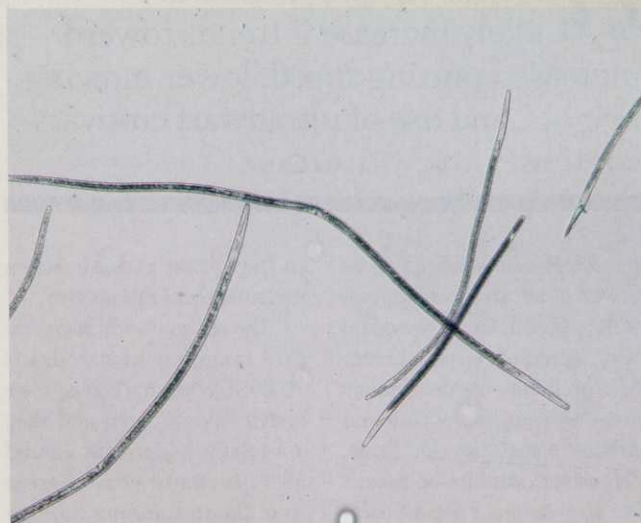
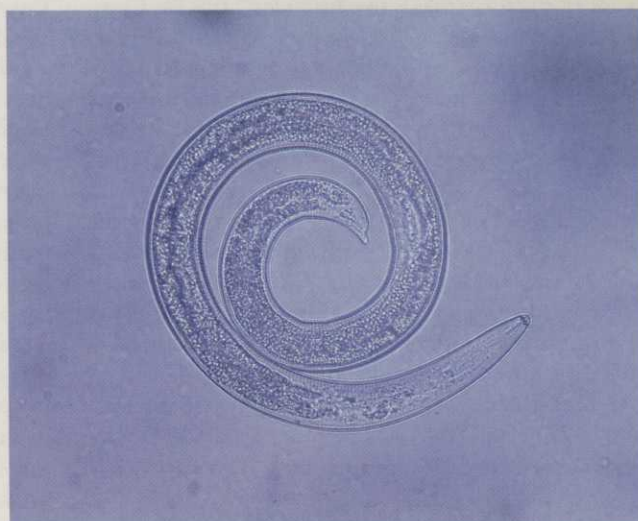
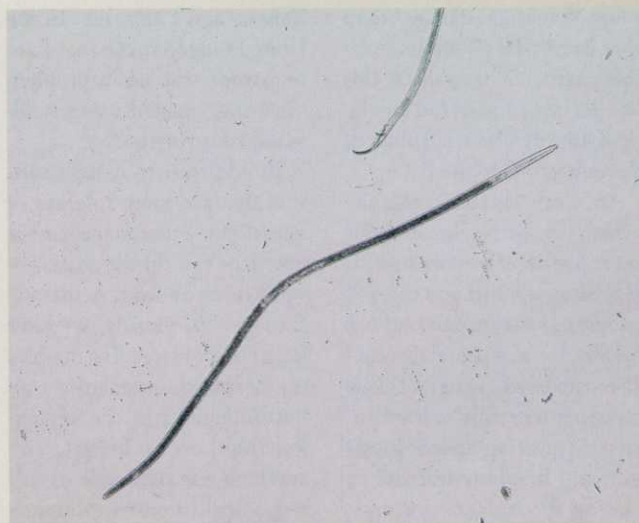
Do these results mean that the dominant species of nematode in a soil sample depends mostly on the turfgrass species (host) that is growing there? Dr. Crow cautions that it is much more complicated than that assumption. "Nematode species composition and population density depends on lots of factors, including the content of sand, silt, clay, and organic matter that is present in the soil, depth to the water table, compaction, drainage, and presence or absence of natural enemies. The susceptibility of the host plant is one of the biggest factors involved, but not the only one," says Dr. Crow. "We look at the nematodes from thousands of turfgrass samples each year, so I often can pick up trends, such as seeing greater numbers of a certain type of nematode on a particular cultivar. This research gave me the opportunity to confirm some of these observations."

The results seem to suggest that where several nematode species are present, the pres-

ence of one nematode species may inhibit the population growth of other nematode species. If so, is there evidence that this is more than a competitive effect for susceptible hosts? "Yes, we noticed that as sting nematodes increased, spiral nematodes decreased, and vice versa. We have since confirmed this with greenhouse experiments. Interestingly, in our field experiments, spiral nematode numbers got highest on seashore paspalum, whereas sting nematode numbers got highest on Bermudagrass, with the exception of TifSport," explained Dr. Crow. "I suspect that there is more going on than just competitive effects. This is something I hope to do further research on."

Dr. Crow is quick to emphasize that none of the tested Bermudagrass or seashore paspalum cultivars were truly resistant. "Nematologists define a resistant plant as one that the nematode cannot reproduce on. Based on that, we did not identify any true resistance in commercial cultivars because the nematodes were able to reproduce on all of them. What we did identify was tolerance – cultivars that could deal with nematode feeding better than others," said Dr. Crow.

"Based on our results, for fairways and tee boxes infested with sting nematodes, switching from Tifway to Celebration or TifSport would likely reduce the amount of nematode damage. I know of golf courses in Florida that have made this switch and have been able to reduce greatly the frequency of nematicide applications. On greens, we found that all the ultradwarfs evaluated suffered



University of Florida field studies showed that sting nematodes (top and bottom images) were much more prevalent in plots of Bermudagrass cultivars (with the exception of TifSport), while spiral nematodes (middle image) were found in much higher numbers on seashore paspalum cultivars.

more nematode damage than the dwarfs did. If sting nematodes are a major concern, this should be considered in the decision of what cultivar of Bermudagrass to use.”

Dr. Crow also notes that the visual damage by nematodes is more prevalent as more stress is placed on the turf and the golf course industry expands its use of ultradwarf Bermudagrasses. “Nematode problems will likely increase if trends toward increased putting speed, lower mowing heights, and use of ultradwarf cultivars continue. This puts more stress on the turf and makes the turf less tolerant to nematodes. Similarly, the increased use of ultradwarf Bermudagrasses in my region has increased nematode problems.”

Although nematodes are extensive on Florida golf courses, Dr. Crow explains the damage to golf course turf is certainly not restricted to the sandy soils of the Sunshine State. “In general, the further north a course is located, the less likely nematode problems will

Kansas, and California. In the United Kingdom, the root-knot nematode was not a problem until they started using sand-based construction.”

In addition to using cultivars that are more tolerant of nematodes, other management practices can tip the scales toward or away from nematode damage. “In Florida, we have found that overseeding doubles the nematode populations on Bermudagrass in the spring. Raising mowing heights and anything else that reduces turf stress will improve tolerance to nematodes,” says Dr. Crow. “Good turf maintenance practices, like aerating, that promote root health and the use of soil amendments that increase the soil’s nutrient-supplying and water retention capabilities can help turf tolerate the negative effects of nematodes.”

Dr. Crow emphasizes the effect that soil temperature has on nematode activity. Although nematode damage will most often be visible during hot, stressful months, nematode damage to turfgrass roots occurs mostly

will move deeper in the soil where it is cooler during high summer temperatures. The root reductions caused by these nematodes generally occur during the spring or fall, while the above-ground damage may not be seen until the summer, when the turf is under the most stress. I recommend sampling early, while the turf is actively growing, and treating if needed at that time. Be proactive — it is much better to treat early and avoid nematode damage than to try to fix a problem.”

Finally, Dr. Crow notes that there are new chemistries being developed for nematode control, however it is still important to have a multiple-control strategy. “I am currently working with several new active ingredients, some of which are promising. There is a strong possibility that there will be at least one new nematicide coming out in a couple of years, with more to follow.”

Is development of resistance to nematicides something that superintendents should anticipate? “With older chemistries like fenamiphos (Nemacur) and 1,3-dichloropropene (Curfew), this has not been documented as a problem. What does happen is that with repeated applications, populations of microbes build that rapidly break down the chemical so that it does not get a chance to work properly. This is called ‘enhanced microbial degradation’ and was a very common problem with Nemacur,” notes Dr. Crow.

“This could also become a problem with biopesticides and new chemicals, and it is something I will watch for. Many of the newer chemistries have more intricate modes of action, targeting specific pathways in the target pest. These tend to have more resistance problems than older chemistries, so chemical resistance could

become more of a problem in the future. This is why it is critical to have multiple control strategies to rely on, including the right choice of turfgrass.” **GCI**

*Jeff Nuss, Ph.D., research manager, USGA Green Section*

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“Nematode problems will likely increase if trends toward increased putting speed, lower mowing heights, and use of ultradwarf cultivars continue. — DR. WILLIAM CROW

develop, because there will be fewer generations of nematodes per year. On fairways and tees, nematodes will seldom be a problem outside of sandy areas adjacent to the Gulf and Atlantic coasts,” says Dr. Crow. “However, sand-based greens are ideal habitat for most parasitic nematodes, wherever they are located. Sting nematodes are being spread by human activity and are now a problem on greens in Texas, Tennessee,

in the spring and fall, when nematodes are most active.

“The optimum soil temperature range for nematodes is 70-80°F. When it is cooler, their activity slows down and they are relatively dormant around 55°F. In warm coastal areas from South Carolina through Texas, it stays warm enough for these nematodes to stay active throughout most of the winter. High soil temperatures (over 90°F) will kill them, so they

# The Size of Topdressing Sand

## *Does it matter?*

Superintendents welcome techniques that improve the efficiency of operations on the golf course. The incorporation of topdressing sand into a turfgrass canopy is one of those practices where a gain in efficiency is beneficial. Significant time and other resources can be spent on managing the sand particles left on the putting surface after most of the topdressing is incorporated. These remnant particles are typically large (fine gravel, very coarse, or coarse particles, depending on the quality of the sand) and interfere with mowing and potentially play, if not removed. Blowers can be used to remove these particles, but at the cost of more labor and fuel. Daily mowing eventually removes these large particles, but at the cost of increased mower maintenance through more frequent sharpening and replacement of bedknives and reels.

The incorporation of topdressing sand is more difficult on turf maintained at lower mowing heights and with plant growth regulation that increases shoot density, calculated as the number of turfgrass shoots per square inch. Additionally, newer cultivars developed for putting greens have much greater shoot density compared to older cultivars. Topdressing sand increases the firmness of a putting green surface due to the “bridging” of sand particles within the turf canopy and layer of mat or thatch. However, the bridging among sand particles and with plant material also contributes to the difficulty of incorporating sand.

Techniques to improve the incorporation of topdressing sand include:

- Using dry sand.
- Drying the putting surface before applying the topdressing.
- Verticutting or grooming the putting surface before applying the topdressing.

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A significant amount of time and resources is spent on managing the sand particles that remain on the putting surface after topdressing is incorporated.

- Applying the topdressing more frequently at lower application rates.
- Using a sand with fewer large particles.

Movement of sand particles into the turf canopy and mat of a putting surface is inhibited by moisture, regardless of whether the water is within the sand or turf itself. Water acts like glue causing the sand particles to stick to each other (bridge) and to the leaves (and other parts) of the grass plants as well. This bridging effect impedes the movement of sand deep into the turf. Practices such as grooming and verticutting are done to open the turf canopy and reduce the amount of bridging, allowing more of the sand particles to fall deeper into the turf canopy and thatch. Topdress-

## Summary Points

- Sand topdressing, regardless of sand size, has yet to provide consistent effects on surface firmness or volumetric water content in either trial. More differences may emerge as cumulative amounts of sand topdressing increase throughout subsequent years of these trials. A drum roller equipped with golf shoe spikes is being designed and constructed to simulate foot traffic on these plots in 2012. Surface firmness across treatments may become more apparent once traffic is implemented.

- On velvet bentgrass turf, topdressing sand applied every two weeks, particularly at 100 pounds per 1,000 square feet, provided better turf quality compared to the non-topdressed plots. With repeated treatment, plots topdressed with medium fine sand eventually had better turf quality than plots topdressed with medium-coarse sand.

- Regardless of sand size, topdressing annual bluegrass every two weeks improved turf quality compared to the non-topdressed plots. In addition, anthracnose disease symptoms were less severe in all topdressed plots by late summer.

- To date, we have not observed any negative effects of topdressing with finer sand on either velvet bentgrass or annual bluegrass maintained as putting green turf. Please note that the finer sands being used in these trials were dominated by medium sand with less than three percent very fine sand content and essentially no silt or clay content. We will continue these topdressing treatments and observations during 2012.



Many superintendents have adopted programs using one sand to fill aeration holes and a finer sand to topdress the surfaces.

ing at lower rates also serves to reduce the bridging of sand particles because particles are not as close together, thus improving incorporation. It is essential, however, that lower rates of topdressing be applied more frequently to achieve the same total rate of topdressing, otherwise the objective for topdressing will not be realized.

Many have adopted the strategy of selecting sand that contains no fine gravel (2 to 3.4 mm particle size diameter) or very coarse sand (1 to 2 mm) to improve incorporation of topdressing. More recently, some are selecting sands that do not contain coarse sand (0.5 to 1 mm), which further improves the ability to incorporate the topdressing, especially when it is dry. While these “cleaner” sands greatly improve incorporation, there is concern that sand less than 0.5 mm in size has the potential to negatively change the physical properties of the developing mat (thatch) layer of a putting green.

**POTENTIAL ISSUES.** Eliminating the larger particles results in more of the particles being similar in size, and this is referred to as poorly or uniformly

graded. Uniformly graded sands are more susceptible to instability problems, meaning that the sand particles may shift under traffic. Additionally, finer sand can retain more water and slow its movement. The extent to which these concerns are actually a problem in the context of topdressing is not fully understood. For example, some finer sands, despite being uniformly graded, can pack together and be more stable than coarser sand. Moreover, what we know about the behavior of sands is typically drawn from studies of sand-based rootzones rather than topdressing sand applied to an accumulating mat (thatch) layer.

In an attempt to offset any potential negative impacts of finer topdressing sand, some superintendents are using two sand sizes. This approach uses a coarser sand for the backfill after core aeration, and a finer sand is used for surface topdressing applications. Thus, the concept is to manage any potentially negative effects by coring out the mat layer containing finer sand and replacing it with coarse sand backfill. It is not clear whether this “dual sand” concept will be sufficient to



Research has shown that frequent applications of topdressing help to manage disease issues.

offset any negative effects of the finer sand, presuming that negative effects actually occur.

**RESEARCH AT RUTGERS.** Two research trials were recently initiated at Rutgers University to evaluate the effects of topdressing sand varying in particle size distribution on turfgrass quality and surface firmness. Our trials compare the use of coarse medium and medium-fine sands on turfs with different thatching tendencies.

Our first field trial was initiated in



The goals of a topdressing program are to manage the organic debris.

2010 on Greenwich velvet bentgrass putting green turf, which has a great thatching tendency. The plots were mowed daily at 0.11 inch with a triplex mower. Irrigation was applied to these plots but only enough to relieve the initial signs of wilt stress, which serves as the indicator to apply water. Either coarse-medium or medium-fine sand was applied every two weeks at 50 or 100 pounds per 1,000 square feet. The plots were evaluated for turf quality, turf color, sand presence, digital image analysis, post-topdressing clipping collection, volumetric water content (0- to 1.5-inch depth), and surface hardness (Clegg Impact Soil Tester [2.25 and 0.5 kg] and USGA TruFirm).

Substantial differences in firmness or quality were not apparent during 2010; however, all topdressing treatments displayed better turfgrass quality than the non-topdressed check plots by early June 2011. By the end of June 2011, a topdressing rate effect was observed. Plots topdressed at 100 pounds per 1,000 square feet had better turfgrass quality than plots top-

dressed at 50 pounds per 1,000 square feet. Additionally, the medium fine sand started to produce better turf quality than the coarse-medium sand during 2011. It was also becoming more evident as the study continued that topdressing sand needed to be applied at the rate of 100 pounds per 1,000 square feet to observe differences between these two sand sizes.

The amount of sand left on the turf surface after topdressing events was different among the sands. As expected, it took more time for the turf surface to become clear of sand when topdressing was done with the coarse medium sand topdressing or at the rate of 100 pounds per 1,000 square feet. Additionally, the amount of sand harvested during mowing was affected the sand was reduced, less sand was removed by mowing. The critical issue that must be evaluated is, will the use of a finer topdressing sand applied over coarser-textured soils have any long-term ramifications? Will infiltration be affected negatively, and/or will free drainage within the profile be unaffected? These issues will be evaluated as research continues.

A second field trial was initiated in late June 2011 on annual bluegrass putting green turf. Three sand sizes are being used in this trial: a medium coarse sand, a medium sand (the medium-coarse sand sieved to remove coarse sand with a #35 sieve, 500- $\mu$ m screen), and a medium-fine sand. Topdressing was applied at 50 pounds per 1,000 square feet every 14 days during the summer months. Data collection in this trial was similar to the velvet bentgrass trial. Additionally, anthracnose severity was evaluated every seven to 10 days.

All topdressing treatments had as good or better turfgrass quality than the non-topdressed plots. As expected, more anthracnose disease was observed on the non-topdressed plots compared to all of the plots receiving topdressing sand. No differences among sand sizes were observed in the first year of this trial. **GCI**

(MORGAHAN continued from page 12)

putting greens might be mown three times a week – if I'm lucky.

I wish someone would hold up a "Quiet Please" sign when I was getting ready to swing. Every hiccup drives the pros crazy, to say nothing of planes flying overhead (or even more ridiculous, the blimp!), the ring of a cell phone (owned by a spectator, who has paid for the opportunity of getting in to watch the tournament), the click of a camera in the hands of a fan.

At a recent LPGA event, a lone spectator was walking behind the green 85 yards away, totally flustering the player, causing her to back off her shot and start her four-minute pre-swing routine all over again. Can you imagine her in my group? She'd have to put up with me and my partners passing wind (on purpose), gabbing on the cell phone, and the squeal of cart breaks three feet from the tee. I get that I'm not playing for a million dollars, but come on...

I guess one privilege of being really, really good is that you don't have to deal with everyday annoyances and inconsistencies. But really: Aren't they part of the challenge and the fun?

Before superintendents and the rest of management go crazy trying to replicate the perfect golf experience for Mr. and Mrs. Average Golfer, they should think about expectations. Do I want the perfect triangle stack of Pro-V1s, my name on a range sign, and ropes separating me from the riff-raff? Sure. But do I expect it? Do I need it? Am I willing to pay for it? No. And will it truly improve the experience? Not enough to make it worth anyone's while to provide it. Not in this economy.

Superintendents, in particular, should not put so much pressure on themselves, and their crews to create superhuman conditions. There are acceptable limits, levels of quality that will make us more than happy. Most people playing on most courses not only aren't elite golfers, they would not know what to do if they did encounter perfect. It would probably make them too nervous to take a divot.

I'm not saying "real" courses – public and private – should abandon their standards and dumb-down their service and conditioning. But they should be realistic about their audience and their budgets. Spend where it makes sense, provide the best possible experience, do the most they can to move people around and let them have fun. We're not playing "perfect" and should not expect to.

As a very accomplished PGA Tour player once told me as I was fuming over a poorly hit shot, "Tim, you're not good enough to get mad!" **GCI**



## LYNCH PIN

**E**ric Kulaas, equipment manager, at the Renaissance Vinoy Resort & Golf Club, St. Petersburg, Fla., designed and built a magnetic lynch pin that stays in place on the hitch and will not bounce out on bumpy terrain. Kulaas purchased them

from Graingers where 25 pound round magnets are used for 3/8-inch and 1/2-inch diameter lynch pins and 65 pound round magnets for 5/8-inch and 3/4-inch diameter lynch pins. The round magnets are bonded to a disk, a center hole is drilled-out and then a larger disk is welded to the lynch pin and they work quite well. It

took about 15 minutes to build each lynch pin (if three or four are done it takes even less time for each one) and the material costs were less than \$15 each.



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## DING!

People ask, “Pat, how do you think of new crap to write every month?” I wish it was a rational process whereby I consider the pressing industry issues, prioritize them by threat level (“DEFCON 5” or “Pucker Factor 9”) and construct a reasoned essay blaming it all on the GCSAA, Johnny Miller or Donald Trump.

Instead, I write almost all of my columns at the last possible second based on some tiny, random thing. I will sit and scour my brain in a desperate attempt to remember any one of the dozen things that set off my “column alert” in the previous month. I’ll be someplace and someone will say something interesting and – “Ding!” – this little “your-Hot-Pocket-is-ready” bell sounds deep in my brain. Column!

This month, I had to email my pal Darrin Batsky to remind me of the brilliant thing he’d said that made me stop in my tracks and tell him, “That’s a column, dude!” Fortunately, his memory is still worth a damn.

A couple of weeks ago, I was talking with Darrin and a bunch of guys waiting to get on a bus to go see the Carolina Panthers take on the New York Giants as part of Jacobsen’s national distributor meeting. My expectations for the game were nonexistent (much like the Panther defense that night) and I was more interested in shooting the poop with David Withers – their new prez – and the rest of their growing team.

Earlier, I’d done video interviews with Darrin, Mark Clark and several other guys who’ve recently joined the company as tech reps. The boys in Orange are serious about fixing the nagging supply chain issues that plagued them too long and, among a lot of positive steps, they’ve hired a group of well-regarded former superintendents

to get out in the field and work with customers and distributors. Frankly, after scratching my head about Jacobsen for many years, it’s exciting to see them engage their warp engines. It’s good for everyone, even the boys in Green and Red, because it energizes and pushes the iron market.

I interviewed the new field guys about making the jump from super to sales (look for that on our website) and – spoiler alert! – they all basically wet themselves describing how awesome it was NOT to be obsessing about the weather every moment of the day. Seriously, they got all teary-eyed trying to describe it. Turfhead Nirvana, I guess.

**Seriously, they got all teary-eyed trying to describe it. Turfhead Nirvana, I guess.**

But, we also talked about how the transition impacted their family life. The bottom line: It’s a different version of work-life balance where travel often takes the place of being stuck at the course. Later, when I picked up the course vs. family conversation with Darrin, who’d been near the top of the private club heap in Pittsburgh for many years before a bad summer took him down, he ingeniously quoted Will Rogers and said: “Everybody talks about work-life balance but nobody ever seems to do anything about it.”

My first thought was, “Dammit... I wish I’d said that!” My second thought: “Ding!”

But the interesting thing is as much as I loved the way Darrin said it, I disagreed a little. Conventional wisdom has forever held that work

always wins with supers and things like summer vacations, weekend relaxation and any interests other than the care and feeding of turf were verboten during the season. But, my sense is that’s changing. I can’t prove it with fancy research, but it seems like the pendulum has swung more toward balance.

I have 1,200+ Facebook friends and most are superintendents. There were plenty of pictures on there all summer long of happy families of Northern superintendents frolicking on the beach, going to Little League games, running marathons and otherwise NOT killing themselves at work even during the busy season. At the very least, it’s clear it’s no longer a stigma to admit you need to relax and see your family during the crazy months.

What accounts for this? The Boomer work ethic has increasingly been eclipsed by Gen X and Gen Y attitudes that emphasize balance. Technology lets you manage from afar better than ever before. And as a consequence of the downturn, there are way more veteran assistants backing y’all up leaving the place in capable hands.

To that last point, one silver lining on the dark cloud that’s hovered over our business is that it’s now actually more common to leave the course behind more often, see your family and lead a life that’s “normal.” True?

Even if it’s not true, it outta be. I know that for a fact because my girlfriend had an even better quote when I told her this whole story about how tough it is for you guys and the toll it takes on families and, especially, their wives. She said: “You tell those guys one thing: they better remember that if Mama ain’t happy, nobody’s happy.”

Ding! GCI





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