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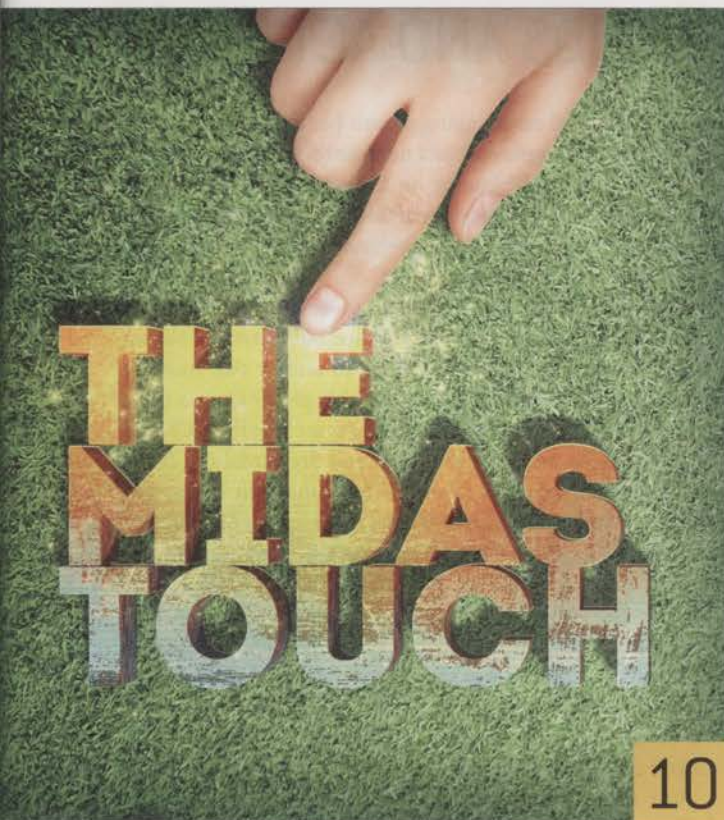
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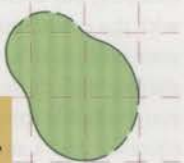
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TEERING OFF

## WORDS AND ACTION

**W**aste and refuse management has become an exceedingly complex subject in recent years, growing exponentially depending on the enormity of the course and facility. Gone are the days of throwing refuse on a pile out back or parking a retired item behind the maintenance shed for Mother Nature to reclaim.

The need for practical strategies to deal with these issues is the editorial reason why we reached out to retired all-star superintendent Anthony Williams to author this month's cover story. And who better to pen this piece? Over a three decade turf career, Anthony's accolades include the GCSAA's President's Award for Environmental Stewardship (2010) and the overall winner of the GCSAA and Golf Digest Environmental Leaders in Golf Awards in 2006. In addition, he was twice a winner in the chapter category. In 2012, he published "The Environmental Stewardship Toolkit," a collection of best practices for the environmental management of golf courses.

But that resume doesn't reflect one important fact – Anthony's passion for this topic. I had the pleasure of experiencing his enthusiasm firsthand at the recent Syngenta Business Institute, an exclusive, invitation-only educational program held annually at Wake Forest University. Think of SBI as a crash-course superintendent MBA.

At SBI, Anthony told me about the initiatives he and his crew accomplished during his tenure as director of grounds at Stone Mountain Golf Club by Marriott in Stone Mountain, Ga. He concluded with one striking revelation. What they accomplished wasn't impossible to achieve, and any superintendent could duplicate these same programs and initiatives. His point: Any action is positive action.

There is one thing Anthony left out, though. Not only should these practices be shared with colleagues throughout the industry, but even more importantly they need to be shared with the communities you call home. Become your facility's, your profession's, your industry's most powerful advocate by sharing with those around you those things you do that make you a valuable steward of the environment. Chemical applications are just a small part of what goes on in the day-to-day maintenance and management of a golf facility. In fact, many would be surprised to learn about the sustainable practices happening between the first tee and the 18th green. **GCI**

Mike Zawacki is GCI's editor.



Mike Zawacki  
Editor





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Retired great Annika Sorenstam performed a bunker playing and maintenance demonstration at the PGA Merchandise Show Demo Day.

## 'Equation that doesn't fit'

**Annika Sorenstam brings bunker maintenance and economics into the forefront at the PGA Merchandise Show.**

By Guy Cipriano

Annika Sorenstam raked bunkers for a summer as a junior golfer. She then flourished from the hazards as a professional.

Now, in the early stages of her golf course architecture career, Sorenstam is learning why plotting bunkers on a course surpasses any challenge she encountered playing from them.

Sorenstam tells GCI she "loves putting down the bunkers" – until she discovers the amount of maintenance

they require. The dilemmas created by bunkers served as the focus of a demonstration involving Sorenstam at the PGA Merchandise Show Demo Day at the Orange County National Golf Center outside Orlando.

The demonstration, which was arranged by Capillary Concrete, presented an opportunity to reach golf professionals and general managers, groups that experience frequent interactions with customers. The message Sorenstam relayed is an important one: desired conditions come at a cost.

"Now that I'm a little bit more removed from playing and in the operating realm, you realize it's tough and there's pressures and expectations on golf course managers and superintendents," says Sorenstam, who retired in 2008 after winning 10 majors. "People want lower membership fees, but they are still going to play as much and they want to keep up the maintenance. Sometimes it's an equation that doesn't fit, like one plus one is three. It really doesn't work."

The technology designed for main-



tenance dilemmas, especially ones involving bunkers, could be a means to solving the equation, according to Sorenstam. Last year, Sorenstam made a financial investment in Capillary Concrete. Sorenstam and Capillary Concrete founder Martin Sternberg, CGCS, are both from Sweden, and the pair first met in the late 1980s when Sorenstam worked for a superintendent friend of Sternberg's.

The PGA Show Demo Day, where equipment companies allow attendees to test new clubs, might seem like an unlikely spot for a maintenance demonstration. But Sternberg says Sorenstam brings a compelling story about bunker maintenance and water management to new audiences.

"The biggest thing that we are trying to convey here is that golf as an industry is making progress as far as inventions and new products to help the environment, help the game forward, help lessen the burden we put on the environment through golf courses," Sternberg says. "The golf course superintendents have much more to bring to the table than a lot of people think. We have taken such strides in the golf course industry in the last 20 years to make it more sustainable and environmental, and we need people like Annika to help us bring that message out."

Not only did Sorenstam offer tips for playing from the sand during the demonstration, she introduced proper maintenance techniques. Moisture and firmness were also topics, with

an explanation of data collected by a FieldScout TruFirm meter included in the demonstration.

Instead of dreading bunkers, Sorenstam wants golfers and course operators to embrace the hazards as an important part of the game.

"People are afraid of bunkers," she says. "They go in and their heart skips a beat. I want to open up the dialogue, give them a few samples and for them to realize it's not just a hole with sand dumped in it. There's a lot behind it. How can we make it more fun? We can make it more fun for the playability and make it more fun for the managers from a money standpoint. It really has a lot of benefits. We need to communicate to people more about what goes into it just because I didn't know what was out there. It doesn't have to be so complicated. It's not that complicated."

The more she transitions from playing, the more Sorenstam is learning about the underbelly of a golf course. The design arm of her business has completed courses in South Korea, South Africa and China. The company plans to open its first European design in Estonia in 2019. Crafting natural, economical and playable courses are Sorenstam's primary design goals.

"I'm learning a lot," she says. "Drainage certainly isn't my expertise. I'm learning quite a bit about that. I come in more from a player's perspective. Overseas they just put tee boxes out and think it's a course. But it's a lot more than that. You really build a course for life."

## SRN GOES ON THE ROAD

**Superintendent Radio Network** had a busy month as we recorded multiple episodes during trips to Tennessee and Florida. Our guests included:

- **Chris Tritabaugh**, Superintendent, Hazeltine National Golf Club, Chaska, Minn.
- **Craig Current**, President, Legacy Golf Management.
- **Roberto Balestrini**, Founder, American FootGolf League.



**SUPERINTENDENT  
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- **Kevin Sunderman**, Superintendent, Isla Del Sol Yacht & Country Club, St. Petersburg, Fla.

SRN can be accessed by entering [bit.ly/1o6TA2o](http://bit.ly/1o6TA2o) into your web browser.



## From THE FEED

GCI columnist **Tim Moraghan** brought a turf perspective to the PGA Merchandise Show floor. Here are a few observations and thoughts he posted on his entertaining and enlightening @TimMoraghan Twitter account.



Post **#PGAShow**: If golf is not "doing well" why is everyone I see, meet & speak to so busy?

**#PGAShow** floor insight. Lots of gadgets to track your every on course move/shot while we try speed things up. Not good

After **#GCI** column on golf cleats. They're trying to help the **#GCS** a ways to go. Softer&lighter soles are a start.

Cheers to **#PGAPete** to meet w/**@GCSAA**. Great team to guide golf into the future. Together we are golf!

Off to **#PGAShow** floor. Raining in Orlando. You think I could find some rain gear here?



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# IN DATA WE TRUST



**Henry DeLozier** is a principal in the Global Golf Advisors consultancy. DeLozier joined Global Golf Advisors in 2008 after nine years as the vice president of golf for Pulte Homes. He is a past president of the National Golf Course Owners Association's board of directors and serves on the PGA of America's Employers Advisory Council.

**"I**n God we trust ... all others must bring data." That was the belief of professor, author and management consultant W. Edwards Deming. There's no evidence that the late Dr. Deming, who is known as the "father of quality," spent much time on golf courses. But his advice certainly seems timely and relevant for today's golf superintendents. But Deming's admonition does raise questions for superintendents who want to use data when making decisions about new and more efficient methods, replacing outdated capital assets and equipment, and managing their workers. Which data sources can they rely on? How should they best harvest the information they uncover? And how can they leverage the data to its greatest effect?

## CURATE TRUSTED INFORMATION

Golf is awash in expert opinions, but often lacking in reliable research and well-supported information. Don't confuse the two and bet the future of your course and career on other people's opinions. Here are reliable data sources:

- **National Golf Foundation:** The NGF has developed a reliable profile of market facts about local-market supply and demand. Subscribe to NGF publications and maintain data regarding rounds and local-level golfer participation.
- **Sports & Leisure Research Group:** At the PGA Show each year, SRG President Jon Last provides an annual projection of golf trends by category and developed from multiple surveys of golfers, as well as an omnibus study of sports enthusiasts. Tap this source to provide directional guidance for macro trends.
- **Club Benchmarking:** Ray Cronin and Russ Conde have spent a decade developing private and public golf facility profiles. The research is a comparative data treasure trove. Use the information to develop captive reference groups for courses in their competitive set, then compare the local to state, regional and national patterns.

## CREATE YOUR OWN AGRONOMIC PLAN

Every superintendent should present an annual agronomic plan detailing the fertility, pesticide, water-use and preservation practices that will be implemented in the next year to meet playing-condition objectives. A sound agronomic plan is grounded in solid data that reinforces the superintendent's own knowledge and experience. The agronomic plan should consider the following:

- **Local weather.** Refer knowledgeably to predicted weather patterns since it profoundly influences on macro-growth trends for golf participation.
- **Define your scope of operations.** The first casualty of golf facility management is correct information. See that the annual agronomic plan sets forth

clear and consistent expectations, standards and scopes of operations.

## PUT THE DATA TO WORK

When making a case for capital needs and prioritization, connect local-market characteristics to your operational intentions. U.S. Census Bureau data – a useful baseline of free, local market data – indicates population growth by social and economic categories that should be matched to the characteristics of those who use your facility.

When making market decisions concerning private clubs, pay attention to annual household income, household net worth and educational levels. Most private clubs recruit members who possess the discretionary time and money to participate. Highly educated people show a preference for club membership.

For daily fee and public courses, heed proximity and drive-time convenience from the facility. With some notable exceptions, most daily fee courses draw from a small radius around their locations. Drive-time measurements indicate most golfers prefer less than a 20-minute one-way drive to their preferred course.

Whether public or private, facility managers should closely monitor consumer-confidence trends, an economic indicator that measures the degree of optimism consumers feel about the overall state of the economy and their personal well-being. Golf tends to prosper when consumer confidence is trending favorably. The Conference Board is a reliable source of the ebbs and flows of consumer confidence.

But heed this note of caution when it comes to research and data. Do not rely only on single sources of information. Experienced superintendents know the danger in falling in love with the first piece of research that supports their view point. Perhaps the only thing that is more dangerous is not remembering Dr. Deming's advice to bring the data in the first place. **GCI**



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A close-up photograph of a hand with a light skin tone reaching down and touching the top of the letter 'E' in the word 'THE'. The background is a lush green golf course with short, well-maintained grass. In the bottom left corner, a portion of a white golf ball is visible. The title 'THE MIDAS TOUCH' is rendered in large, 3D block letters with a weathered, metallic texture. The letters 'THE' are a golden-yellow color, while 'MIDAS' and 'TOUCH' are a darker, rusted orange-brown. The lighting is bright, creating soft shadows and highlighting the textures of the grass and the letters.

# THE MIDAS TOUCH



# WASTE **NOT**, WANT **NOT**

WHAT DO ALUMINUM CANS, WORM FARMS AND PROPANE HAVE TO DO WITH YOUR FACILITY'S BOTTOM LINE? MORE THAN YOU MIGHT THINK.

By **Anthony L. Williams CGCS, CGM**

**O**ne of the most common themes within the golf course management profession is how to get more work done with fewer resources. This has led many superintendents to master the art of maximizing what they have and leveraging the full worth of any asset no matter how small or overlooked.

Benjamin Franklin aptly reminded us that a penny saved is a penny earned, but what does that mean for the modern golf course superintendent? The savvy superintendent in today's economy has created programs and projects that are turning some common items from useless to useful and impacting the financial strength of the operation not to mention earning a few creativity points along the way. Here are a few tried and true ways to waste not, want not.

## GREEN WASTES AND ORGANIC DEBRIS MANAGEMENT

One way to turn something that appears useless into something useful addresses organic wastes. This covers a lot of territory from leaves and tree debris to the golf-centric aeration cores gathered from greens or tees. While it is common to use aeration cores as fill material throughout the course, many superintendents are now turning their leaves and tree debris into valuable mulch to be used on site as well. The process is a three-part endeavor. First, choose a site to collect the debris. The collection site should afford the staff easy access but not be too visible as to generate complaints from golfers/





guests. Secondly, when your collection area is full, you will need to grind these materials into consistent mulch. You can purchase the equipment yourself or contract a local vendor to handle the grinding as needed. This decision is largely a personal preference but running a quick ROI calculation is always a good idea. Lastly, once the debris has been properly ground, you can install the mulch in flower beds, erosion areas or compost sites throughout the property. This will allow your green wastes to continue their life-cycle on property, eliminate landfill fees and even provide nesting materials and wildlife habitat while the debris pile is waiting for grinding.

#### RECYCLING – TURNING TRASH INTO CASH

Another way to turn a negative into a positive is to establish basic recycling programs that can turn trash into cash. Even smaller operations can benefit from this type of program. They are easy to start and sometimes as simple as creating a special collection container for cans or bottles.

There is a great story from the GCSAA Environmental Leaders in Golf contest that really shows the potential of these programs. In 2009, the overall winner of the Environmental Leaders in Golf contest was Terry Straton, golf course superintendent at Little River Inn Golf and Tennis Club in California. Terry organized an amazing recycling effort that funded the team's (Terry, Scoot Cail, Ron Levy and Darrel Low) trip to the Golf Industry Show in San Diego. They raised over \$2,000, with \$1,300 coming from recycling cans and bottles. There are all sorts of

things throughout the golf course maintenance operation that can be recycled. Consider developing recycling programs for things such as batteries (small and large), printer cartridges, light bulbs, ballasts, paper, cardboard, waste oil and other petroleum products, copper and metal piping.

#### CHEMICAL AND FERTILIZER APPLICATION REDUCTION

There are those superintendents who look at a problem and have the unique ability to see a bigger picture than most people and, therefore, connect some pretty amazing things.

Mark Hoban, the superintendent at the Rivermont Golf and Country Club in Johns Creek, Ga., is one of those superintendents. Mark saw an opportunity to reduce his chemical and fertilizer costs by literally making his soils healthier. In March 2013, Mark began a compost tea program to enhance soil biology through the introduction of large amounts of diverse microorganisms to the soils on his greens, tees and fairways. Mark researched the process and consulted with a number of organic farmers who had been successful and he felt that his version of the process would also be successful on the golf course.

Mark convinced the owner to invest in a compost system and cited the potential savings in fertilizer and chemicals along with healthier turf as a byproduct of the investment. Mark's fairways were 40 years old and he had been applying 2.5 lbs of inorganic and synthetic nitrogen on them each of the last seven years. The results were striking. In the first year, fertility on fairways was reduced to .62 lbs of N. In year two, the



The start of a recycling program can be as simple as beginning a collection program for aluminum cans. Here is a trash can converted into a collection point for cans. It is simple, effective and helps turn your trash into cash.

total N applied was down to .48 lbs. In the third year, the total N was even lower at .35 lbs. These results combined with members commenting that the fairways were the best they had been in years was certainly a win-win process.

Even Mark admitted the turf quality was noticeably high. However, the fertility was just one part of the puzzle. "We had averaged 15 fungicide applications per year on greens leading up to the start of our compost tea program," he says. "In the first year of using the compost tea program, we cut the number of fungicide applications to three."

He made five fungicide applications in the second year and spot treated an additional five times. The third year featured excessive heat in May and June, and four apps before June 17 had to be applied.

"I knew I was pushing the envelope of how far I could go and didn't know until I went too far and Mother Nature showed me excessive heat, traffic and humidity are lethal to bentgrass health and fungicides need to be used ahead of

the stress," he says. Mark had found the magic line to make the program sustainable.

Mark's worm farm produces enough vermicompost for his brewer to supply his property's needs, but he admits that it is a fine art to brewing compost tea.

"I learned you needed to measure the dissolved oxygen, dechlorinate the water, control temperature and do microscope readings to determine when it's actually ready to apply," he says. "I am able to utilize food waste from the club in the process, and I make thermal compost from clippings, wood chips and tree leaves to add diversity to my brew. One tank of brew has more microorganisms than all the people that have ever lived on planet earth."

Mark hopes the combination of tea and biannual compost applications this will become the only plant health and fertility used in their landscape, club grounds and native/wildflower areas. He has a two-year program to purchase vermicompost, a high quality carbon and microbial product to blend into his topdressing sand.





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"I have found out that the carbon is vital to the soil biology and its symbiotic relationship with the turfgrass and is a catalyst in getting the nutrients that are tied up in the soil to release and become available to the plant as well as adding additional microdiversity," he says.

Mark has seen evidence in his trials to show that the vermicompost is even controlling dollar spot, which can be a concern with lower fertility programs. He is currently working with researchers at the University of Georgia on this data as well as Dr. Jenifer McBeath out of Alaska with a

trichoderma atroviride fungi. Mark has been very successful moving his theories into practice on a daily basis on his course.

#### ALTERNATIVE FUEL AS A FINANCIAL AND ENVIRONMENTAL OPTION

The cost of fuel is always a concern to any business that runs equipment on a daily basis. This has led researchers to create a variety of alternative fuels and some have ventured into golf such as biodiesel, a fuel made from used cooking oils. The latest of these fuels to test its worth in the golf industry is propane.

The Propane Education and Research Council invested in a one-year case study placing green mowers, tee mowers, fairway mowers and bunker rakes at eight golf courses located across the country.

I had the privilege to participate in the case study during my tenure at the Stone Mountain Golf Club by Marriott. We saw a 30 percent savings year over year in fuel costs. We immediately saw the environmental advantages of removing the likelihood of fuel spills (liability savings) and the ability with the propane canisters to refuel in the field saving labor

and increasing productivity. The propane-powered mowers are also affordable because they do not require expensive Tier-4 upgrades. Our equipment technicians were very complimentary of the maintenance requirements being in line with other traditional mowers.

Jim Coker, director of propane applications for R&R Products, was a key player in setting up and servicing the propane case study.

"It was critical to get this equipment onto a variety of golf courses and climates so that we could see just how effective the processes could be and offer an



Robert Brown, a greenkeeper at the Stone Mountain Golf Club by Marriott, mows a green with a propane-powered triplex mower as part of a year-long case study to introduce propane as a viable alternative fuel for the golf industry.



# 13

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alternative to the dependency on traditional petroleum fuels," he says. "Propane is produced here in the United States, and delivers a stable, affordable and environmentally superior fuel option."

Time will tell if propane-powered mowers become commonplace in the golf industry, but there are obviously opportunities to save money and expand your environmental programs.

The golf course industry demands excellence and rewards innovation especially when it



The Georgia Golf Environmental Foundation selected Mark Hoban as its 2014 Environmental Leader in Golf award winner.

comes to evaluating the bottom line. The modern golf course superintendent is finding ways to utilize everything from aluminum cans, to worm farms and even the power of propane to squeeze every ounce of profit out of their operations. The key is to always be willing to see the potential and prove the value of worthy ideas. This work ethic is the difference between good and great, proving that sometimes a penny saved may actually be more than a penny earned. **GCI**

## DOWN IN THE DUMPS



WASTE IS A WAY OF LIFE ON GOLF COURSES. LET'S REVIEW SOME OF THE BEST PROGRAMS FOR HANDLING IT.

By **Anthony L. Williams CGCS, CGM**

**S**ince golf's beginning there has been an ongoing struggle to find an appropriate way to handle the wastes generated by the operation. The more developed the property is, the bigger and more complex the problem of waste management becomes. The superintendent must also factor into their programs the increasing regulatory pressures that impact the fate of everything from leaves and limbs to tires and waste oil. The search for creative and compliant ways to effectively manage waste byproducts is a necessity for the modern superintendent. We are going to review some of the best programs to help keep your operation from being, "Down in the Dumps"

The first step of handling your waste effectively is to identify how much and what type of wastes your property generates. You will likely be dealing with simple organic waste such as clippings, leaves, limbs, spent flowers, etc., inorganic wastes such as retired equipment/parts, tires, batteries, cans, bottles and other packaging, and lastly a very important group, chemicals products. It should be easy to identify the waste items that you are generating, but it is also important to get an accurate estimate of the amounts generated. These items can be tracked by weight or mass measurements, and if you have been literally filling the local landfill, there should be records that indicate the volume of waste generated. Once you have the numbers, you can start taking on a few processes to impact the results.

### LEAVES, LIMBS AND TREE DEBRIS

In recent years, many landfills no longer take green waste (leaves, tree debris, etc.). These materials must be sent to special landfills or recycling areas, and the costs can be significant. What can be done to reduce these expenses? One of the best solutions is to establish a small collection area to gather all these materials for storage and periodically grind these into mulch that can then be used on the property in flower beds, trails/walkways and erosion control areas. These types of programs can cut your green waste disposal costs by as much as 50 percent. One of the decisions to be made here is whether to purchase grinding equipment or contract with a

(MIDAS continues on page 53)



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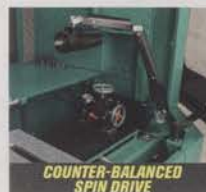
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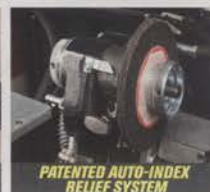
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# THERE IS A "YOU" IN "TEAM"



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

A friend and I were watching "Caddyshack," laughing hysterically at Bill Murray's portrayal of assistant greenkeeper Carl Spackler. But when my friend wanted to know if "a lot of guys in your industry are like that," suddenly the "Cinderella story" wasn't so funny.

Whenever I speak to superintendents, I make the point that we are the Rodney Dangerfields of the industry: We don't get any respect. I suppose it's because we get our hands dirty that the public perceives us as little more than gardeners, ignoring our mastery of agronomic science and the countless hours of work we put in – largely without acknowledgement or thanks – to keep their golf courses healthy, beautiful and playable.

But I also believe we have mostly ourselves to blame. I was reminded of our "own worst enemy" syndrome recently while reading Jon Gordon's "The Hard Hat." Based on the success of the 2004 Cornell University lacrosse team, it is a story about leadership and management, with emphasis on team success. The author lists 21 traits of a great teammate, from which I found eight that have particular significance for what we do, where we do it and who we do it with.

In a nutshell, being a good teammate means giving and earning respect. And your "team" isn't just people but could include facilities, local and regional associations, and our national presence. As you read these eight traits, ask yourself if you are doing all you can to be a great teammate.

## BE A "COME WITH ME" TEAMMATE

Do you set the tone? Do you clearly articulate your vision? How good are you at influencing those around you? You must be able to explain how "we" will get things done properly. Then, working side by side with your crew, you must show them you know how to reach your stated goals. The more you work and the more you sweat, the more you'll get out of your team.

## WELL DONE IS BETTER THAN WELL SAID

The better your course looks and plays, the more people will seek you out for your opinions, your expertise, and perhaps other jobs and opportunities. You gain respect as you prove yourself, which leads to more chances to be regarded as an expert.

## BE A DIFFERENCE MAKER

Be involved. Don't shy away from opportunities to be seen and heard. Talk to and listen to members. Accept industry challenges. Speak up on important topics. Take a stance.

## FIRST TO ARRIVE, LAST TO LEAVE

Again, lead by example, by working longer and harder than anyone else. But don't be a martyr: If you never take any time off, your work – and health – will suffer. Work hard, and work smart.

## STAY HUMBLE AND HUNGRY

Humble: The minute you think you've arrived at the door of greatness, it will slam in your face. Hungry: The hungrier you are, the more you can improve. Staying humble means not hogging all the glory, not taking credit that isn't yours and remembering that you're part of a team. Staying hungry is always wanting to improve not only yourself but your people, your course and your industry reputation.

## DON'T COMPLAIN

Superintendents have a lousy image: We're never happy, always bitching about something whether it's the course, the weather or the members.

If this sounds like you, make the effort to change your attitude. Become the "half-full" guy, hard as that might be. Look forward, be positive and rather than blame, explain. If you've got a gripe, don't grumble but lay out the facts, explain what needs to be fixed and make it happen.

## SHOW YOU CARE

Care for the three Cs: your course, your crew, your customer. Make sure those three constituencies are taken care of and you'll gain respect for yourself as well as all other superintendents. Caring also means being more approachable, willing to talk to others about whatever concerns them.

## PAY IT FORWARD

If you want respect, give respect. There may be no more powerful example to set than as someone who cares about others and shows it, who acknowledges someone else's job well done, and who expects everyone else on the team to do the same. **GCI**





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# ORDER ON THE TURF

Lawyers, witnesses, costumes, oaths, even a bailiff. Members of the Tennessee Turfgrass Association concocted a bold and entertaining way to present a serious industry topic.

To assess the pros and cons of Transition Zone putting surface options, the TTA "put the system on trial" with a judge, bailiff, legal counsels and witnesses. For oaths, witnesses swore on the "Beard Bible," Dr. James Beard's "Turf Management for Golf Courses."

By **Guy Cipriano**

**T**he first inkling this might be different than the typical Wednesday morning education session arrived when a powerful man entered a conference room at the Embassy Suites in Murfreesboro, Tenn., dressed as a law enforcement officer.

Those who didn't know Cherokee Country Club superintendent Jason Sanderson could have easily confused him with an actual officer. The man who then entered the room to anticipation wore a robe and showed no apprehension. Chris Sykes created, developed and honed the Tennessee-style turf court. He knew those involved well enough to understand a

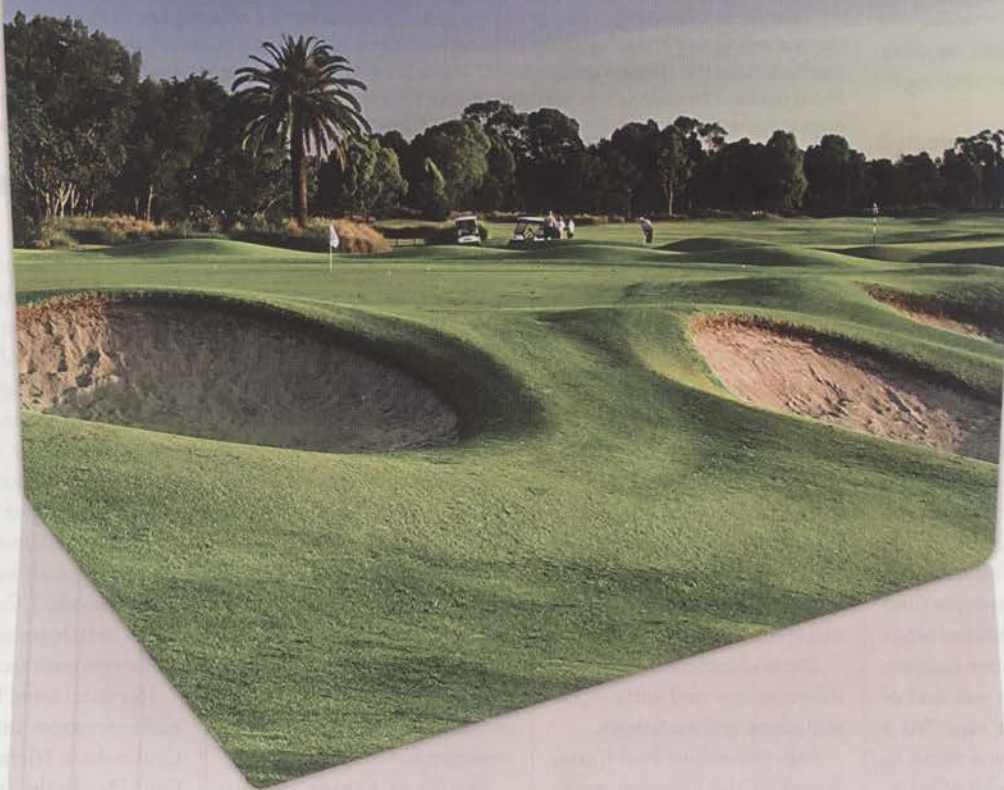
mock trial pitting ultradwarf Bermudagrass vs. bentgrass greens could generate buzz for the 50th Tennessee Turfgrass Association Conference & Tradeshow.

Sykes, the superintendent at Toqua Golf Course in Loudon, spent 2 hours, 56 minutes bringing order to the Tennessee turf and the help he received from a shrewd

panel could redefine how associations view educational offerings. Instead of using solo presenters and PowerPoint to assess the pros and cons of Transition Zone putting surface options, the TTA resorted to a judge, bailiff, legal counsels and witnesses. For oaths, witnesses lowered their hand on the "Beard Bible," Dr. James Beard's "Turf Management for



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## Golf Courses."

"I have been thinking about this for several years in a debate format," says Sykes, a member of the TTA educational committee. "And it just came to me the perfect forum for this debate format would be a courtroom setting which would provide structure and a setting for the debate."

The mock trial was held on Wednesday, Jan. 13. Planning started last November, with members of the Bermudagrass and bentgrass teams meeting several times before arriving in Murfreesboro.

One of the biggest pre-trial considerations involved selecting the lead counselors. Chris Hartwiger, the director of the USGA Green Section Course Consulting Service, steered the Bermudagrass case by providing observations from years of visiting Tennessee golf courses. University of Tennessee assistant professor Dr. Brandon Horvath brought academic and scientific perspectives to the bentgrass counsel.

Hartwiger and Horvath were in difficult spots, because their professional reputations hinge on providing objective analysis. "My first reaction was one of terror," Hartwiger says. "As a consultant, I always want to bring the full breadth of information to everybody and now I was required to argue one side. I feared alienating one portion of the group."

Horvath sought guidance from a legal expert. He met with UT law professor Joan Heminway, who explained Tennessee's mock trial procedures. "She got me to understand that a trial is a story," Horvath says.

Still, winning the trial proved secondary. It became

## SPICE UP YOUR CONFERENCE

Chris Sykes, the lead organizer of the Tennessee Turfgrass Association's ultradwarf Bermudagrass vs. bentgrass mock trial, provided succinct advice for educational chairs looking to bring courtroom fun into a turf meeting room. "Just run with it and have fun," he says.

Translation: Don't be afraid to try something different at your conference. Still, if you go the courtroom route, preparation is key. Similar to performing your homework before pitching a renovation, set time aside to study. An authentic-looking presentation adds credibility.

"We spent a tremendous amount of time on this," says Sykes, the superintendent of Tellico Village's Toqua Golf Course. "I got the rules for the mock trials in the state of Tennessee and put those out to both sides. I downloaded some videos for trial proceedings and sent them out to both sides. By no means was it perfect, but I think it looked and felt real, which added to the value."

Selecting a topic of relevance to your members also shapes success. No statewide survey about grass varieties on greens has been conducted, but University of Tennessee assistant professor Dr. Brandon Horvath describes the split as being "close to 50-50" among the state's 279 courses.

"We wanted everybody, whether you are growing Bermudagrass or bentgrass, to leave with the healthy understanding that in the Transition Zone we have some of the best growers of turf in the world because of the challenges the environment presents," Horvath says. "It doesn't matter which species you are growing. There are enough weaknesses and strengths of the grasses that you are capable of growing those at a high level. But you are also capable of losing both of those to a significant degree if the wrong things are done and the budget isn't present or whatever."



obvious midway through the event a hung jury would be the final result. Engaging audience members who invested time and money to attend the conference represented the primary goal.

"First of all, we wanted [turf court] to be educational," Hartwiger says. "I wanted to structure it so we touched on different aspects of ultradwarf maintenance."

The trial included numerous informative – and witty – presentations and exchanges.

Superintendent Paul Carter described the financial implications of The Bear Trace at Harrison Bay's conversion from bentgrass to Bermudagrass. Bear Trace is a government-owned facility in a state park, meaning offering employees overtime pay to hand water and using fans to cool greens aren't options.

On the humorous side, Trey Cutshall, the superintendent at The Farm Golf Club in Rocky Face, Ga., provided images of a boat he now has time to use in

the summer because he's managing Bermudagrass instead of bentgrass greens.

UT professor Dr. Sorochan served as the bentgrass side's opening witness. He presented findings from his own research and data from Dr. Micah Woods to present a scientific case for maintaining high-level bentgrass greens in the Transition Zone. The Golf Club of Tennessee superintendent Jeff Huber shared text messages from PGA Tour player and club member Brandt Snedeker as evidence favoring bentgrass.

Syngenta senior technical representative Dr. Lane Tredway also took the witness stand. His testimony included a memorable cross-examination:

**Hartwiger:** "If the owner of a course in Nashville comes to you, what would your recommendation be?"

**Tredway:** "My recommendation would be to choose wisely."

The closing arguments featured different approaches. Hartwiger explained changes

since 2001 that led to Bermudagrass greens becoming a more viable option in the state. The three waves of change, according to Hartwiger: 1. Courses wanting to escape doom cycles caused by a variety of factors such as poor construction, small budgets and a lack of manpower; 2. Courses wanting to peak regularly instead of just at key periods; 3. Courses wanting to switch grasses as part of major renovations.

Horvath closed by inserting turf references into the Tom Cruise-Jack Nicholson "You Can't Handle the Truth!" courtroom exchange from the early 1990s film "A Few Good Men."

The jury left the room for four minutes before presenting its verdict...

There is no right or wrong answer to this debate. Everything is site specific and case specific. The biggest element for success are the people maintaining the turf. **GCI**

Guy Cipriano is GCI's assistant editor.



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# WEATHER STATIONS: A THING OF THE PAST?



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

**I**s a weather station a part of your irrigation system? If so, does it work? If it works, do you use it? If you use it, do you use it for irrigation or to help you with your IPM program? Weather stations are one of the oldest sensor technologies we have on golf courses, yet they may have outlived their usefulness and worth?

Weather stations estimate the evapotranspiration (ET) used by the turf over a 24-hour period to aid in scheduling irrigation or, if desired, automatically change irrigation schedules. Normally, there is one weather station for an 18-hole course, but some 18-hole courses and many multiple golf course properties have multiple weather stations. They measure the six parameters required to calculate ET: wind speed and direction; solar radiation; temperature; relative humidity; and rainfall. One of the frustrating things was even though you had the six sensors you could not access the sensors to provide individual measurements of those parameters. Instead, all you could get was ET. For example, this is why you see many weather stations with two rain buckets – one to calculate the ET and the other to provide a rainfall measurement.

Through the years, weather stations have had their issues. Hard-wired stations never worked over long periods of time. Power needed to be found and they require 120 volts, not the 220 volts common on the vast majority of golf course field controller power systems. As a result, in the last decade solar-powered stations have begun to communicate with the central via radio, eliminating wiring.

Until recently, irrigation equipment manufacturers had one weather station option for their control system and it was expensive. Over the years I've met few superintendents who automatically change their schedules based on the weather station. That makes them pretty smart. I have met many who look at the ET number the weather station generates and enter it into their scheduling methodology as a variable to consider.

I have met even more superintendents who don't use their weather station because it provides misinformation or has stopped working, most likely due to lack of maintenance. Yes, weather stations require regular maintenance if they are to provide accurate information. They also should be grounded.

Granted, not providing accurate information was not always the weather station's fault. If the weather station is installed on the maintenance facility roof it

will read the ET for the maintenance facility roof, not the turf.

So why are weather stations becoming obsolete? One reason is new technologies lower costs that give more specific information than that of the traditional weather station. These include portable soil-moisture probes or below-grade, soil-moisture sensors. These technologies provide very specific water availability data as opposed to a calculated estimate. One superintendent recently told me he thinks locally and prefers to water by feel as opposed to ET, and if he used ET then his greens would not be as firm as golfers expect.

Additionally, the importance of a weather station is further negated with the proliferation of all the local content on the web. Rain gauges are inexpensive and they are the single biggest benefit to pause/cancel irrigation cycles – providing your somewhere where it rains. The amount of information gathered from the web is much less expensive and can give you as much or even more data than you need. Certainly there are weather sensors available that provide lots of parameters in addition to the six needed, but not a whole lot that provide ET. But again, these days this doesn't seem to be a big deal as not many people are using ET. Superintendents are using other means to fine tune their irrigation schedules and, in most cases, they have better results.

The irrigation design trend is to exclude the weather station. If you are considering a new weather station or repairing an existing one, then you may want to first decide if it's worth the investment and whether it still fits into your management strategy. Then, investigate the new technologies available to assist you with irrigation scheduling. **GCI**



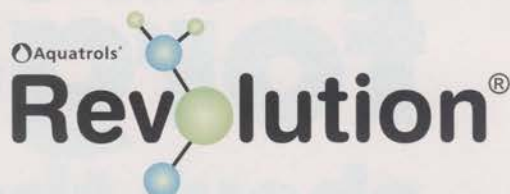


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# Don't forget about the rough

Golfers dislike playing from it, but they want the primary cut looking tidy. Superintendents and industry experts share their strategies for maintaining these wayward areas.

By **John Torsiello**

**G**olfers hate to be in it, superintendents and their crews are in it a lot, because, well, they have to be. It's the rough areas of the course and they demand a good deal of attention as part of any overall best practices management plan.

Scott Phelps, superintendent at The Golf Club at Newcastle in suburban Seattle, says approximately 10 percent of his department's labor allocation is spent on rough management each week. That number can reach as high as 20 percent "if we are also focusing on weed control, fertility or heavy clipping removal that week." And, managing rough areas can be time consuming. "Conditions such as moisture, the amount of players on the course, length and density of the grass, topography, and obstacles (trees, bunkers, ponds) all affect how long it takes," Phelps adds.

Maintaining roughs properly is a "huge" deal for Michael Fabrizio, superintendent at two private courses at The Daniel Island Club in Charleston, S.C. "During the growing season (April through October), we use 90 to 130 man-hours labor, or more, per week, per course to cut rough and clean up debris in rough on each course," he says.

Brian Benedict, superintendent at The Seawane Club on Long Island, N.Y., believes rough areas must be classified into mowed rough and native rough areas. Mowed rough areas have become more labor intensive, he says, due to expectations by club members and golfers. "Our bluegrass roughs are maintained at three inches and mowed weekly by three greens crew members, totaling 30 to 35 man-hours of labor," Benedict says. "Additionally, golfer expectations have increased to the point where 3-inch bluegrass rough has to be weed-free of crabgrass, quackgrass and broadleaf weeds."

Benedict's management program has evolved into applying pre-emergent herbicide to 35 acres of his course to now well over 80 acres, combined with broadleaf applications. That's a considerable increase in labor and resource allocations. "Also, we loop fairways with fungicide to keep it disease-free in the bluegrass roughs," he adds. "If you combine all these conditions, the expense involved in maintaining roughs has increased exponentially over the past 15 years I've been here."

Now, if you want to talk about native roughs, that's an entirely different animal. "They are honestly the biggest pain in the (well, you get the idea) in the world," he says. "While they look awesome



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when blowing in the wind, golfers want them to be beautiful but not penal. I feel that is the toughest balance to find. We spend more money in the native areas than we do on bluegrass rough. Occasional mowings, use of a full-time sprayer with a 26-gallon herbicide tank, constant weeding and thinning by hand, sweeping of native areas in the fall, pre-emergent applications in the spring, and sand topdressing is all part of the caring for rough areas."

Zenon Lis, vice president of sales for Burlingham Seeds, points out that weather plays a large part in rough maintenance and playability, while budgets and staffing dictate how roughs

are maintained. Public and daily fee courses tend to mow fairways and roughs similarly, in a more open course layout. "Generally, near roughs are mowed at twice to three times the heights of fairway cut," Lis says. "Far roughs can be maintained bi-weekly or monthly based on budget and weather conditions."

Rough areas of a golf course often constitute the largest span of turf to maintain. It is also typically the area on the course with the most obstructions, such as trees and bunkers to mow around. "Although not typically mowed every day, rough mowing still represents one of the biggest tasks on the job board and requires a sig-

nificant amount of labor," says Ben Bruce, product manager for Jacobsen.

Rachel Luken Thompson, global product management and strategy director for Jacobsen, says, "Rough typically represents the largest volume of turf on a golf course, but its maintenance is sometimes the least important to the superintendent because of its lower impact on course aesthetics compared to greens, surrounds, fairways and tees. When sacrifices need to be made due to time, weather, labor, budget or other circumstances, rough areas can be the first to be neglected. As a result, an errant shot into an unkempt rough

area can be unfairly penal."

Rough maintenance can be time consuming due to the acreage of rough the course has and the level of the playing conditions superintendents need to maintain. "For a course that has 60 to 70 acres of rough during the growing season, it can be difficult just to keep it mowed," says Tracy Lanier, product manager for John Deere Golf. "This depends on the labor budget and weather. With the rough being the largest area to maintain on the course, the superintendent wants to get started in the early morning to stay ahead of play. In early morning, dewy conditions can lead to poor dispersal

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Scott Phelps says around 10 percent of The Golf Club at Newcastle's weekly labor allocation is devoted to rough management.

costs when it comes to maintaining rough areas. He advises to allow rough to be as natural as possible, and using native grasses and plants in those areas.

maintained roughs to allow the maintenance staff to focus more on greens, fairways and tees," Liu says.

How often the rough should be mowed depends on the time of year and types of grasses that are in those areas, according to Liu. "Cutting the rough once a week seems very time consuming. I believe it would be ideal to cut it every 10 to 14 days, or even less frequently," he says.

Liu adds that all crew members should all be involved in rough maintenance. "If only certain workers are assigned to take care of roughs that will result in less motivation for the workers," he says. "It would not be a bad idea to contract

of grass, which adds another level of labor to the task of sending someone behind the mower to use a blower to clean up." Also, he says, having a mower that is too large can reduce areas on the course it can reach, requiring a second task of mowing those areas

missed by the bigger mower or a mower that is too small, reducing staff productivity.

Cheer up, Dr. Haibo Liu, professor of turfgrass/sports turf at Clemson University's School of Agricultural, Forest and Environmental Sciences, says there are ways to reduce

Also, superintendents may choose to reduce irrigation, fertilizer and pesticide input to limit time spent on roughs, and use plant growth regulators to reduce cutting and overall input of resources. "Superintendents can also educate golfers about accepting less-

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Turfgrass variety, course type and customer expectations are key factors to consider when determining how to mow and maintain rough.



rough maintenance with a local lawn care company.”

Rough areas should be cut between one to three inches, he says. “It is very common to change cutting heights,” Liu adds. “For example, for warm-season turfgrasses, leave it a quarter- or half-inch higher before the winter and the same for cool-season turfgrasses to help them overcome winterkill and summer stresses, respectively.”

Grass type, course type and member expectations are all factors that dictate rough height, Lanier says. On average, cool-season grasses are usually going to be two inches and above for height of cut. Warm-season grasses are going to be two inches and below. A “resort-type” course that is interested in getting play moving through is going to want their rough maintained low.

Phelps likes his rough to

be mowed at 2 to 2.25 inches. “Two-and-a-half to three inches would be the healthiest for the turf, but golfers would not allow this and the length of time it would take to play would not be acceptable,” says Phelps, who manages 36 holes open to the public at Newcastle. “As for private clubs versus daily fee, I think it is more of a question of standards and expectations. If you’re a \$200 daily fee club, the standards may be higher than a small private course. You need to manage to expectations.”

Mower selection can help reduce time spent on rough maintenance, Lanier says. Many superintendents look for larger rotary deck mowers “and that can be a solution, basically reduce the mowing time by mowing it quicker with a larger width of cut.” However, larger is not always better for many courses, as quality of cut and

dispersal of clippings are key to reducing time in the rough, along with having the proper size machine that can go into more places to reduce the need for additional labor.

The height and condition of rough areas will directly affect customer satisfaction, which, in the end, is what all turf managers should be seeking. Some may want lower grass heights when their golf balls stray off the fairway while others may seek the challenge of higher rough professionals face from tournament to tournament.

Fabrizio adds that when rough is too tall, thick and penal, it has a dramatic impact on pace of play and golfer experience. This can be due to lost balls and the difficulty in advancing the ball when in the rough.

“Rough maintenance can have a huge effect on playability and pace of play,” Lanier

says. “It can also be strategic for the type of players you have. If the goal is to get as many golfers around as quick as possible, then shorter is better. You may suffer though on density of grass, health of grass and the overall aesthetic view. Longer roughs may also be used to make the golf course more difficult and thus attract better golfers to your club. How each course maintains its rough is generally a question of who you’re trying to attract and how much you’re willing to spend to do it.”

It’s a rough (sorry) job for sure, but your maintenance program for the grass off the fairways, greens and tees needs to be a fine-tuned as it is with any other area of your course. **GCI**

*John Torsiello is a writer from Torrington, Conn., and a frequent GCI contributor.*



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# DETERMINING GREEN SIZE



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

**G**iven the variety of greens worldwide, the question “How big should a green be?” would seem to have no definitive answer. But, if you are designing a green, or set of greens, you need to settle on at least approximate green size, and then final green size as the details emerge. Consider factors such as green type, shot values (including anticipated approach shot length) and adequate size for maintenance, including suitable cup rotation, climatic factors, etc.

Starting with green type, it's clear the “precision” greens will be the smallest by concept. Sunday pin greens should be larger, usually with one easy to hit area, and one or two smaller areas tucked in corners for greater challenge. True multi-target greens, where two or three target zones are designed into a single green, often divided by space eating ridges, valleys, or tiers, are largest of all.

## SIZING FOR SHOT VALUES

Generally, a green exists to be hit, and the architect believes it ought to be reasonably possible to do so with a good shot. The USGA Slope Rating system provides a good start in determining green size for playability. Their extensive field research shows green width and depth (in yards) needed for  $\frac{2}{3}$  of players (in both scratch and bogey categories) to hit a green surface.

Approach shot accuracy is related to length. Target size must increase proportionally to approach shot length, with a slight “jump” over 180 yards. Good players improve distance control on longer shots, while bogey players need about 20 percent more depth than width for all approach shots. I have converted their data to a generalized “percentage of approach distance” chart (see below).

I added one percentage point to the average dispersion, because I'm not sure if their methodology accounted for collars and fringes and inevitable “green

shrinkage. I also wonder how I fit a rectangular target shape into a round or free form green.

While the USGA empirical data should account for the average of normal slope, wind, weather and firmness conditions, for specific greens, I add a few yards of width for crosswinds, side hill lies, and uphill or blind shots. I add a few yards to the depth for downwind conditions and downhill lies because of how those affect the shot. I don't obsess, since it's only a guide, and it's early in the design process.

Given the number of bogey players populating the typical course, I usually size greens for them, as follows:

- Precision greens:
  - Under 200 yard – Size for the anticipated approach of bogey player
  - Over 200 yards – Size for scratch player
- Sunday Target Greens:
  - Main target accommodates bogey player
  - Sunday pin sized for scratch players
  - For 160 yard shots (with both playing correct tees to the same landing zone)
- Main target – 26 yards wide/31 yards deep
- Sunday pin – 24 yards width and depth

For some high-play public courses, I figure many bogey players will be approaching many greens from longer distances after bad tee shots, and increase green size. For private clubs with high-skill members, nearly every

SCRATCH PLAYER					BOGEY PLAYER				
APPROACH SHOT	WIDTH	DEPTH			APPROACH SHOT	WIDTH	DEPTH		
<140 YARDS	13%	17%			<130 YARDS	16%	21%		
140 – 180	13%	13%	14%	14%	140 – 170	16%	19%	17%	20%
190 – 220	16%	11%			180 – 220	17%	20%		

(BRAUER continues on page 56)



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# Teeing off on a tee-box project

When doing the project in-house, follow the four critical stages of tee box renovation and construction.

By **Jim Dunlap**

**T**ee box construction and maintenance is one of the more overlooked aspects of the overall golf course construction and maintenance operation. It's ironic because a course's teeing grounds make up, along with its greens, one of the two areas of the course visited on every single hole by 100 percent of its golfing customers. The fact remains, however, that sooner

or later, whether due to soil compaction, wear due to limited teeing area, faulty drainage, or the need to move or add tees to accommodate changes in golf equipment technology, work will need to be done. If the budget doesn't allow for a golf course builder, an architect or both, the job falls to the superintendent, who may or may not have experience in course construction.

There are four phases to the tee box construction work:

planning, preparation, execution and inspection/documentation of the results. Each is critical, both to ensure a smooth and efficient flow of work and to make sure everyone involved is on the same page regarding scope, budget, scheduling and desired result. For a superintendent taking on this type of construction project for the first time and planning to do the work in-house with the maintenance staff and equipment on hand,

these four steps are even more critical.

## PLANNING

The planning phase involves communication with the course owner, general manager or board of directors and/or greens committee chairman if it's a private club. The superintendent and management must determine how many tees will be involved, the required degree of renovation or reshaping, and if new tees are neces-



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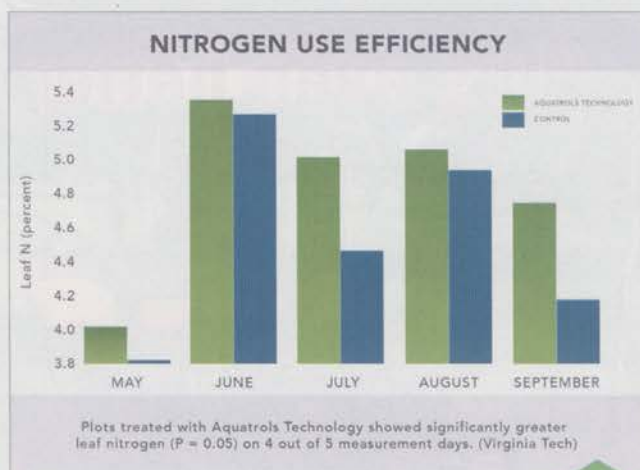


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sary, how many and where they need to be placed. During that discussion, there will likely be some mention of any limitations on the work in terms of budget, as well as scheduling to minimize disruption of play.

#### PREPARATION

Once the scope, budget cap and scheduling considerations are agreed upon, the superintendent begins the preparation stage by researching the cost and availability of materials, equipment, manpower and time necessary to complete the project. If that total exceeds the tentative budget, more discussion with management will be required to either increase the

budget or determine which of the elements of the previously agreed upon scope of work can be eliminated or modified.

Jon O'Donnell, president of golf course construction firm Heritage Links, cautions that in calculating costs, superintendents should be sure to include material delivery costs and any taxes, and to track maintenance crew labor hours as part of the cost of work completed. In some states, there is a renovation tax that may be applied, says Doug Long, a Landscapes Unlimited project manager, who adds that before presenting a completed budget to management, superintendents who are Golf Course

Superintendents Association of America members may want to ask fellow GCSAA members who have done similar projects to review the budget for accuracy and completion.

It should be noted that as part of the scope of work, consideration should be given not only to the condition of the existing tee boxes, but to their size and their alignment to the hole's playing surface.

"The first thing, if you're rebuilding for playability, is that you need adequate tee

surface size," says Pat Karnick, president of golf course builder Wadsworth Golf Construction. "In the South, particularly, Bermudagrass tends to creep in, and your mowing pattern gets smaller and smaller. Also, you want to position your tees so you're not putting golfers at a disadvantage. Obviously square tees with a straight angle, where the line of play is perpendicular to the tee, are easier."

#### EXECUTION

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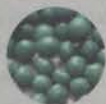
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get have been defined and materials and equipment have been procured, the work can begin. Again, the extent of the actual construction will determine not only the cost and time involved, but the complexity of the work. The most basic tee surface touch-up can be done by stripping off the tee surface level of turf, laser-leveling

where clay soils are prevalent, compaction of tee box turf has occurred and the sub-surface soil will need to be roto-tilled or otherwise loosened up. Rick Benson of Tifton, Ga.-based Benson Construction recommends lowering the depth by 2 to 4 inches and laser leveling it, then adding sand or greens mix and laser leveling once

“The first thing, if you’re rebuilding for playability, is that you need adequate tee surface size. In the South, particularly, Bermudagrass tends to creep in, and your mowing pattern gets smaller and smaller. Also, you want to position your tees so you’re not putting golfers at a disadvantage. Obviously square tees with a straight angle, where the line of play is perpendicular to the tee, are easier.”

— Pat Karnick, Wadsworth Golf Construction

it to ensure that the teeing areas are level, and sprigging or re-sodding the surface. Depending upon the soil quality and local climate, a layer of sand may need to be added. In some cases, a layer of pea gravel needs to be added under the 4-6 inches of sand base.

Some courses, particularly those who have recently done work on their greens, may want to reuse the old greens mix instead of straight sand to save money without sacrificing quality, Karnick says.

In some cases, particularly

again to ensure a proper grade.

The need for sufficient slope on both the tee surface and the surrounds to facilitate drainage is a critical element adding cost and time. Proper drainage on the tee surface itself requires anywhere from ½ to 1 percent slope front to back (or vice versa) and the same side to side, Benson says. Wadsworth’s Karnick adds he prefers a 2 percent slope due to water’s slow movement across grass.

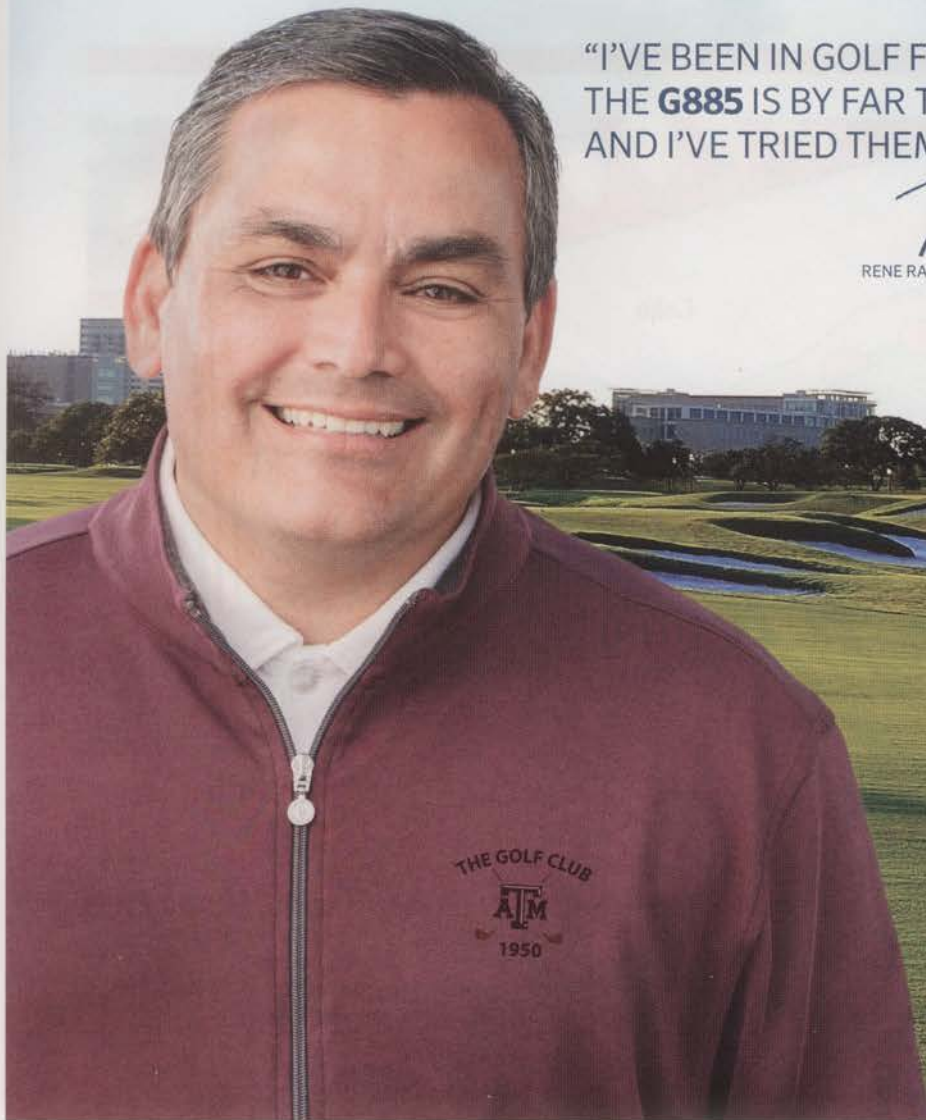
Contractors also caution that slope and drainage issues



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are not confined to the actual tee box surface.

For example, in some instances, slope adjustment involves going as much as 5 to 10 feet outside the tee surface, says Richard Hagy, vice president of golf and irrigation for Aspen Golf. Moving that much dirt to the proper specifications may require an experienced shaper. Likewise, superintendents must tie the side slopes into the existing grade, says golf course architect Richard Mandell.

Irrigation piping and drainage is another element to slope, and proper drainage is configured to drain from the sides of the elevated tee surface. This is to avoid drainage onto the paths, assuming the cart paths are located in close proximity to the tee boxes.

#### INSPECTION/DOCUMENTATION

Additional concerns should be addressed for the protection of both the superintendent and the course. O'Donnell cautions superintendents should ensure they have reviewed safety precautions with maintenance staff, as this type of work is different than their usual tasks. He also suggests contacting the course's insurance company to ensure "construction" is covered for club employees who will be doing the work.

Landscapes Unlimited's Long also recommends superintendents doing the work in-house be careful about underestimating the time needed to complete the work, re-grass the tees and make the tees playable. Long has seen a number of in-house projects run out of time before either inclement weather ends the work or, conversely, the work runs into the course's busy season.

And, not insignificantly,



## Outside help

In terms of the actual step-by-step construction process, numerous resources are available to superintendents involved in an in-house project, including the USGA Green Section, GCSAA and a variety of detailed articles on the Internet merely by searching "tee box construction" or similar terms.

And unless superintendents have significant construction experience themselves, as well as the equipment available to do the job, architects and builders encourage them to enlist the services of professionals.

Both golf course architect Richard Mandell and fellow architect Damian Pascuzzo say most architects would be willing to provide various levels of consultation and advice for a minimal fee. Similarly, many course builders say they have both the equipment and the willingness to assist in varying degrees on these types of smaller-scale projects.

"We all have an interest in having superintendents do the job right because that reflects on golf and golf courses everywhere," says Doug Long, a Landscapes Unlimited project manager.

there are some elements of self-preservation and job security involved. O'Donnell notes the importance of communicating the purpose and schedule of the work to not only course management, but also to course members or customers to mitigate complaints over disruption of play or construction distractions.

The inspection/documentation phase of the project is

designed to ensure the tee box has been shaped and graded correctly to produce the proper slope, the irrigation to the teeing area is working as planned, and the drainage is functioning properly. Once the job has been approved, the final step is to document time, labor and material costs of the project.

"It's important to document what has been done for a variety of reasons," Long said.

"The owner or the club's board is going to want to see where the money was spent, and the final figures will be helpful in terms of any future budgeting, or possibly for consideration in course valuation for tax purposes." **GCI**

*Jim Dunlap is a writer based in Encinitas, Calif., and is a frequent GCI contributor.*



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# CHANGING CLIMATE?



**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).

**N**othing affects golf course management like weather. Mostly, superintendents modify conditions the best we can during times less than ideal for the golf turf we are managing. From overwhelming heat and humidity to bone-crunching cold, the struggle is to get through it until normal weather returns. Given that, the conversations about climate change in the news almost daily are serious ones for all of society. But the threat of change is especially serious for those of us with the charge of managing around and through it.

The question actually may be, "How much of the change is permanent and caused by human activities?" Up to this point, I have been a climate agnostic. That is probably because in my 70 years on this earth I have seen weather extremes many times. Add to that the stories from parents and grandparents about weather extremes they lived through, especially in the mid-1930s, and you gain some skepticism about the doomsday theories bantered about these days.

During my 40 years in golf course management, there were wide swings in the weather, but only lately has there been such widespread publicity about the weather extremes. Some of that reporting is based on science and fact, and some of it is not. Opinions vary and I see both sides. Experience, however, has taught me there is wisdom in hedging your bets, especially when it comes to an issue like climate change. Worst-case scenarios can happen and this is one where we need to be on the right side.

Opinions are shaped by what we see and experience close to home. It was probably a decade or so ago that a ban on phosphorus in turf fertilizers was passed. This aggravated many in our business because, as admitted via a DNR pie chart, turf (home lawns, golf courses, parks, sports fields, cemeteries, etc.) accounted for less than 5 percent of the phosphorus leeching into our lakes and streams. We had some exceptions – soil testing recommendations and new seeding, for example – but the target was turf. What about the agricultural lands and the runoff of manure? What about soil moved off construction sites onto roads and then into lakes and streams? What about negligent leaf pickup on streets in and around lakes and streams? I'd guess that we lacked the political influence other target sources of phosphorus were able to generate. As an aside, I am not aware of any increase in water quality since the P ban on turf fertilizers.

When you lack political clout, science is a good way to respond. So a graduate student at the UW-Madison designed an experiment to look at runoff from turf as opposed to native plants. In a bermed rain garden situation, turfgrass reduced runoff and increased percolation to the same degree as prairie plants. In unbermed plots, the sodded turf performed better than the prairie plants. So much

for the proof of runoff from grassed areas like golf courses.

What's the point? The recently agreed to Paris climate agreement allows some countries to continue to operate for decades without reducing the pollution they produce, while in this country industries are closed and jobs taken away because of politicians and bureaucrats. It isn't unlike the P ban in turf fertilizers in Wisconsin.

There is no denying it was a tough year for many in the U.S. The frightening scenes of drought and fires out West would impact anybody. The extensive flooding in the Midwest during early winter gave all of us pause. I am not sure, however, that those tragic events are evidence of global warming. In our town we had a nice year. Precipitation was a little above normal, temperatures were a little cooler and we are short of snow, though, not by much. Some courses in our area were reporting scores into December. Our state had a near record year for crops and statewide saw a growing season (June-September) only 0.1 degrees above normal.

Our world was normal, once again. Well, almost normal. Our golf course is located on Lake Mendota, a 10,000-acre lake that is one of five in and around Madison. As I write this, it still hasn't frozen over. The hard water fishermen and the ice boaters are distraught. We are way past the "ice-on" date and some scientists wonder if Mendota will freeze at all this winter. It seems impossible, given how far north we are. Years ago, limnologists determined the "ice-out" date was when they could row a boat from campus on the south shore to the village of Maple Bluff on the north shore to deliver a case of beer to friends. This year, they just might be able to do that all winter long. Now I wonder if something is going on.

So, like with so many things, we have to turn to legitimate science to define the problem and find a course of action. We cannot wait too long. GCI





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By **Rob Thomas**



**B**ritish author A.A. Milne once says, “Weeds are flowers, too, once you get to know them.” But who wants to get to know them? Certainly not golf course superintendents.

Fortunately for those charged with maintaining impeccable playing surfaces, labs and research facilities are filled with people learning everything there is to know about these wild, unwanted plants.

Zac Reicher, a green solutions specialist at Bayer Environmental Science, for instance, has been studying turfgrass and weeds for more than 34 years. Taking a look at cool-season golf course grasses, specifically, he says annual

bluegrass always ranks at the top of the list for weeds, but has plenty of company. Goosegrass is “problematic” in the Transition Zone, but seems to be spreading more into the North and white clover is common in cool-season fairways and roughs.

“Weed control in no-mow roughs or natural areas is becoming problematic,” Reicher says. “Canada thistle, milkweed, and other agricultural weeds are common since mowing is not used as a primary control method.

“Resistant weeds are becoming more common in cool-season turf,” he adds. “Annual bluegrass, crabgrass or goosegrass resistant to glyphosate

Clover is commonly found in cool-season fairways and roughs, and multiple researchers consider it a weed superintendents must be ready for 2016.



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(Roundup) or pre-emergence herbicides have been around for years in fairways of warm-season grasses. Recently, herbicide resistance has been reported in weeds either in or commonly found in cool-season turf, including crabgrass, annual sedge, yellow nutsedge, broadleaf plantain and spotted spurge. The presence of resistant weeds reinforces the need to maximize cultural practices to minimize weed pressure, make herbicide applications at the plant stage and seasonal timing when weeds are most susceptible, and rotate and/or tank-mix herbicides with different modes of action."

Additionally, summer annuals like spurge, knotweed and oxalis tend to be more common next to cart paths, Reicher says.

"None of these weeds are different than past years, but goosegrass appears to be moving farther north," Reicher says. "The increased use and maturity of no-mow areas [is] increasing weed pressure in those areas, and the resistance issues appear to be on the rise ... or at least we are becoming more aware of the problem."

Crabgrass, goosegrass, spurge, clover and nutsedge are the top weeds superintendents will likely fight in 2016, says Kyle Miller, a BASF senior technical specialist.

"These have been identified as those that supers mention first in most all surveys in the northern U.S.," he says, adding growing conditions during the year will affect the level of pressure seen from these weeds. "A wet year will mean more nutsedge and a long, hot, dry year will likely mean weakened turf, increasing the weed pressure from crabgrass, goosegrass, clover and spurge."

## Natural pressure

The growing popularity of "natural" areas has cut down on maintenance hours and helped budgets, but also leads to the possibility of more weeds if left unchecked.

"In no-mow roughs, over-the-top applications of broadleaf herbicides in the fall can control even the most difficult-to-control weeds like Canada thistle," says Zac Reicher, a green solutions specialist at Bayer Environmental Science. "Two applications made one month apart will increase efficacy against tough weeds over a single application."

"A fall application of Specticle will provide pre-emergence control of annual grasses like annual bluegrass, crabgrass and foxtails plus many annual broadleaf weeds," he adds. "A single fall application of Specticle will control weeds throughout the following growing season and minimize the need for additional broadcast treatments, which reduces traffic and the dreaded wheel tracks in no-mow areas. Specticle can thin some cool-season grasses, which may be desired in the thickest no-mow areas, but refer to the label for specific recommendations."

"Ornamental beds can also fall under the general title of 'natural areas' and these can require significant labor to keep weeds under control," Reicher adds. "Specticle is safe over the top of many established ornamentals and either broadcast or directed spray applications will provide long-term weeds control. If weeds are already present, Specticle Total includes non-selective herbicides (glyphosate and diquat) so directed spray applications will control the weeds present as well as provide long term residual control."



Whether it's climate change or a cyclic rise in temperatures, Dean Mosdell, a Syngenta technical manager, reports seeing more crabgrass in northern regions of the country than in the past.

"Other factors that can influence weed competition include management practices, such as herbicide applications," Mosdell says. "The restrictions on MSMA, use of post-emergence herbicides rather than a broad-

cast pre-emergence herbicide are examples of program changes. I suspect the increases in doveweed, kyllinga and dallisgrass (other paspalums as well) populations may be attributed to changes in management practices."

Factors contributing to an increase in specific weed pressure are as varied as the weeds themselves. Reicher sees change as a constant in this battle.

"Weed pressures will con-

tinue to change as weeds adapt to our management practices such as mowing heights, herbicide use, irrigation, etc.," Reicher says. "Weed pressures will change as we increase acreage of no-mow areas. Weed pressures will change as seed and propagules move from state to state naturally by animals, or by golfers and possibly by turf maintenance equipment, such as contract aerifiers or loaner equipment. Weed pressures



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can also change with extreme weather events and changes in temperature and rainfall."

A warmer winter – as experienced across much of the northern United States early on – could result in better/denser turf cover, which will discourage weeds, says Dave Gardner, associate professor of turfgrass science at The Ohio State University. However, less cover or turf loss due to diseases may favor more weeds.

"The one x-factor, I suppose, is if the winter stays warm and then we have an early spring, then pre-emergence herbicides will need to go down a week or two earlier, which enhances the chances of problems with breakthrough during the summer months," Gardner says.

The best strategy for weed control and resistance management, as well, is a multi-prong approach including a pre- and post-emergence herbicide and manual intervention as needed, Mosdell says.

"A weed-control plan should

include maintaining healthy turf for better competition, pre-emergence herbicides as a broadcast treatment or to areas mapped as problem areas and early post-emergence applications to escapes or new areas of weed development," Mosdell says. "And don't let any weed go to seed, spot spray or hand remove."

For pre-emergent control of crabgrass and goosegrass, Miller says to not be late with your application and make a sequential application if needed to provide strong weed control late into the season.

"With weeds like spurge and clover, we normally make post-emergent applications," Miller adds. "The secret here has always been get them when they are small, actively growing and the most susceptible. Larger weeds are harder to control. This would also be the case for crabgrass and goosegrass if you have escapes and need to make a rescue or post-emergent application. Smaller is better."

Cultural practices to maintain dense turf will minimize pressure and help maximize control from herbicides – both pre- and post-emergent, Reicher says. "Control programs for annual bluegrass must include cultural practices, growth regulators and herbicides to be most effective," he says. "Growth regulators used for annual bluegrass control include Trimmit (paclobutrazol) and Cutless (fluprimeridol) along with these two in a variety of mixes. These products are usually applied on two- to four-week intervals or on a growing degree day schedule, and it is critical to apply these growth regulators during the spring and fall when annual bluegrass is highly competitive.

"Post-emergence herbicides such as Prograss and Velocity can be effective, especially when combined with pre-emergence herbicides and/or growth regulator regimes," he adds. "The latest herbicide PoaCure has not been released yet, but is on target to be released in

Goosegrass is problematic in the Transition Zone and appears to be spreading into the North, according to Zac Reicher, a green solutions specialist at Bayer Environmental Science.

the next 18 to 24 months. This herbicide shows tremendous potential to control annual bluegrass in greens, but like with all herbicides, it will be important to rotate chemistries with PoaCure and be on the lookout for annual bluegrass tolerant to this herbicide."

For white clover, timing is a common mistake for superintendents. "White clover is most problematic on low nitrogen areas and is fairly common in fairways and roughs," Reicher says. "Many superintendents want to attempt control in June and July when the white flowers of this weed are most visible, but September to October applications of typical three-way broadleaf herbicides are most effective for this perennial weed."

As for controlling summer annual broadleaves in wear areas next to cart paths, try limiting traffic and encouraging turf density, Reicher says.

"Curbs, pavers or large cobbles in wear areas will effectively keep carts on the path," he says. "Herbicide options include multiple applications of broadleaf herbicides during the summer as these weeds may continue to germinate for months. Pre-emergence herbicides for crabgrass may slightly help to limit summer annual broadleaves but isoxaben (Gallery) is a pre-emergence herbicide labelled specifically for broadleaf weeds." **GCI**

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



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



## Travels with Terry

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

## BALL WASHER CUSTOM PAINTING

Sean Sullivan, CGCS, at The Briarwood Golf Club in Billings, Mont., powder coats and paints ball washers with 60 different designs completed at golf courses in the United States and United Kingdom. A hobby powder coat gun (\$129) from Eastwood Automotive Restoration, a sand blast cabinet (\$250) and a used kitchen oven does the trick. Approximately 6,500 different colors of powder coat are available. Powder normally costs about \$15-\$18 per pound. It takes about 18 minutes at 400 degrees Fahrenheit in the used oven he got for free that he has been using for 14 years. The whole process includes paint stripper; sand blasting; grinding off the manufacturer's logo; cleaning with mineral spirits; putting it in the oven briefly; cooling down; applying the powder coat; baking; cooling to apply a stencil; applying the next color if necessary; baking for three minutes; removing the stencil; cooling a bit; applying a clear coat to extend the service life and for easier cleaning. Anything that will fit in an oven such as tee markers and equipment parts can be powder coated. It takes about one hour to do a one color ball washer and three hours for a two color version with logo. It costs about \$2 per color, \$6 for the logo stencil and \$3 for the stripper.



## GREENS MOWER ADJUSTMENTS:

The Tama Country Club, an 18-hole private course in Tokyo designed by Koukichi Yasuda in 1962, uses this simple but effective ramp to adjust the Baroness walk behind greens mower's mowing height and reel to bed knife adjustment quickly and easily. The box the mower rests on is a heavy duty plastic milk carton crate turned upside down. The ramp is a lightweight aluminum plank, with a "roughened surface" to help with traction for the mower's drum roller and with holes drilled for drainage. There also is a portable height adjustment support stand that is adjustable up to 15 inches high for added support placed underneath the grooved front roller. Shin-ichi Toku is the superintendent. This project cost about \$300.





# SALUTING THE SPRAYER



**Paul F. Grayson** is the Equipment Manager for the Crown Golf Club in Traverse City, Mich., a position he's held for the past decade. Previously, he spent 8½ years as the equipment manager at Grand Traverse Resort & Spa. Prior to that, he worked as a licensed ships engine officer sailing the Great Lakes and the oceans of the world.

**F**or the past 12 years, I've mended an 18-year-old little orange Smithco spray truck as parts wore out. It is a heavy hauler by turf equipment standards, carrying 1,200 pounds of liquid in its orange fiberglass tank. More precise, the spray truck is a Smithco Spray Star 1602 with TeeJet spray system. It has three booms across the back; the two outside ones lift up and fold down alongside the tank. It is a compact arrangement, but since the shop and storage area have 12-foot high doors, the booms clear (just barely) when up. On the outermost tips of the booms are foam markers. The foaming agent/water mix foams when mixed with air from the onboard compressor and forced through a sponge at the end. The foamers leave a trail of shaving cream like globs of white foam. The booms are raised and lowered using the same Thompson linear actuators that are on our John Deere Aercore 800.

Frequently, I see it on the course from the shop door. The driver riding in its single seat over the front wheels is always dressed in a white disposable spray suit and hood, with purple gas mask cartridges on his spray mask and bright blue disposable gloves. The chemical mix has a bright blue color added to it to warn the rest of us who may work around the machine where chemicals are on the machine (or floor). It takes a great deal of rinsing to get the blue color off of the machine after spraying, but when dealing with industrial-strength chemicals, caution is essential.

To do repairs, I need it to be very clean so I don't have to work in gloves.

For areas I have to work on that still show a hint of the blue warning color, I clean with sodium hypochlorite – Clorox spray bleach cleaner. This not only cleans the color off but chemically oxidizes any of the herbicide/pesticide that may be hanging on.

Other than oil changes, the spray trucks 20-hp gasoline engine has required practically no attention. The belt clutch though stands out as the weak link in the drive line because if the belts come off or break, it is at the most blue-covered times in the middle of a tank run. Tank mixes need constant agitation and can only sit idle for a short time, which puts serious pressure on any repair.

Pump seal, tires, valves, plastic tubing, sight glass, switches, every system on the truck has had part of it replaced. A few more adventurous repairs come to mind. For example, the rear end started making a bad noise and finally one day the machine quit moving forward. The differential drive gear had stripped. After a long consultation over the phone with the parts department a rear end was found in the warehouse that would work if we also changed the universal joint that goes with it. It was here in a couple of days and was installed the day after that. **GCI**

The spray truck is an 18-year-old Smithco Spray Star 1602 with TeeJet spray system. It has three booms across the back.





(MIDAS continued from page 53)

local partner to periodically grind the material. The ROI for this project will usually be in favor of contracting the service for grinding. But taking the time to gather estimates and compare the results will always pay dividends. Depending on the size of the area available, you may grind quarterly or annually. Larger operations may defer grinding for as long as three years; this can negatively impact the quality of the mulch produced limiting in some cases how it can be used. Costs of these programs can be as low as a few hundred dollars annually and occasionally bartering and trade options can fund the entire program. Here are a few additional values to this type of program.

- Allows for the organic wastes from trees and vegetation to complete their life-cycle on property
- Reduces the amount of waste sent to landfills annually and saves disposal fees
- Generates mulch for use throughout the property
- While the waste is being stored, it provides nesting materials and habitat for the native wildlife
- Accelerates the cleanup of debris following weather events
- Creates a win-win public relations opportunity for your environmental programs that can be spun in a variety of ways such as saving landfill space, providing habitat and protecting your green assets.

There are a few items to consider before starting this type of program. First, be sure numbers are correct and ROI is realistic before you present the program to property leaders for approval. Make sure the collection area has easy access

(the staff will use it properly) and not too visible (members/golfers may hate the look of it). Remember that as the superintendent your commitment to tracking and communicating the progress and the details of the program will ultimately decide if it was successful.

#### OLD EQUIPMENT, TOOLS AND PARTS

The “graveyard” for old spent equipment is not as common as it used to be with the popularity of large lease equipment fleets rolling over on shorter intervals. However, the financial pressure to get more out of every piece of

equipment means you can still find examples of yesteryears equipment hidden in a discreet corner of the property. There are two easy steps to avoid or cleanup this situation. The first step is to develop relationships with local equipment or salvage dealers. These partners can turn your old equipment into cash/credit and work with you on small deals (equipment parts) or even bundled deals for a variety of multiuse “vintage” (past its prime) equipment. Negotiate a win-win deal and the graveyard will soon be gone. The second step is to harvest and organize parts from retired equipment immediately and resist the temptation to park a “donor” fairway unit behind the shop to supply parts for a similar model with fewer hours. Trust me, harvest the parts and store them properly to never have a “dump” on your property map.



Large or small grinding equipment can turn organic wastes into useful mulch and save money on landfill and disposal fees.



Things that can be recycled in a golf maintenance operation include cans, light bulbs, ballasts, batteries, petroleum products, paper, printer cartridges, tires, waste oil and cardboard.

#### REDUCING, RECYCLING AND REPAIRING

Many superintendents have incorporated reducing and recycling programs to limit how much material is available to create the “dump” effect. The fundamentals of all reducing programs are simple – use less, buy less and naturally accumulate less. This applies to fuel, utilities, supplies, etc. These programs range from waterless urinals to using long-lasting LED lights to using alternative fuels such as biodiesel. The premise is to save money while reducing the need for storage and/or disposal of traditional items. Superintendents are recycling lots of things and generating revenues for the effort.

Buck Workman, general manager and CGCS at the Cateechee Golf Club in Hartwell Ga., says, “We take the funds



What is waiting to be discovered behind the door of the chemical storage area?



generated from our salvage and recycling programs and use them for employee meals and outings. It motivates the staff and rewards everyone when we do the right thing."

These programs can be as simple as a recycling collection bin for aluminum cans or be as complex as using a third party to handle waste oil or used tire recycling to reduce liability and add a layer of documentation. Be sure to research any regulations in your area and establish clear benchmarks. Another way to address these ongoing opportunities is to assign a weekly cleanup inspection to your staff. This will engage the entire staff and cover the entire property with many eyes and hands. Establish a simple and clear set of jobs and procedures, and be sure to reward the work and inspect the results. Be vigilant

to remove and properly recycle or repair even small things such as broken bunker rakes (good head, bad handle or vice-versa), broken or wandering hand tools, pallets (these elusive creatures stack themselves in odd places after every sod project and large EOP delivery), light fixtures, and the list goes on.

#### CHEMICAL DISPOSAL PROCEDURES

In a perfect world, we would never need to dispose of chemicals beyond their intended use, but when faced with the need to dispose of chemicals, there are clear and potential liabilities attached to every container. Suppose you arrive on your first day as the superintendent of a course and you stand in front of the chemical building wondering what is inside. There could be any number of things inside

that building. Assuming there are no leaks or exposure issues, here is a quick survival guide to properly handle the disposal of chemicals.

The best recommendation is to use the product in a manner that is in compliance with its label. An example would be if an older fungicide product that you were not sure was still viable to spray on greens, could be applied at label rates in the rough to safely use the product as intended while minimizing risks. Then follow label recommended container disposal procedures such as triple rinse, puncture, etc. If you know the product within a container but the label details are unreadable, you can usually find an updated label on any number of websites or contact a local distributor.

The safest way to handle containers with no labels is to leave

the products sealed, and turn them in at an official "Clean Day," pay any fees associated and feel good that no matter what was in the container you did the right thing. "Clean Days" are events that safely collect various chemicals and dispose of them at approved sites to minimize any environmental risks. These community service events are often sponsored by regulatory agencies, environmental groups or similar organizations. You could help sponsor events as an individual, property, GCSAA chapter or other professional association. You can donate time and money or simply raise awareness of the need for and the many benefits of these events. **GCI**

*Anthony Williams is a retired Georgia superintendent and a frequent GCI contributor.*



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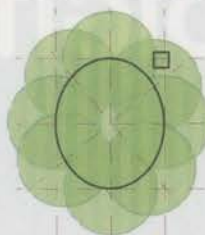
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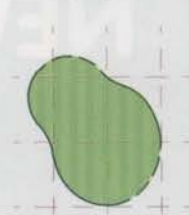
## DESIGN CONCEPTS

### POTENTIAL SUNDAY PINS 63 FOOT CIRCLE



Main Target 77' x 92'

### SUNDAY PIN — BACK LEFT



Green Size 6,879 ft<sup>2</sup>

green might be sized for the scratch player.

If you follow this size guide religiously, you actually would create 18 approach shots with the same relative difficulty. I like a few approach shots easier and some more difficult, so I size a few greens on each course larger or smaller than the chart suggests. Approach shots over 200 yards provide opportunities for smaller greens, assuming most bogey players fall short and have a wedge approach, while providing an accuracy test for good players.

## MAINTENANCE CONSIDERATIONS

Despite the chart, proportional sizing makes greens with short approach shots too small to recover from numerous ball marks. Short approach shots are a great opportunity to design bigger greens with a series of smaller internal targets, maintaining both challenge and the green surface.

In fact, maintenance considerations must play equally into all green size decisions.

Superintendents like 14 to 21 separate pin locations, usually 8–10 feet in diameter. While that is only about 1,600 sq. ft. of cup space, or, a circular green with 46 feet diameter, we need to add:

- 4 – 10 feet for collar (2–5 each side)
- 4 – 10 feet for green shrinkage (2 – 5 each side)
- 20 – 24 feet minimum band where you can't set a pin by rule (10 – 12 each side)

That takes a circular green up to 74 foot diameter, and a minimum area of about 4,300 sq. ft. But the circle is the most efficient container of space, so more complex shapes need 10–25 percent total room. And some greens need more space due to below par environmental conditions. Typically, a similar amount of internal space is lost to contouring that doesn't allow cup placement, so a good average size is 5,160–6,450 sq. ft. in good growing conditions.

Some argue any green larger than 6,500 sq. ft. is simply too costly to maintain. Others argue a course should have all similar-size greens to create a theme, but that really isn't necessary, or the only way to create a theme. Some holes simply call for larger greens and some maintenance concerns call for them, too. Practicality dictates that the factor demanding the largest green usually governs the choice. GCI



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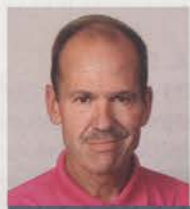
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# CRYSTAL BALL TIME



**Pat Jones** is editorial director and publisher of *Golf Course Industry*. He can be reached at [pjones@gie.net](mailto:pjones@gie.net) or 216-393-0253.

If you read last month's issue, you got a deep look at the current state of our happy little industry. The short version is that good facilities are getting smarter, more profitable and more innovative in their approach to everything. Investment in course infrastructure is growing nicely, budgets are finally trending up and supers are generally confident about the year ahead. Crazy weather and insane discounting of green fees remain our primary enemies in the short term.

But, what about a decade from now? What about 2026 or beyond? What will the future hold and how can you ensure that your facility, your agronomic strategy and your career are all viable?

Allow me to shine up the old crystal ball and peer into our future for a minute. Here are a few visions that rise up in front of me...

There will be no rising tide that lifts all boats (to steal a quote from my old boss Steve Mona) that will substantially grow golf nationwide. The socioeconomic headwinds against us are just too strong. I think the laudable efforts to grow the game will help replace lost play and revenues, but they won't overcome the challenges presented by time, difficulty, perceptions and money.

We will continue the slow deflation of our facility supply but not nearly fast enough to equal slumping demand. That means that every one of the 15,000-ish courses still operating today will be in a market share dogfight for bigger slice of a gradually shrinking pie even as we close 150-200 facilities per year.

Superintendents have the opportunity to be front and center in the success of their operations if they choose to lead the charge for intelligent change. You manage the biggest, most important asset your business has and you need to help shape the vision for what the facility needs to do to survive the slow but inevitable shrinkage that lies ahead.

(Aside: the great Shawn Emerson of Desert Mountain spoke at Kevin Smith's Turfhead Summit in Greensboro last month and said this: "To me, the secret to success in golf course maintenance is understanding the history and culture of your club and managing to it." Think about that.)

Emerging technologies like precision turf management, super-efficient irrigation, improved construction practices, sensing systems, and metrics software and next-generation plant protection will be critical. But investing in those technologies today demands that you make a ROI case that shows you should jump in now to be prepared for tomorrow.

The question is which technologies and why?

We're going to try to help answer that question and more in our first-ever national business meeting. The GCI Technology Conference will take place

April 11-12 in Charlotte, N.C., and will focus on what the future of our business will hold and how you, the superintendent, can prepare yourself and your facility for what will come.

I'll be emceeding and offering my vision for 2026, but more importantly you'll hear from experts like Henry DeLozier, the driving force of Global Golf Advisors; Tim Moraghan, consultant and career expert extraordinaire; Dana Lonn, the genius behind The Toro Co.'s technology; and Dr. Lane Tredway, one of Syngenta's experts on emerging plant health strategies. Additionally, we're bringing in leading superintendents for panel discussions on how they're managing key responsibilities today for success a decade from now.

I'm pleased to say we'll be hosted by our friend Matthew Wharton, CGCS, at Carolinas Golf Club (which is just minutes from the Charlotte airport). The event starts with a golf outing to benefit the Wee One Foundation on Monday, April 11 (the day after the Masters concludes) on Matthew's remarkable Donald Ross course. Tuesday the 12th will be a full day of presentations and interaction, so come prepared to absorb and process a ton of good information.

When you're trying to put together a new kind of conference on the business of golf, you need strong partners. We're incredibly fortunate to have The Toro Co., Syngenta and Smith Turf & Irrigation supporting us. We're also honored to have the Carolinas GCSA by our side on this too. Great companies, great association, great topic, great speakers, great networking...what else do you need?

So, consider this your invitation – whether you're a super, supplier, designer, builder or any other stakeholder in golf's future. Join us in Charlotte for the GCI Technology Conference and start charting your course for the next decade and beyond. **GCI**

(Get conference details and register at [events.golfcourseindustry.com](http://events.golfcourseindustry.com))



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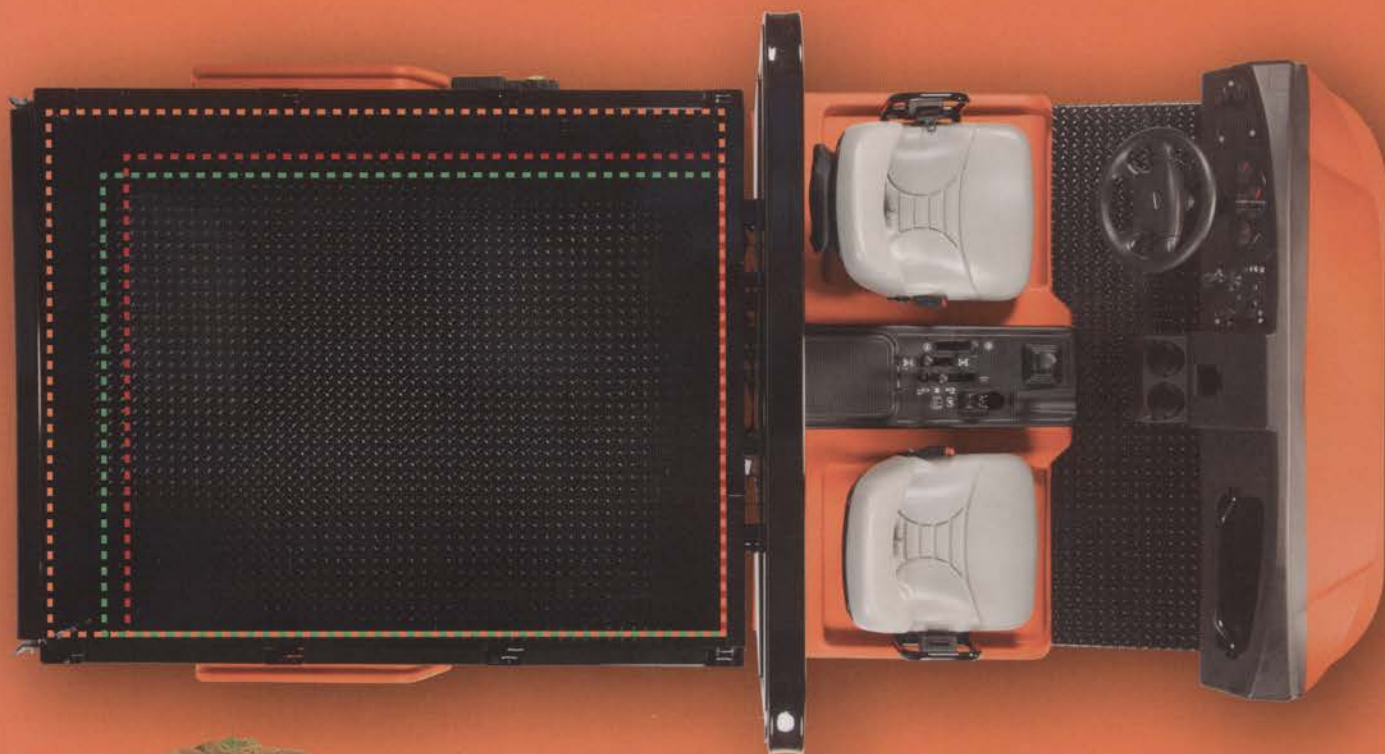
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