DIVERSITY

THE INDUSTRY

INSIDE:
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FEATURES

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ALL-INCLUSIVE
The industry pursues diversity initiatives.

Turfgrass management
TOPDRESSING TECHNIQUES
Superintendents find success with methods beyond the book.

Turfgrass management
WEED WARS
Superintendents look for ways to make herbicides more effective and affordable.

Course renovation
RESURRECTING TILLIE
Architects bring A.W. Tillinghast’s hell-raising hazards back to life.

Facility operations
INVEST IN YOUR FACILITY
Targeted spending can boost cash flow and member satisfaction.

Course construction
REVIVING RESORT COURSES
Kaanapali Resort’s North and South courses win back visitors to the popular Maui destination.

Product focus: Pond management
WILD BLUE YONDER
In a green-obsessed industry, one estate manager has learned there’s no green without blue.

IN LIMBO ON THE LAKES
Two superintendents suffer through scorching heat to keep on-course lakes under control.

RESEARCH

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EDITORIAL MISSION STATEMENT:
Golf Course Industry reports on and analyzes the business of maintaining golf courses, as well as the broader business of golf course management. This includes three main areas: agronomy, business management and career development as it relates to golf course superintendents and those managers responsible for maintaining a golf course as an important asset. Golf Course Industry shows superintendents what's possible, helps them understand why it's important and tells them how to take the next step.
FOCUS ON OPPORTUNITIES

People keep asking the same questions: When is the economy going to improve? Are we headed into a recession? When is the housing market going to turn around? When are gas and food prices going to come down?

Frankly, no one knows the answers to these questions, not even experienced economists – so stop worrying about them. Instead, focus on your facility and address your strengths and weaknesses. How is current business? How can it improve? What is management doing to better your business? Seek growth opportunities for your facility. Focus on your micro world, and let policymakers and governments worry about macroeconomics.

When the economy is booming, managers tend not to look at their operation as closely as when the market is slumping. During difficult economic times, cutbacks happen here and there in various areas of the business. Fewer crew members, a smaller marketing budget, fewer pesticide applications, no new equipment. Yes, expenses are one side of the business equation, but generating revenue is another – membership drives, special deals, giveaways, outings, leagues, events. There are many options.

Consider what’s worked for you in the past and what hasn’t, and analyze your short- and long-term business plans. For those who’ve been in the industry many years, think about what helped you through the recessions of the ‘70s (1973-1974, oil prices and unemployment), ‘80s (1980-1982, inflation) and ‘90s (1990-1991, the Gulf War and tax increases). Can what you did successfully then be applied to the current market? Or, did you determine what not to do during a recession back then?

It’s obviously difficult for golf course operators to improve business significantly in the current economy. But the bottom line is that a successful golf facility comes down to two things: course conditioning and service. Simply put, those two aspects of an operation are going to carry a facility through difficult economic times. Many people say above-average service doesn’t cost anything, and it’s just a matter of stepping it up a notch. A successful business starts with employees who go the extra mile to make customers – regular and new – feel welcomed and appreciated.

During a time when many golf facilities are reducing expenses or erecting for-sale signs, be aggressive and think seriously about investing in your course. Maybe it’s a greens renovation, or a complete redesign. Maybe you’re able to do it all at once, or perhaps you’ll progress nine holes at a time. Funds, ownership’s goals and golfers’ input will help determine the scope, but a renovation could give your business the big boost it needs during a sluggish period of economic growth. If you can pull it off, it’s a great time to do it. An investment in your course now could pay off tenfold when the economy takes off in the right direction. Then, you can ride the wave of increased business while your competitors scramble to catch up to you.

And if you can’t manage to spend a decent chunk of change renovating your course, hone in on the details of your facility and the little things that cause golfers to return to your place. Refurbish your signs and tee markers. Purchase new flags. Spruce up the areas around the clubhouse. Hire a photographer and promote your golf course as an oasis from stress. Survey your players and find out as much as you can about their likes and dislikes. Use your e-mail database to promote specials and offer incentives. Do simple things such as provide free tees and ball-mark repair tools. Most of all, find out why customers don’t return after they’ve visited. Remember it’s much cheaper to keep a customer than acquire one.

Last but not least, remember that without great course conditions and attentive customer service, you won’t be successful – regardless of the state of the economy.
Same name, different course

After reading your June 2008 edition, I want to point out what I think is a misleading statement. In “Curators of the course,” author Peter Blais writes (on page 59), “Alex Findlay ... designed more than 100 courses, including ... Aronimink Golf Club in Philadelphia.” Findlay helped design Aronimink when it moved from its 1896 original location in West Philadelphia to Drexel Hill, an immediate suburb of Philadelphia, and merged with the Belmont Cricket Club. But about 10 years later, in 1928, Aronimink expanded and bought a piece of property in Newtown Square, a western suburb of Philadelphia, and hired Donald Ross to design what is now known and recognized as the famed Aronimink Golf Club. So while Findlay did design the second site of Aronimink, he had nothing to do with the third and current famous course that Ross designed, which it seems the writer implied. I don’t want readers to be confused or misinformed.

Michael Blake
Business development
Nuzzo Course Design
Houston

Brotherly love

I just love Pat Jones “An Unbreakable Bond” article (page 82, June 2008). Even as a chapter executive, my major professor is still important. In fact, Nick Christians, Ph.D., was in the Iowa GCSA office recently. Jones continues to amaze me with his understanding of this brotherhood. I thank him for his efforts.

Jeff R. Wendel, CGCS
Iowa GCSA
Ames, Iowa

CALENDAR

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Oct. 23 - 25
THE GREEN INDUSTRY AND EQUIPMENT EXPO
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Nov. 9 - 11
CALIFORNIA GOLF COURSE SUPERINTENDENTS
ASSOCIATION STATE MEETING
Morongo Casino Resort and Spa
Cabazon, Calif.

Nov. 9 - 11
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Nov. 17 - 20
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Myrtle Beach (S.C.) Convention Center
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Dec. 8 - 10
TEXAS TURFGRASS ASSOCIATION’S ANNUAL
CONFERENCE & SHOW
Fort Worth Convention Center

Dec. 8 - 11
OHIO TURFGRASS CONFERENCE & SHOW
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Dec. 9 - 11
ROCKY MOUNTAIN REGIONAL TURFGRASS
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PERSONAL WEB SITE VALUE

Personal Web sites are playing an increasingly important role in our careers. Individuals and employers are depending on them more frequently for hiring decisions. People who've invested time and effort creating interesting Web sites have a distinct advantage because they expose their capabilities in a unique way.

I gained insight about personal Web sites after reading an article about their benefits. I investigated online and discovered a few industry professionals had created Web sites. I reached out to a few of them to understand their experience and ask for advice.

As a result, I determined building a personal Web site would be an investment in my future. It would provide me with a unique opportunity to organize my career portfolio and help prepare for the next stage of my career in a demanding and competitive environment. It could be the item in my cover letter that distinguished me from my peers. It would allow potential employers to see my resume in a way paper couldn't portray. It would describe my job experiences through visual exposure and my communication skills through samples of my written work.

My first decision was whether to build my personal Web site myself or hire a professional. I learned to build a Web site through an introductory Web site-building course at a local library. I had built a simple Web site for my hockey team that included season stats and a few team photos. I needed more information before I could make the final decision about a personal Web site.

There are three common costs associated with a personal Web site.

- Buying a domain name (www.your-name.com), which costs about $10 a year.
- Hosting a site (placing it live on the Internet), which starts at about $10 per month.
- Producing words and graphics specifically for the Internet.

Also, there are many tools available to help build a personal Web site. Choosing the right tools is a matter of personal preference.

- Common software such as Dreamweaver or Microsoft Frontpage ensures better compatibility with browsers such as Internet Explorer and Firefox.
- Internet programs at www.geocities.com and www.godaddy.com are available for free download and require no technical knowledge. Both offer free, easy-to-use templates, images, colors and navigation buttons. You also can define your Web site or which Internet program you use to build it, always avoid vendor lock-in. Ensure you can move your Web site designer, my Web site, www.tavishorton.com, costs me $10 a month. I paid my hosting fees for the entire year in advance and received a small discount.

Explore your options and see what best fits your time and budget. The cost and energy will be well worth it. Following the initial cost of using the professional Web site designer, my Web site, www.tavishorton.com, costs me $10 a month. I paid my hosting fees for the entire year in advance and received a small discount.

There are two other items to consider in this process. No matter where you host your Web site or which Internet program you use to build it, always avoid vendor lock-in. Ensure you can move your Web site easily without hassle to any other Web hosting provider. Finally, copyright your site by adding the following to the bottom of each page: "Copyright 2008, by Your Name. All rights reserved."

Remember, creating a Web site is a simple task that can be intimidating because of the time involved and options available. Whether you choose to create a Web site yourself or hire a professional, creating a good one requires a lot of time and effort. A good site isn’t about graphics and a fancy layout; it’s about quality content...
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Jimmy Alston
Golf Course Superintendent
Eagle Creek Golf and Country Club
Naples, FL

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A century ago, architect Charles Blair MacDonald declared the best way to prepare a bunker for play was to run a horse cavalry through it. Obviously, times and expectations have changed. Bunker rakes eventually became ubiquitous, and fried egg lies were largely eliminated. Modern golfers demand consistency, i.e., perfect lies and easy, predictable playing characteristics.

The PGA Tour has focused on perfecting bunkers for a while, and it’s not uncommon to hear tour players cry “get in the bunker” because it often provides the best lie and easiest shot. (Old Tom Morris must roll in his grave every time.) This mentality has filtered down to the club level. Golfers expect a bunker shot to be as easy as one from the fairway.

I’ve been asked, “Shouldn’t I be able to reach a par-5 green in two shots from the fairway bunker?” Because I have three college-age children, I’ve learned to answer “yes,” knowing it’s what they expect to hear – even if I don’t believe it.

What’s the architectural/strategic/hazard value of sand bunkers when they play as easily as other shots? Why don’t golfers lobby to cut down all trees that affect play or fill in ponds and lower the height of cut in the rough? Why should bunkers be so nonhazardous compared to other hazards under the Rules of Golf?

The emphasis on bunker perfection conceptually is wrong – and practically impossible. The need for skill and strategy is diminished if there’s no penalty for any shot. Golf becomes easier but less interesting, even if players’ scorecards look better. And it’s ultimately impossible to achieve perfect fairness because higher standards lead only to higher expectations and maintenance expenses.

Bunkers should be raked and shouldn’t be as difficult as the old Scottish bunkers. In Scotland, match play is common still, and punishing bunkers cost only a hole rather than a dozen strokes and the entire match. Deep bunkers turn an otherwise pleasant golf experience into extreme golf: They slow the pace of play, punish average golfers more than good ones and often lead to cautious play, which is as dull as easy play.

I strive to design reasonably fair bunkers, but I don’t obsess about it. I build fairway bunkers that are shallower near the fairway and deeper toward the rough to proportionally penalize shots further off line. My fairway bunkers generally are shallow enough to allow a golfer to reach the green but deep enough to cause some doubt about clearing the lip. I make them deeper for shorter approach shots, using the depth-equals-club guideline (i.e., 6 feet deep for 6-iron shots). I make the front bunker slope less than club loft (i.e., less than 32 degrees for that 6 iron) for a reasonable chance of escape.

Theoretically, greenside bunkers should be deeper for shorter approach shots because they should demand more accuracy. However, most golfers prefer 3- to 5-feet-deep greenside bunkers that allow them to see the pin. Smaller greens with more contours make the shot proportionally more difficult, so bunkers should be about the same, or proportionally even more difficult, for shorter approach shots.

Bunker depth also might vary with target size. A huge green or wide fairway might feature one difficult hazard, but small greens and narrow fairways surrounded by hazards suggest most or all should be shallower because it’s more difficult to avoid them. Each situation would inspire completely different types of play. Holes combining one difficult hazard with easier hazards, or mixing sand bunkers with other hazards, create strategy by making golfers think about where to miss.

Bunkers can serve other purposes that might affect design. They can serve as distance cues, aesthetic elements or targets, if they’re shallow. Bunkers intended to fool distance perception must be larger to make things appear closer, and undersized to make them appear more distant. I usually limit, but don’t avoid, large bunkers to reduce the number of difficult sand bunker recovery shots.

The above suggestions are good rules of thumb for fair bunker design. But while recoverability is important, design consistency truly isn’t. A course holds more interest throughout time if some bunkers intimidate through size or depth. That often happens naturally in design as architects fit bunkers in different slopes, letting a bunker’s depth fall where it may. Good golfers will learn to avoid them, and others should be challenged with a lesser penalty.

Predictable recovery makes for predictable and dull design. I hate to hear complaints that a bunker is different from the others. Variety is the spice of life, and bunkers are designed differently for good reasons.
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MARK WOODWARD?

Hiring a c.e.o. attracts attention. The GCSAA’s recent search for its next c.e.o. was no exception. Due to the unexpected length of time it took to name Steve Mona’s replacement, speculation about his successor grew sizably. No name was mentioned consistently as the likely next c.e.o.

However, surprisingly, well before the name of the next c.e.o. was announced, speculation had coalesced around one central theme – because the GCSAA was perceived to be at a significant crossroads within its long, noble history, the almost universal hope (not expectation) of the members and industry leaders watching was that the next c.e.o. would be a person with the requisite experience and vision to bring much-needed change to the present GCSAA culture.

Accordingly, when Mark Woodward was announced as the new c.e.o. earlier this year, this sizable awaiting audience was quick to respond because it knew what it wanted and suspected it wasn’t likely to get it. Consequently, a wave of respectful disappointment spread quickly throughout that segment of the membership ranks paying attention.

It’s important to note this seemingly negative response to this hiring isn’t a personal matter because Woodward is respected by his peers as a person, for his career path and for his extensive knowledge of GCSAA affairs and the operating world of the golf course superintendent. But, is he the right man at this time for the GCSAA? Many think not basically because it appears Woodward would offer little support for the core change the GCSAA now requires.

Identifying what this core change should entail isn’t new business because these cards have been in play for several years now – without drawing effective response. The fundamental point is an increasing number of GCSAA members are finding it more difficult to support an associationwide culture that consistently ignores member welfare and subverts members’ rights.

To support this premise, I cite the following factual association history:

- No GCSAA board has addressed the pressing, but still readily resolvable, industry practice that generally denies members access to the security of written contracts. (Read my May 2008 GCI column.)
- Politically motivated chapters consistently commandeer the individual voting opportunities of their members.
- GCSAA boards claim they act transparently yet refuse to publish their meeting minutes to confirm this assertion.
- Board policy deliberately denies the membership access to board members’ voting records but then allows these same board members to run for reelection without disclosing their prior voting records while on the board.
- Vice presidents run unopposed for reelection, which ensures they can’t be held accountable for their actions.
- The association bylaws allow GCSAA boards to operate with impunity, without the possibility of being held accountable for their actions.

To ensure new thinking doesn’t penetrate board policy-making, the association bylaws have been prepared to deny the membership any input to the board nominating process. It seems members exist to pay dues and GIS education fees, then stay out of the way to allow board and staff agendas to predominate. Remind anyone of an early American theme, i.e., taxation without representation?

Then, there’s the mysterious concept of the Board Policy Oversight Task Group, which appears to be a device that provides GCSAA boards with cover when their actions are questioned. GCSAA boards appoint the members to the BPOTG and designate a recent GCSAA past president to serve as BPOTG chairman – hardly an objective evaluation team. Then, when pressure on a board arises, the BPOTG referees the issues without having final decision-making authority.

It’s difficult to imagine Woodward becoming a champion for change within GCSAA circles when:

- As the 2004 association president, he comfortably accepted the present GCSAA political culture.
- When acting as 2006 chairman, the BPOTG continued to support this same culture.
- When recently interviewed by GCM magazine, he was quoted as saying, “I have great confidence in this working structure because I’ve functioned in similar environments...”

Odds are Woodward will continue to support present GCSAA board priorities and policies. But, it would be wrong to prejudge the man. Remember that Harry Truman was a politician who assumed an important office once with less expected of him than from a young boy scout. But, the office grew the man, and Truman now is respected as one of this country’s most effective presidents. So too, this opportunity presents itself invitingly to Woodward.

While waiting to see what direction Woodward turns, members are reminded they always have the opportunity to regain control of their association by insisting their chapters identify member needs and support member rights, and then deliver this message loud and clear to GCSAA boards. For starters, chapters might consider requiring GCSAA board members running for reelection to disclose their prior voting records while on the board to remain eligible to receive chapter member votes.
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A TALE OF TWO OWNERS

An industry friend tells me repeatedly we need to eliminate 3,000 courses, or add 1,000, for our industry to get back to a healthy equilibrium of supply and demand. What he means is the supply of courses in the U.S. is oversaturated, and if we maintain this current supply, we need to add at least 1,000 new courses that are player friendly to attract more people into the golfing ranks.

From a marketing viewpoint, course owners need to better recognize what type of courses and facilities fit profitably into their local markets if they want to improve their businesses. For example, not all markets will support an upscale facility just because a developer wants to add a substantial premium to his lots.

Two cases in point: One is the story of a developer, and the other is about a wannabe golf course owner. The market is an upper Midwest major metropolitan area. The existing course owner, the developer, is 45 minutes north of the major metropolitan area; the wannabe course owner is focused on a market 45 minutes south. The markets are similar demographically.

In the first case, the developer became involved with golf course ownership because of a desirable land purchase that provided him an opportunity to sell land and develop homes. Though the course operations didn't cover all his debt, land sales and home development did.

Ten years ago, the property across the street from the developer's became available, and the developer, who's not a golfer, created a partnership with others interested in owning the proposed on-site golf course, which was planned as a regulation 18-hole course that would complement an existing course.

After financing was secured, the party interested in owning and operating the course backed out of its commitment. Believing developing a new golf course couldn't be that difficult, the developer moved forward with the business plan and built the golf course as he began to develop the property.

As anyone who's been through this stage knows, myriad setbacks can occur during the course construction and land development: permit problems, land mitigation, reduced demand levels, drainage, wetlands and other unexpected expenses the golf course might not be able to support. Some of these problems were endured, but the course wasn't generating revenue anywhere near business-plan expectations after seven years.

Worse yet, the market revealed relatively high consumer demand for this type of golf course. The problem wasn't the product, it was that the developer didn't know what expectations to have of the market, and he didn't have a proactive marketing plan to increase revenue.

Frustrated, the developer decided he needed to refinance or sell the club. He hired someone to conduct a feasibility study, and that person hired a consultant to conduct a marketing assessment of the club's market. The developer spent a pretty penny to learn his course was underperforming in his market by almost 20,000 rounds compared to similar courses. What shape might he have been in if he'd conducted these studies 10 years ago?

Now, the other tale. The wannabe golf course owner, who is a golfer but not savvy about golf course operations, couldn't shake a dream he'd had for years: owning a unique golf course. So, he called a consultant two years ago to discuss the practicality of his idea, and the consultant shared the cold realities of the current golf market.

The consultant confided that while he'd be lucky to get several thousand rounds from his unique facility offering, he could expect significant public relations and significant marketing exposure from it. Therefore, viewed from a marketing standpoint, the idea had merit, and the cost of implementation wasn't prohibitive. Most importantly, the consultant told him he had to match his proposed golf course to a market at a price point the market would bear to cover debt, at least by the third year. The consultant recommended the wannabe owner talk to other feasibility consultants, course managers and architects, and pick their brains, too.

In just two years, the wannabe course owner hasn't lost his dream of golf course ownership but is able to look at opportunities and evaluate the potential success relative to probable debt. To date, his investment in consultants is less than half of the existing course owners' investment in preparing his course for refinancing or sale.

So, what's to learn from these two examples? Invest your time and energy in knowing your optimal market positioning and what your market expectations can be before you build or buy. Doing so reduces the surprise factor of golf course ownership tenfold.
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Demand potential of any golf course is strongly related to the number of playable days. Based on the information received from Golf Benchmark Survey participants in 2007, golf courses in Southeast Mediterranean Europe, Great Britain and Ireland, and the Middle East have almost year-round playability, whereas courses in Central, Northern and Eastern Europe had between 235 and 300 playable days in 2006.

A good benchmark indicator of demand is the average number of rounds per playable day. Eighteen-hole golf courses in the Middle East and South Africa recorded the highest average number of rounds per playable day - 117 and 96, respectively - while Eastern European courses recorded the fewest rounds per playable day - 38.

Looking at top performing locations, Dubai has the highest number of rounds per playable day (121), followed by Finland and Sweden (120 and 96, respectively). Despite the fewer playable days in Northern Europe, longer daylight hours during the summer months enable increased playability in these countries.

Eighteen-hole golf courses in the Middle East recorded the highest average number of total rounds played (almost 42,000 rounds). Golf courses in South Africa recorded about 20 percent fewer rounds, yet the country still is well above the averages of other surveyed regions in Europe.

Source: KPMG's Golf Benchmark Survey 2007
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The route to Clearview Golf Club is as steeped in American history as the course itself. U.S. 30, known as the Lincoln Highway, is the oldest paved transcontinental highway in the country. Built in 1913, it runs right through the heart of East Canton, Ohio. Pass Jim’s Auto and Truck Repair Shop, pass a little diner called Patty’s Place and you’ve nearly reached the historic landmark, 1 mile straight ahead, tucked neatly into a valley off the throughway. A narrow gravel road leads down to the heart of the course, where an American flag is rooted beside a bronze sign: Ohio Historical Landmark, Clearview Golf Club, 1946. “Putting the fair in fairway.”

Clearview has created its own rich history - American tradition at its proudest and best. William Powell, who opened the course in 1946, served in World War II as a U.S. Army tech sergeant. Daughter Renee is an award-winning LPGA pro who recently received an honorary doctorate of laws from the University of St. Andrews in Scotland. And son Larry, who’s worked on the golf course from age eight, has more than 30 years experience as a superintendent.

“We used to maintain the golf course without a lot of equipment,” Larry Powell says. “Without all the bells and whistles, it comes down to timing and respect for nature. People think they can control and somehow change nature. They can’t.”

It’s a paradox that part of our country’s history is rooted in strict separatism – of race, of class, of territory. But while you can’t change nature, you can change a nation, and America was established to provide new opportunities for freedom and prosperity.

In a flat market, the golf industry is clamoring for just such a change. William Powell introduced a novel golf course to East Canton, one that would provide an experience for any and all golfers and would distance the game from the prejudice he experienced as a participant. In so doing, he created an unprecedented leadership opportunity for himself – officially, he’s the first black American to open a golf course in the U.S. – and his children.

“Renee and I were privileged,” Larry Powell says. “We were brought into an opportunity our parents provided.”

While the GCSAA has reached out to minorities in the industry recently, the percentage of nonwhite, nonmale superintendents in the association still hovers around 3 percent – 142 of 14,604 members are female and 374 are American Indian/Native American/Alaskan, Asian, Black/African American or Hispanic/Latino, according to the GCSAA. The nation and the industry are evolving, but hard work and success are deeply embedded in the history of American golf, and this remains constant as diversity in the nation and the industry is broadened.

ACTIONS SPEAK LOUDER
It’s been three months since Gary Myers, CGCS, began accepting applications for a new management addition to the golf course staff at Walt Disney World Resort in Orlando, Fla. He has more than enough candidates to choose from, but he’s waiting to begin the interview process.

So what’s the hold up? When it comes to
hiring, Myers is a businessman. You might say he has an agenda, then, but he has no ethnic or gender quotas to fill. He wants to hire the best person for the job. Still, he believes in a fair application process, and as an equal opportunity employer, he keeps each position open until he’s accumulated a diverse candidate base.

“Diversity is an issue that needs to be pursued and addressed,” Myers says. “I don’t think any of us is doing as much as we should.”

As part of a male-dominated industry, he says, employers at golf courses should actively recruit women and nonwhite men for management positions, for a start. Following the interview process, if Myers is left with two equally skilled candidates, he’ll allow his desire for a diverse staff to tip the scales—though he emphasizes that candidates shouldn’t be selected based on background alone.

“We’re not going to hire someone based on their ethnicity or gender,” he says. “But we do want to open opportunities that might not be there otherwise.”

Maintaining a well-rounded staff has been a process of trial and error for Myers. Several years ago, he hired a young—and inexperienced—female employee to fill a foreman’s position.

“That was a mistake,” he says. “I learned then not to push the issue.”

Quality—not quantity—comprises the most effective work force, and Myers now feels he has a solid crew that’s both diverse and skilled, including a female and an Asian-American assistant superintendent and a Haitian-American foreman.

“My gender’s not a big deal, and I don’t have to prove myself. I don’t have to be better than a guy.”

SHELIA FINNEY

The knowledge propelled her to a job as assistant golf course superintendent at Gaylord Springs Golf Links, located on the Gaylord Opryland Resort property, which also is in Nashville. Even as an assistant, Finney immersed herself in the industry, becoming heavily involved in associations and working to fill in the gaps.

Finney never felt her opportunities in the industry were limited because of her gender because she believes the necessary skills for success transcend sex and ethnicity.

“It’s very important to be organized and have a plan,” she says. “You have to be extremely flexible, because Mother Nature can change your plans. I try to have a plan A, B, and C to anticipate what could happen.”

Finney also describes herself as inquisitive, and believes that to be an important and inherent quality in a good superintendent.

“I always have to know how things work and why,” she says. “And I know how to find the answers.”

As the U.S. population becomes more diverse, Finney sees need for increased diversity in the golf world.

“For the industry to remain healthy and whole, it needs to replicate the society around it,” she says. “If not, it’s stagnant. To attract society to a golf course to take up the game, you have to be able to show them it’s something they can relate to on a personal level. Forcing new golfers outside their comfort zone makes it even more difficult.”
FROM THE BOTTOM UP
Rafael Barajas, CGCS, experienced that discomfort as a young golfer in California. Before he and his friends played a round of golf, they'd flip a coin to determine who had the unpleasant task of entering the pro shop. Thirty years later, it's hard to imagine Barajas afraid to walk through any door. He's worked hard to gain the confidence he's known for now, and it's been a long road.

At 16, Barajas moved to California from Mexico to help support his family. His brother hired him as a crewman, and after two years, he landed a job as assistant superintendent at Mountain Ridge Golf Course in Monterey, Calif. Long hours on the golf course developed a passion for the sport, and soon his entire life revolved around the industry.

"As I played more golf, it really developed into a career," he says. "I got hooked, and I figured if I moved up the staff ladder, I'd have a better opportunity to play more."

Young, but with almost five years in the industry under his belt, Barajas was hired by American Golf as golf course superintendent at Recreation Park Golf Course in Long Beach. Having started from the bottom and worked his way up, he acquired his fair share of knowledge — but he knew he had a lot to learn. Barajas took every opportunity to attend business and personnel seminars and eventually became a certified superintendent at age 27. Then, in 2000, he received a certificate in turfgrass management from UC Riverside. Presently, he's the superintendent at Hacienda Golf Club in San Diego and is on the board of directors of the Southern California chapter and California GCSA. With almost 30 years of industry experience, Barajas

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Embrace diversity
By Mark J. Woodward, CGCS, GCSAA c.e.o.

Everything we’ve learned and experienced points to the need to diversify - to sustain and grow stronger. Those in golf and outside the industry have noted the absence of diversity in the game. It’s quite clear untapped markets provide an opportunity to grow the game.

Only recently has organized golf dedicated the necessary resources to make the game more inviting to nontraditional golf targets: women, minorities, juniors and people with disabilities. The concept is simple – a more diverse customer base will strengthen the game’s economics.

But have there been barriers for these groups? In some cases, there has been overt exclusion. But for the most part, golf has displayed what Steve Robbins, Ph.D., calls unintentional intolerance. While not speaking specifically about golf, Robbins says groups oftentimes exclude without being aware. He doesn’t point fingers but challenges individuals and organizations to be more mindful and intentional about inclusion.

By having this perspective, we are likely to attract others who can make us stronger. Growing the number of golfers certainly is a sign of strength. But, including a diversity of experience, backgrounds, perspectives and talents also creates a stronger team. A stronger team makes better decisions and is more focused on success. That’s the reason the GCSAA has begun to dedicate resources to enhancing diversity where it has influence. From an association staffing perspective, we’re making every effort to tap a diverse pool from which to draw talent.

The GCSAA also has done the same in attracting individuals to the golf course management industry. We’ve called on our members and others inside the industry with experience in fostering diversity to help us toward achieving this goal. This fall, our diversity task group (see page 21) will meet to continue our goals of identifying barriers to entry and developing programs to attract these individuals. The end result will be a stronger industry and association.

We’ve identified two measures to start us down the path: one pertaining to females and the other to individuals from ethnically diverse backgrounds. We’re introducing both groups to golf course management through a variety of outreach vehicles. We would like to see representation that puts them on a career path that takes them to an assistant position and then as golf course superintendents.

There are no illusions that such a process will be achieved in a short time frame. We know it will be a deliberate process. The ultimate goal isn’t to have a specific number of new members representing diverse backgrounds. While we will have targets, it’s just as important our efforts result in a different way of thinking that will impact our planning and operations. We will declare victory if our efforts attract a diversity of people and if the process results in a more efficient and effective organization. The execution might be complex, but we’re confident we’re on our way to a stronger industry and association. GCI

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doesn’t rest on his laurels. He looks ahead.

“I don’t put a lot of importance on what I’ve accomplished,” he says. “I was given opportunities, and I ran with them. I try to stay humble. My passion right now is giving back to the associations that have given a lot to me and my family.”

Barajas has four children, who are a big part of his commitment to diversity in the industry: increased opportunities for young, minority candidates to become successful leaders.

“They're a big time proponent of diversity,” he says. “The country’s diverse. The workforce in the industry is very diverse. With a little help and education, we can get staff to be assistants and golf course superintendents.”

**A LEVEL PLAYING FIELD**

Finney believes physical presence is an important component of a campaign for increased industry diversity. She makes a daily effort to be as visible as possible on property.

“No matter how many computerized systems and gadgets and tools you have, you still have to go out and look and probe,” she says. “A lot of golf course management is still your gut feeling. I'm out every morning, while the guys are out getting the golf course ready.”

Finney’s customers are surprised when they find out she’s a woman, but they’re not amazed.

“The industry’s changed throughout the years,” she says. “I can remember going to national conferences where everyone would turn around and stare at me because I was the only woman. There still aren’t many women in the association, but there’s not as much surprise in the GCSAA as there...
used to be. That’s a lot more comfortable for me. My gender’s not a big deal, and I don’t have to prove myself. I don’t have to be better than a guy.”

Finney’s glad to let her work do the talking. Gaylord Springs has hosted the BellSouth Senior Classic (now the AT&T Classic), and each year Finney fielded the same question during tournament prep: How is it different for you, as a woman, to prepare for a senior PGA event?

“For the first few years, I tried to come up with something fancy to say,” she says. “Then I finally said, ‘You know, the grass doesn’t care. The Tour officials don’t care. They care about the turf. They care about the condition of the golf course. It’s not any different for me than it is for a guy. Judge me by the golf course, not my anatomy.’”

Sometimes, though, anatomy is a necessary consideration. When Nancy Miller, CGCS, was an intern at Oakmont Country Club in Pennsylvania, the facility offered no living quarters for women at all.

“I was in a position where I could afford to take a room for a few months, and I did because I really wanted to work at Oakmont,” Miller says. “But the industry could attract many more women by providing those amenities.”

Miller is now the superintendent at Maple Leaf Golf and Country Club in Port Charlotte, Fla., and is one of a mere handful of minority chapter delegates in the GCSAA.

“When I’m at chapter delegate meetings, I think: This isn’t America,” she says. “The industry isn’t a true cross-section of the country, and you wonder why not. You wonder why more women and minorities aren’t drawn to the industry, especially the agronomic side of things. I don’t know the answer, but the GCSAA diversity task force has been working on it.”

A few short decades ago, career opportunities were limited for women and nonwhite men, and almost nonexistent in the golf industry.

“Women were expected to be nurses and teachers,” Miller says. “We weren’t even aware of all the possibilities.”

Still, Miller says it never crossed her mind that there’d be discrimination against women as superintendents, and so far, she hasn’t been terribly disillusioned, though occasionally she’s been discouraged.

“It can be intimidating to be the only woman in the room,” she says. “But what I’ve done is just gotten involved. I figured the best way to get over my intimidation is to get to know these guys, and that’s gone a long way. I’ve gotten to know each person, so I’m not walking into a group of men but a group of individuals.”

It’s a feeling Larry Powell knows well.

“There’s not much diversity in the industry at all,” he says. “That’s the way it’s always been. The majority of our players at Clearview – over 90 percent – are white. But everyone’s welcome.”

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As with almost all cultural practices, each superintendent has a little twist that allows him to achieve his desired results.

Topdressing is no exception. It's a given a topdressing program should be tailored to meet the needs of a particular golf course. Most superintendents topdress with straight sand, but others topdress with a mix of sand and organic matter, be it mushroom soil or peat. Some even topdress with 100 percent peat.

Those looking to the USGA for a standard recommendation for topdressing won't find one because it doesn't have one, according to Jim Moore, director of construction education for the USGA Green Section. Topdressing — material and amount — depends on the type of green. The needs of older, soil-based, push-up greens are different than those of newer, USGA-spec, sand-based greens. However, there are some general topdressing goals no matter the type of green:

- Prevent layering in the soil profile, whether it's excess organic matter or layers of excess sand.
- Improve drainage and root-zone aeration.
- Encourage upright plant growth.
- Prevent a smooth surface.
- Improve putting quality.

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basically rebuild them through aeration and topdressing. As a result, Moore says it’s not uncommon for members of the Green Section staff to see as much as six inches of topdressing sand built up during a 20-year period on top of older greens.

"If you don’t want to rebuild older, soil-based greens, your best bet is to improve them through a combination of aeration and topdressing," Moore says.

If a superintendent is trying to improve older, soil-based greens in this manner, he needs to make the change in the profile a gradual one. Adding too much sand too quickly can result in a shallow, droughty layer immediately above the soil. To avoid building such a layer, it’s important to combine sand topdressing with core aeration.

Moore suggests removing cores at least 2 to 3 inches deep when aerating and backfilling the holes with sand. Many superintendents aerate two to three times a year and follow with a heavy topdressing application to fill the holes. Additionally, they lightly topdress four to eight times per year depending on the duration of the growing season. As a general rule, about 1/4 inch of sand will accumulate on the surface of the green each year with this type of program.

Another topdressing program is one in which a superintendent tries to match the existing root zone – a 90/10 sand/organic matter mix, for example – which typically occurs on newer, sand-based greens, instead of building a new root zone on older, soil-based greens. On new construction greens, Moore suggests topdressing with the exact same material the green was built with if possible. As the turf starts to produce excess organic matter, the switch can be made to straight sand if desired.

CHANGE IS ORGANIC

With sand-based greens, superintendents try to match the rate and frequency of topdressing with organic matter in the green. Organic matter accumulates in a soil profile because the plant is producing it faster than it can break down. One needs to change one’s topdressing program if organic matter is building up, Moore says.

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• Reducing nitrogen fertilizer, which accelerates organic matter production.
• Aerating more often.
• Diluting organic matter with sand.

When following a guideline of a certain percentage of organic matter in the soil – 3 to 4 percent, for example – superintendents should make sure they’re measuring profiles of the same depth and measure organic matter by weight, not volume, Moore says. Too much organic matter holds too much water in the top of the root zone, creating an environment ripe for disease.

Some organic matter is needed between the root zone and crown of the plant. Part of the grow-in process is to accumulate organic matter near the top of the profile. Without this cushion, traffic would cause excessive wear on the turf. However, once the plant is in the ground for a while, it might begin to produce so much organic matter there’s no need to add more, Moore says.

On mature greens, too little organic matter isn’t a problem the Green Section typically sees. “If you look in a superintendent’s maintenance building, you’ll find several tools for removing organic matter but nothing that adds it,” Moore says.

SIZE MATTERS
Another issue with topdressing is the size of sand particles. When buying topdressing sand, superintendents need to know which size to buy, Moore says. Some superintendents buy sand that’s finer than the sand used to build the green. The finer-particle sand is desirable because it moves down in the profile easier and doesn’t damage mower reels. However, the downside to this strategy is the finer sand holds more water than the courser sand used to build the green, allowing too much water in the top of the profile. This could cause problems down the road, in some cases after a superintendent leaves and a new one arrives.

MATERIAL
Scott Anderson, greens superintendent at Huntington Valley Country Club in Pennsylvania, topdresses bentgrass/Poa annua greens differently than most superintendents. He avoids pure sand topdressing.

The topdressing Anderson uses is a mix of sand (80 percent) and mushroom soil (20 percent), which has been screened and baked. (These mushrooms grow on horse manure, and after the mushrooms pull all of the nutrients out of the manure, they’re ground, baked and screened.) The mushroom soil still has organic matter in it, which stimulates growth. Anderson estimates that when he topdresses he receives about an 1/8 of a pound of nitrogen a year in an organic form.

Anderson pays about $60 a ton for the topdressing – compared to $40 a ton for straight
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sand. Because of the topdressing Anderson uses, he is also able to use less water than other superintendents in the area, he says. He uses 7 million gallons of water between April and October on 27 holes.

Anderson keeps the soil as dry as possible, and the grass actually goes dormant on greens, browning out. Even the Poa goes off color and doesn’t die. Often he will apply a wetting agent in anticipation of rain to rewet the soil.

"The browning out will scare anybody because they think it’s death," he says. "I'm promoting the plant’s natural ability to defend itself. Everyone is doing what the USGA recommends. They’ve seen this, but they don’t seem to be promoting it. The soil first approach works well here."

At Pecan Plantation Country Club in Granbury, Texas, golf course superintendent Michael Underwood, who maintains 328 bermudagrass fairways and Tifdwarf greens with a $575,000 budget, topdresses with an 80/20 sand/peat mix, which costs $35 a ton. He’s been using that mix for two years. Before that, he was using straight sand but wasn’t getting enough moisture retention, and isolated dry spots were problematic.

To increase the disease suppression for take-all patch, bermuda decline, spring dead spot and curvularia, Underwood adds acid to the peat. He says organic matter helps with disease suppression — this based on research conducted by Phil Colbaugh, Ph.D., a turfgrass pathologist (colbaugh-turf.com).

"Some guys topdress with solid peat, but the USGA isn’t keen on that," he says. "It’s easier to grow grass with a mix than straight sand. It’s easier to do a grow-in and build the roots when you have that mix. Straight-sand greens aren’t as healthy."

Underwood used to use straight sand on the courses he maintained before coming to Pecan.

"In this area, I’m one of few who are topdressing with sand/peat mix," he says. "If you build a green with 80/20 sand/peat mix, why wouldn't you use the same mixture as the soil profile when topdressing?"

"A lot of people topdress with straight sand and don't consider anything else," he adds. "The USGA doesn’t recommend the peat. I was leery of peat because one of the courses I worked at before had a bad organic matter layer. The organic matter will breakdown. It’s like good carbs/bad carbs. As long as you’re putting good organics into the soil, it’s OK."

At the 18-hole, Donald Ross-designed White Bear Yacht Club in White Bear Lake, Minn., John Steiner, CGCS, who maintains Poa annua/bentgrass greens with an $800,000 maintenance budget, uses straight fine-building sand when topdressing.

"Why add organic matter when you have some already in the profile?" he asks. "There’s enough."

**AMOUNT**

Dusting — applying a light amount of sand frequently so one doesn’t have to drag the sand into the profile — is another topdressing method.

"With dusting, you can water it in that night, and the next morning, golfers don’t even know you topdressed," Moore says. "Frequent dusting is very helpful in preventing organic layers."

"When you look at a soil profile of a green of those people who don’t topdress enough, you can count the layers in the profile like rings on a tree," Moore adds. "It’s the absolute worst thing Finer-particle sand is desirable because it moves down in the profile easier and doesn’t damage mower reels. However, the downside to this strategy is that finer sand holds more water than the coarser sand most likely used to build a green, allowing too much water in the top of the profile. Photo: Wiedenmann
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Steiner doesn’t dust because he doesn’t think it does any good.

“To put down enough topdressing to do any good, we’ll lose speed for five days,” he says. “If I topdressed more, I’d have dull mowers.”

Steiner doesn’t know exactly the amount of topdressing he uses because he applies by feel. But he puts down a modest amount, which he sweeps in with a broom. He can’t water it in because there’s too much.

Underwood applies light applications of topdressing that just cover the surface, so it takes one drag to get it in. His heavy topdressing applications equal 0.5 tons on three acres of greens, or 0.4 tons per 1,000 square feet.

The topdressing Anderson uses is the consistency of sugar, and he spreads it with a hand-spread so there are no problems with the mowers. He applies it in three to four directions and doesn’t have to brush it in. He usually applies about 0.5 ton for 5,000 square feet.

FREQUENCY

Anderson topdresses the greens at Huntingdon Valley four times a year. The first thing he does in the spring is topdress with purchased material to protect the crowns going into the summer heat.

“I’d never do that with straight sand because you’d cook the roots,” he says. “Try growing grass on beach sand.”

Anderson uses a hand spreader twice a year. The other two times he pulls quad tines and drags them around, knocking off the soil.

Anderson says he doesn’t get a thatchy buildup because a lot of organic matter assists in its natural degradation.

“Sand doesn’t have the organisms in it; it’s more sterile,” he says. “It doesn’t have capacity to host organisms that break down thatch so you get a build up of organic matter, so you need to keep adding sand or keep pulling it out.

“My approach is less common,” he adds. “The few people I know who do this worked for me. I can’t see people learning about this in school and doing it because it would scare them.”

Anderson monitors the amount of thatch or puffiness so there’s no need to topdress more than he does, he says. He manages growth by controlling moisture and fertility and by using PGRs. However, if there’s an event at Huntingdon Valley, such as the Pennsylvania State Amateur, Anderson will topdress in advance of it. Topdressing basically protects the crown against scalping.

The one downside to Anderson’s topdressing method is that when the greens get wet, they stay wet for three to four days. The percolation rate is 0.2 to 0.4. The deep tine aeration improves that, he says.

“I take this approach because I’ve got push-up greens,” he says. “If I had USGA straight-sand greens, I’d have a different approach. When you have an organic approach, the organisms create porosity and channels naturally. It’s what we do, but it’s generally not promoted as an option.”

At Pecan Plantation, Underwood topdresses the push-up greens, which have sand caps on them, heavily twice a year and lightly every two to three weeks.

Steiner topdresses about three times a year, including May and September when he aerifies.

“I’d like to topdress every month, but I don’t in June and August,” Steiner says. “If it’s hot, I don’t. I never topdress in July.

“Topdressing isn’t a priority,” he adds. “I’ve never been on a strict schedule. We use rollers a lot, which keeps the greens smooth.”

GRASS TYPE

Grass varieties also affect topdressing. The new bentgrasses and the ultradwarf bermudagrasses generate a lot of thatch so superintendents need to keep up with their topdressing, aerating and verticutting, Moore says.

Steiner’s Poa greens don’t produce a lot of thatch, and the turf is upright. He says if he had L-93, A-1 or A-4 bentgrass greens, he’d be more concerned about thatch and topdressing.

“There’s a high percentage of Poa on the greens, so topdressing isn’t imperative,” he says. “I’m sure people would debate me to death about that though. Topdressing is a good thing, especially with bentgrass. For me, the negatives outweigh the positives. I’m getting away with not doing it often. A lot of people don’t agree with me.”

WHAT TO DO

So what is the best way to topdress? It depends on the needs of the green and the demands of the golfers. Moore’s opinion is clearer.

"Of the people who have a reputation for great greens, more are topdressing heavily at least twice each year after aeration and dusting every 14 to 28 days during the growing season to prevent layering," he says.
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Superintendents agree healthy turf is the best weed control. Accordingly, they focus on developing and maintaining a dense, deep-rooted stand of thriving turf. Well aware of the environmental impact of all their turf management practices, they work hard to minimize chemical applications by following integrated pest management procedures, monitoring conditions, setting action levels and defining target areas for application.

Though weather conditions have the greatest impact on herbicide use, economic factors also play a role. Superintendents are becoming savvy managers of their budgets, so product overuse is seldom an issue. But the pressures of the economy, including the dramatic increase of gas prices, are forcing superintendents to monitor their budget allocations more closely to make essential applications.

Disease control, preventive or curative, is usually a measure to save turf. Yet, although weed infestations might jeopardize turf quality, impact playability and appear unsightly, they rarely threaten the turf’s viability. Where and when weeds appear determines the type of control used.

ON THE SPOT

Each golf course is a patchwork of microclimates, challenging superintendents to adjust their practices to meet the specific needs of each setting amid ever-changing weather conditions. Superintendents follow the research, check out new product introductions and network with their peers to develop weed-control strategies that fit their needs.

Golf course superintendent Kurt Hellenga deals with many microclimates at Lakeview Golf Club in Harrisonburg, Va. The 36-hole public facility is split into playable 9-hole segments. Hellenga maintains about 305 acres, including 5.1 acres of Penncross and Poa annua greens and about 4 acres of bentgrass, Poa annua and perennial ryegrass tees.

While Hellenga lists Poa annua as part of his turf mix, he considers it the most difficult weed he tries to control. He uses Trimmit – a PGR that provides seed-head suppression while acting as an herbicide on annual bluegrass – on the tees and greens.

Hellenga says he’s had good results using Barricade (prodiamine) for spring preemergent control of crabgrass, goosegrass and dallisgrass on tees and fairways. Dandelions and clover are the main broadleaf weeds he controls. He uses Confront (triclopyr and clopyralid) for control, adjusting the timing for weather conditions and...
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Spot treatment is most effective for individual weeds or small groups of weeds. Photo: Steve Trusty

TURFGRASS MAINTENANCE

targeting only the high visibility areas for treatment. Any grassy weed breakthrough generally hits in late July. He spot treats with MSMA, or uses a combination of 2,4-D with MSMA or MCPP to control broadleaf weeds, too.

Fitting weed control into the budget is a factor for Jamestown Golf Course in Rhode Island. The nine-hole municipal facility just added preemergent controls to its program two years ago, says assistant manager Jon Mistowski. Jamestown’s greens are a mix of bentgrass and Poa annua, and the tees and fairways are a combination of Kentucky bluegrass and perennial ryegrass. Fescues are in the rough.

Mistowski uses Barricade for crabgrass control, applying it in May mostly to the tee surfaces, targeted trouble spots on the fairways and the approaches. He spot-treats clover in June, applying Trimec (2,4-D, MCPP and dicamba) with a backpack sprayer. He hits the outbreaks, mostly within the tee boxes and approaches in areas totaling about 100,000 square feet. He also uses glyphosate for spot applications of weeds that pop up in bunkers or the parking lot.

Head grounds superintendent Jeff Pint maintains about 108 acres of bentgrass, annual bluegrass and Kentucky bluegrass at New Prague Golf Club, an 18-hole public facility in Minnesota. The area, like much of the upper Midwest, is cool and rainy in the spring.

Those needing preemergent controls struggled to find an application window. Many that made early applications were finding weed breakthrough by early June, but Pint has managed to crowd out the grassy weeds with dense turf.

“We haven’t needed a preemergent application for several years,” he says.

Clover and dandelions are the most problematic weeds at New Prague and used to be controlled with Millennium Ultra (2,4-D, clopyralid and dicamba). Pint made the first application in mid-May, working in the high-profile spots first, then covering as much of the affected area as possible by mid-June.

“With the boom sprayer, we could usually hit about one-third of the tees, roughs and fairways each year,” he says. “This year, we’ve had no application window during that time frame.”

While Pint achieved fairly good control at the recommended rate, the Millennium Ultra applications stunted the Poa, and it has struggled to recover.

“A sales rep suggested an alternative that we switched to in 2006,” he says. “We’re now adding straight dicamba to the tank at a low rate when we make our growth regulator applications.”

Pint starts mid-May, weather permitting, and keeps repeating at three week intervals until the weather gets too hot around July. Then he starts back again in the fall. The first application knocks down the weeds that have emerged, and the application three weeks later takes them out.
SOUTHERN HOSPITALITY

Weed challenges in warm-season turfgrass are different from those in cool-season turf. At the private Shady Oaks Country Club in Fort Worth, Texas, Brent Doolittle, CGCS, manages GenTiff bermudagrass — an unmarketed experimental variety that performs much like Tifway 419 — on tees, fairways and roughs.

“We usually apply a granular fertilizer with Team Pro (benefin and trifluralin) preemergent in the fall for crabgrass, goosegrass, Poa annua and Shepherd’s Purse,” Doolittle says. “We can use spot applications of Roundup on the dormant bermuda to get anything that escapes. We have little weed pressure in the middle of the fairways, but the bermuda struggles along the edges because of the shade. We apply Ronstar (oxadiazon) there, usually in February.”

Doolittle and his staff have used Gallery (isoxaben) in areas where they’ve had a severe outbreak of Shepherd’s Purse but generally just spot treat them with 2,4-D using a backpack sprayer. Nutgrass is the worst weed problem.

“When I arrived here seven years ago, we were spot treating about 5 acres for it,” Doolittle says. “This year, we’ll probably treat about 20 acres. The preemergent program works so well we don’t need the follow-up application of MSMA to keep the nutgrass in check. We use Monu-

ment (trifloxysulfuron-sodium) and Manage (halosulfuron-methyl), depending on where the nutgrass is located. Some seasons it takes two treatments to control it.”

Mark Smith, golf course superintendent at The Quarry at La Quinta in California, maintains warm- and cool-season turf.

The hybrid bermudagrasses are overseeded with a blend of perennial ryegrasses. Greens are Tifdwarf bermudagrass, tees and fairways are Tifgreen, and the rough is Tifway 2.

Smith uses Barricade for preemergent crabgrass control and applies it in March, only covering the infested area, which is about two-thirds of the fairway.

Smith’s two main broadleaf weed problems are cudweed and spotted spurge. Generally, the turf is thick enough to hold its own, but Smith spot treats as needed with Trimec or Speed Zone (2-ethylhexyl, dicamba, MCPP and carfentrazone-ethyl). He also uses Gallery and Ronstar in the 8 acres of dormant turf that aren’t overseeded at different times of the year.

During overseeding, Smith uses a preemergent herbicide, either Ronstar or Surflan (oryza
lin), in the landscape beds that are within the turf area and along the bunkers to keep the perennial ryegrass seed from taking hold there.

Smith's most prevalent weed problem is Poa annua, and it's the most difficult to control. He had used Prograss (ethofumesate) for more than a decade, making two blanket applications a year, three weeks apart, covering the affected area. But the transition back to bermudagrass in the summer was slow, and the turf was weaker than desired.

"Although several factors might have contributed to that, we decided to eliminate the Prograss application and see if we'd get a better transition," he says. "My unscientific presumption was the cumulative applications might give us enough residual to skip a year and still get some control. Through early June, we had only a minor Poa problem that we managed with PGRs, Primo and Proxy together, for seed head suppression. I'll need more time to fully analyze the results."

**PRODUCT PREFERENCE**

Many of the newer herbicides are earning kudos from superintendents. Hellenga likes the results his crew has achieved with Confront. Doolittle is impressed with Monument to control sedges and TranXit (rimfurfuron) to control annual bluegrass for the occasional breakthroughs or missed areas of application when it's too late to use Roundup to control Poa annua and nutgrass in the bermudagrass.
Some superintendents also have expressed concern about the potential loss of some of the older products from the marketplace such as MSMA, a postemergent grassy weed control. They'd like to see an affordable alternative introduced. A preemergent control for nutgrass and a 100-percent effective, affordable control for Poa annua are other items on their wish list.

COST COMPARISONS

There might be as many ways to track chemical expenditures as there are superintendents. Some break down budgets by area; some combine turf and landscape products in one category; some include labor costs with product costs. The breakdown of the budget is developed primarily to give superintendents a means of tracking, and controlling, expenditures.

Hellenga early orders most chemicals for price breaks and to ensure he has a product on hand when needed. Typically, his annual fertilizer costs are about $40,000, and fungicide costs are about the same. Herbicide expenditures average about $7,000 annually.

In contrast, Doolittle prefers to bring in product as needed in season. “My budget is bottom-line oriented, with enough flexibility to make adjustments as long as the course is in top condition and I don’t exceed the budget,” he says. “I feel I can better control my expenditures that way.”

All pesticides are grouped under chemicals in Doolittle’s budget. Herbicides, including the fertilizer/preemergent combination product, account for about 25 percent of the chemical budget. Insect outbreaks are minimal, accounting for as much as 5 percent on average. Fungicides, wetting agents and specialty products make up the balance.

Jamestown Golf Course groups all pesticides under chemicals, too. Fungicides account for 50 percent of their chemical budget, and insecticides account for 40 percent. The herbicides make up about 10 percent, costing between $300 and $500 a year.

Herbicide expenditures at the Quarry at La Quinta are higher than those for insecticides or fungicides because weed control applications are made on the larger area of the fairways and roughs. The fungicides and insecticides are used only on the greens and tees. The course also has extensive landscaping that’s treated with herbicides. Without the Prograss application this year, landscape area herbicide expenditures will exceed those for turf.

La Quinta’s turf herbicide costs will be reduced a few thousand dollars this year, compared to the last three years, Smith says. “We eliminated the Prograss, which averaged around $12,000 per season, but added the PGRs for Poa seed-head suppression,” he says. “I include that expenditure within the herbicide budget.”

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Resurrecting Tillie

Architects bring A.W. Tillinghast’s hell-raising hazards back to life

Rees Jones Golf Course Design restored A.W. Tillinghast-designed bunkers at Bethpage State Park’s Black Course for the 102nd U.S. Open in 2002. Photo: Larry Lambrecht
BY MARK LESLIE

When George Crump and Harry Colt designed Pine Valley golf course in the sandy hills of New Jersey, they asked for the input of golf course architect A.W. Tillinghast. Tillinghast's contribution was a masterpiece within a masterpiece: the now-famous 7th hole, where Hell's Half Acre is a 1.2-acre bunker that bisects the fairway and provides a challenging second shot, eye-catching aesthetics and a dash of fear.

From Hell's Half Acre, Tillinghast began to implement his trademark - massive hazards at courses throughout the country. Bob Trebus, Tillinghast Association president and Baltusrol Golf Club member, says Tillinghast designed Great Hazards in about half of his approximately 60 original layouts, mostly created during the 1920s.

Tillinghast’s hazards earned him the nickname Tillie the Terror. He once described the logic behind his design: “In my humble opinion, the green to the three-shot hole must be beyond the range of any player who misses either his drive or second stroke. The most effectual method, and I believe the only satisfactory one, is the location of a truly formidable hazard across the fairway. This must be carried with the second shot if the green is to be gained with the third.”

Architect Stephen Kay has worked on 11 of Tillinghast's layouts. “With Tillie, everything was about the second shot and getting over the hazard,” Kay says. “More often than not, the clubs eliminated a Great Hazard because it was too difficult for women or the maintenance budget was cut.”

Now, clubs throughout the country who’ve lost theirs are resurrecting them.

BRINGING BACK THE HAZARD HAS-BEEN

Perhaps the most famous Great Hazard resurrection was at Bethpage State Park’s Black Course, which Rees Jones Golf Course Design restored for the 102nd U.S. Open in 2002. Jones’ lead architect, Greg Muirhead, says the giant cross-hazard, once in use at the 4th hole, was so deteriorated there was little in terms of noses and fingers.

“The edging was lost, and there was no real form or definition,” Muirhead says.

Using aerial photographs from the 1930s, the team recreated Tilling-
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Tillinghast's design so well that it's now one of the most-photographed holes in golf. The fairway has two elevations, with the tee shot landing at a lower elevation so a menacing wall of elevation looks you in the face, Muirhead says.

More recently, in 2006, architect Keith Foster rebuilt the East Course at Five Farms' version of Hell's Half Acre on the 14th hole before the club hosted the Senior Players Championship in 2007.

"It went from a wild and woolly look to something formal and very maintained," Foster says. "Using old aerial photos, we reshaped it to what Tillie had designed originally, then regrassed it in a more rugged, old-school look."

Preserving and protecting Tillinghast's design is part of the club's mission, says superintendent Tim Kennelly, whose Five Farms course is part of Baltimore Country Club. "Our members insisted that whatever we did, it shouldn't look like we did anything to it," Kennelly says.

**LEGACY IN LAKEWOOD**

In the mid-1990s, members of Lakewood Country Club in Westlake, Ohio, became aware of the origins of the gem on which they played when now-deceased member Ken Stofer, a founding member of the Tillinghast Society, first stirred the pot, says Brian Pizzimenti, general manager of Lakewood. Since then, Lakewood has created a lounge and a library in Tillinghast's name.

"This golf course is a piece of history," says Jim Noel, superintendent at Lakewood. "I look at maintaining this course as maintaining a piece of artwork. If Tillinghast came back and saw this course, he'd say, 'This is what I wanted.' It's that good."

On its Web site, Lakewood states, "Our out-
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standing, 18-hole, A.W. Tillinghast-designed golf course is the cornerstone of our existence. The golf course is our legacy.”

That legacy includes Winged Foot Golf Club in Mamaroneck, N.Y.; Quaker Ridge in Scarsdale, N.Y.; San Francisco Golf Club; Chicago Golf Club; Ridgewood Country Club in Moultonborough, N.H.; Southward Ho! Country Club in Bayshore, N.Y.; and Sunnehanna Country Club in Johnstown, Pa., according to Trebus.

True to the architect’s design, Lakewood recently brought Tillinghast’s 6th hole Great Hazard back to life with the help of Stephen Kay.

“On several Tillinghast courses, you go out to where the Great Hazard was in the drawings and all you see across the fairway are mounds and undulations,” Kay says. “Sometimes courses intended to install the sand when finances improved, but it never happened.”

Lakewood had mounds shaped where the Great Hazard was supposed to be and seeded it to save money.

“The grass was mowed as rough, and then women complained the grass was too thick, so it was mowed at an intermediate height,” Kay says.

Members thought they would put sand in a few years later, but the Great Hazard lacked the sand Tillinghast wanted until Kay’s arrival 80 years later. Kay and partner Doug Smith drafted

Lakewood Country Club in Westlake, Ohio, recently brought Tillinghast’s 6th hole Great Hazard back to life with the help of Stephen Kay. Photo: Lakewood Country Club
a master plan and convinced members to install sand. They also shifted the hazard 20 yards closer to the green to make it more challenging for today's game.

"We changed it drastically," Noel says. "Beforehand, we just had mounds, and we would mow the middle of it down to step-cut heights. It wasn't difficult at all. Long hitters could get over it with a 7-iron and be 110 yards away from the green. Now, you barely make it over, and you're 80 yards away from the green."

At first, the membership was overwhelmed by the sheer size of the Great Hazard.

"Now, when anybody who brings guests out, the first thing they talk about is what a great hole that is," Pizzimenti says. "It has really turned around for us."

The Great Hazard moves diagonally from left to right. The par-5 6th hole measures 527 yards; the bunker is 302 yards from the back tee, 285 yards from the second tee, 267 from the third tee and 187 from the forward tee.

"It puts a premium on your drive," Noel says. "If you hit a drive 250 yards from the back tee, you can get home because you only have 260 to go."

Kay plans to add a new back tee another 45 yards behind the existing one.

"Some people love it, and some hate it," says Tom Watrovich, head golf professional. "The positives are fabulous. It's a very talked-about hole by golfers in the area. It's our No.1 handicap hole, and as such, it should be difficult."

Reconstruction of Lakewood's Great Hazard cost about $50,000, and the ongoing cost of maintenance is negligible, Kay says.

People who have Great Hazards yet aren't using them are making a mistake, Noel says. "It's a great visual," he says. "You see all this sand and the mounds and you can see the green, so it almost looks like the green is right over it. From a nothing hole, it's now our No.1 handicap hole. Stephen Kay really got into Tillinghast's mind and did a fabulous job."

Watovich agrees: "Tillie's smirking up there every time he sees someone hack around in that hazard. It's a great thing."
INVEST in your facility

Targeted spending can boost cash flow and member satisfaction
How do you know if the big check you just wrote will change from outlay to income for your club? “It's sort of like the old adage, 'You've got to spend money to make money,'” says Mike Leemhuis, c.e.o. and general manager of Congressional Country Club in Bethesda, Md.

Congressional has completed $20 million of capital improvements during the past decade. With recent investments in exercise facilities, a new wine list and top-notch maintenance equipment, Congressional has everything covered, Leemhuis says, noting the club has a waiting list for membership despite one of the highest initiation fees in the country.

“I know that to meet my budgets, I have to provide a level of service and product above people's expectations,” Leemhuis says. “To do that, I have to spend money. I have to have the best cuts of beef. I've got to have the very best conditioned golf course. I've got to have the very best service in our restaurant facilities.”

Leemhuis recognizes his willingness to invest isn’t universal.

“I've been lucky enough to work at great facilities where people bought into that philosophy,” he says.

Jay Miller, president of Hidden Valley Golf Club in Norco, Calif., also isn't shy about investing. Miller has been pouring time and money in his latest venture for two years. He arrived at the high-end public course when it was on the verge of closing - the perfect opportunity to develop a golf business through savvy investments.

As the founder of an organization for troubled youth, Get a Grip, Miller knows mentoring can go a long way toward growth. One of his mentors is industry veteran Ted Horton, who consulted on the operations at no cost.

“If Ted says, 'Jay, you need to invest in this,' I don't even second guess it,” Miller says.

Investments at Hidden Valley throughout the last two years have been multifaceted: $90,000 to restore the irrigation system, $23,000 to restore the clubhouse, $35,000 to renovate the wedding facilities and $7,000 for audio-visual capabilities. The big-ticket item was the driving range at $100,000.

Miller has invested capital in areas that will give his customers a better experience, as well as provide his course with a better reputation and possibly a boost in revenue.

“You get out what you put in as long as it's an intelligent investment,” he says. “As for your personal time investment, you get 10 times more back in blessings if you take the time to think things out and talk to your customers.”

Miller uses a suggestion box at the club to find out players' ideas. He often meets new players and buys them a beverage after the round and asks about their first impression of the course. Play has increased 4,700 rounds during the past five years at Hidden Valley, he says.

**WEATHERING THE STORM**

Scott Hoyt, a former golf pro turned general manager, handles the 27-hole course at Cinnabar Hills Golf Club in San Jose, Calif. Hoyt thinks his strong business plan from day one has a lot to do with the 10-year old, high-end public course's success today. He credits the ownership group with making good decisions early on.

“They know that to have a successful business, you need to do it right to start with,” Hoyt says. “So the building and the golf course were built right to start with.”

Once a nice course and facility is completed, the biggest challenge is keeping it in prime shape, especially amid the chaos that has hit the industry and Southern
"I have to provide a level of service and product above people's expectations. To do that, I have to spend money." - Mike Leemhuis

California, Hoyt says. He credits his course's local owners who, while other owners bailed out, didn't flinch after the 2002 stock market crash.

"They continued to invest in the golf course and the building," he says. "The economic situation in the area was seen as an opportunity to become more efficient. The club reduced expenses by $500,000 within a year, after getting each manager's input about every expense line item."

Congressional has completed $20 million in capital improvements during the past decade. But that kind of willingness to invest isn't universal. Photos: Congressional Country Club

The team focuses on maintaining a high-caliber course while being smart with money. Their strategy seems to be working -- Cinnabar Hills was voted Golf Course of the Year in 2005 and 2006 by the California Golf Course Owners Association.

"When people come out here, they say, 'Wow, this is really a nice place,'" Hoyt says.

SATISFACTION GUARANTEED

Stu Stram, president of The National Golf Club of Kansas City, says his 36-hole club constantly evaluates ways to serve members better. The private facility is one of the top 100 golf clubs in the nation, according to several magazine rankings. Considering the club's location, far from scenic mountains and ocean views, the recognition speaks volume for The National's attention to detail, Stram says.

"There's always a happy medium when it comes to spending capital dollars on improvements to your facility," he says. "We have an ambitious ownership group who is the driving force behind the success of The National and The Deuce courses."

When an idea for capital improvement is researched, financial returns and member satisfaction are worked into the equation by the owners.

"First and foremost, they analyze the potential of member satisfaction and how it affects increased membership, so all those things are tied together," says Stram, who believes all areas of the members' experience factor into the club's success. "We feel that if we have the best facility, services and amenities package, we'll increase our market share here in the Midwest."

PROFITABLE PERSONNEL

Hoyt challenges anybody in the country to beat the quality of the greens maintained by his golf course superintendent, Brian Boyer, CGCS.

"There are so many people out there, no matter what industry you're in, that it's as if you're afraid to admit somebody else can do it better," Hoyt says. "You're afraid to ask questions."

Boyer is good at analyzing what's successful elsewhere and avoiding mistakes, Hoyt says. In addition to following excellent maintenance practices, Boyer addresses the financial side, too.

"He understands the business side of it," Hoyt says. "He knows how to balance the needs of the course with keeping the customer happy."

Miller also is boosting revenue by investing in employees with expertise he doesn't have himself.

"I'm a golf course guy," he says. "I'm not a restaurant guy, so I'm taking the best of both worlds. Now I have a real restaurateur running my whole golf food-and-beverage operation -- weddings, banquets, everything."

Income at Hidden Valley has been increasing since the first year Miller took over the operation. The club sold $100,000 in memberships in 2006, and he expects to be in the black with a six-figure profit by next year.

Leemhuis agrees course improvements aren't the only way to invest in better outcomes. Congressional invests in the employees' morale and training throughout the year by holding off-site events for the employees.

"We want to make sure we're paying the best possible wage we can in the marketplace in our area," Leemhuis says. "We prefer to gear ourselves toward good employees who understand our culture and service."

Hoyt believes it's critical for employees to feel empowered.

"If an employee feels that he or she has responsibility and can make a difference, that's so huge," he says. "It's almost more important than money."
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The courses of Kaanapali Resort sit in a prime area to attract golfers. Located in the middle of several Maui resorts, the oceanfront courses are surrounded by about 5,000 hotel rooms. Yet, until recently, they didn’t generate a stellar number of rounds because no one seemed to want to play them.

The resort features two courses: the Championship Royal (North) Course and the Kai (South) Course. Robert Trent Jones Sr. designed the par-71, 6,700-yard Royal Course in 1962. Created as a championship course, it had gotten to a point where it could no longer be described that way. It hadn’t been maintained properly until recently.

The Kai course conditions deteriorated, too. It was originally created as an executive course but was later redesigned by architect Arthur Jack Snyder in 1976. At 6,400 yards, the par-70 course was a breeding ground for goosegrass.
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The asset management group that owned the courses hired management company Billy Casper Golf to operate the courses and oversee $13 million of renovations to the courses, clubhouse and pro shop. BCG has a relationship with golf course architect Robin Nelson, who's been involved in the layout or redesign of many courses in Hawaii, so the choice to bring him on board wasn’t difficult.

One at a time, the courses closed as they underwent a transformation that would bring them back to resort-level conditions.

STRATEGIC MOVES

Safety was a factor in the South Course redesign. Houses had been built around the course since it opened, and some were too close to the fairways. So, Nelson moved tees and added trees and bunkers to create a safer layout.

All the bunkers on the South Course were rebuilt and reshaped. A few were removed, and a few were added.

“You need to place the shot more accurately now because the bunkers are closer to the greens to make it more interesting,” says Daniel Ramos, president of DHR Construction, one of the subcontractors that worked on the renovations.

Nelson added new tees to suit a variety of skill levels better, bringing the total on each hole to four. But even with new tees, the focus remains on hitting the shot properly rather than hitting the ball a great distance.

Adding to the challenge is the fact that several greens were redesigned to allow more pin placements.

Additionally, contractors installed a new irrigation system on the South Course and improved the drainage in the bunkers.

A CLEAN SLATE

The Robert Trent Jones-designed North Course was a different story. Changes to the course weren’t as drastic as those made to the South Course.

“I didn’t want to modify the course — just resurrect it back to its natural state,” Nelson says.

It was obvious, though, the greens on the North and South courses would have to be regrassed.

“The greens were resodded with TifEagle hybrid bermudagrass, which is a smoother and faster putting surface than than Tifdwarf, the grass that was on the greens previously, Nelson says. The new turf was significantly faster, causing the crew to reshape some of the greens to slow them down slightly.

The tees and fairways were planted with 419 hybrid bermudagrass, a dense variety that allows for lower cutting heights and quicker recovery time. Course superintendent Craig Trenholme intends to keep the turf this way. He wasn’t around during the redesign, but he had worked at the course 10 years earlier and kept a close eye on it during the renovations when he worked at a course five miles down the road. Trenholme returned just after the courses reopened.

Trenholme uses cultural practices for the ongoing prevention of another significant goosegrass infestation. He made changes to the courses’ fertilizer program and regularly verticuts the greens and aerates them. He also applies preemergent control.

“After the goosegrass died on the South Course, it had to be pulled out
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manually because the clumps were so big," Trenholme says. "When the Royal Course was grown in, there were a lot less weeds to deal with than the Kai Course. It was easier to control."

Another aid keeping the turf healthy was the addition of cart paths. DHR installed wall-to-wall cart paths on the courses to combat the stress carts cause on the turf.

"First we put the path only near the tees and greens on the South Course, and we installed it wall to wall on the North Course," Ramos says. "We then realized we needed to make the South Course path wall to wall."

ROUGH PATCHES
DHR ran into a slight delay at one point when the crew's sand mixer broke. Normally this leads to only a minor delay, but Maui magnifies construction problems. Many times, a piece of equipment is the only machine of its kind on the island.

"On the mainland, if something breaks, you can buy or rent another one," Ramos says. "Here, if it breaks, you have to do without it or wait about six weeks until it's fixed. Many times you call your competitors to ask them to lend you a piece of equipment."

It's such a common occurrence on the island, it barely fazes Nelson anymore.

"It's old hat," he says.

The fact that most materials cost more in Hawaii than they do in most other states – including irrigation equipment and fuel – doesn't help the situation. To make up for these costs, green fees in Hawaii usually are higher than elsewhere, Nelson says.

The other challenge Ramos faces is finding enough labor. He has a crew that can do the job, but room and board on the island is expensive and sometimes difficult to come by. He has to find the right balance of hiring his own crew members and local labor.

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The two courses went from being avoided four years ago to generating record numbers of rounds presently.

"They get high green fees, and they can't accompany all the people that want to play there," Nelson says. "It's been a huge success for them. Before, they couldn't get people to play."

The Royal Course hosted the Wendy's Champions Skins Game in February, and it received at least one glowing review.

"The greens were the best greens I've seen in my life," Nelson says. "They were so fast, so true and quite nice. Especially in Hawaii, with warm-season grass, it's difficult to get the greens like that."

The updated courses have received wider exposure via The Golf Channel. Viewers could catch glimpse of the course in its show, The Big Break Kaanapali, which ended in July. The reality show featured women golfers facing off attempting different challenges.

The only work yet to be finished on the Kaanapali courses is along the shore. Permits are needed for any work that's done near the shoreline area, and the resort is waiting for final permission. GCI
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Toxin trail

Four seemingly unrelated events lead to an unexpected scientific discovery

The word serendipity is used to describe the process by which seemingly unrelated observations, conversations and communications unexpectedly lead to what a scientist or inventor considers a eureka moment. I've had only two eureka moments in my career, separated by about 40 years of mundane routine. My latest eureka moment came as the result of a four-part serendipity.

EARLY FINDINGS

In late January 2006, I traveled to Northern Indiana to visit Agdia, a company I'd done work for during the early 1990s. I met Chet Sutula, Ph.D., who founded Agdia in his basement 25 years before and who was proud of becoming one of the world's largest developers and manufacturers of plant pathogen diagnostic test technology, with 50 employees and a six-acre complex of buildings.

At the end of my tour and dinner, almost as an afterthought, Sutula described a test the company was working on to determine a toxin produced by blue-green algae (cyanobacteria) in drinking water. The test was sensitive to 10 parts per billion, and Agdia's goal was to get its sensitivity down to 1 part per billion. Because the test didn't fit the company's standard product line of plant pathogen...
An outbreak of minirring disease on ultradwarf bermudagrass in midsummer on a microcystin toxin-positive course. The exact cause or causes of minirring aren't clear. Photo: Mike Healy

tests, Sutula felt it might need to look at various options to market the test once it was thoroughly validated. I agreed, but didn't immediately see any applications in my field.

And, as Paul Harvey says, the rest of the story. A year later, in early January 2007, I was called to a municipal golf course in Southern Alabama to look at a live oak problem. Live oak trees, on and adjacent to the course, which had been irrigated by spray, were suffering from leaf blighting - but only as far up as the water came in contact with the leaves.

As it turned out, the blighted leaves fell off eventually, and the new leaves replacing them were unaffected. The superintendent thought sediment removal from the irrigation pond the previous summer must have had something to do with the leaves.

As it turned out, the blighted leaves fell off eventually, and the new leaves replacing them were unaffected. The superintendent thought sediment removal from the irrigation pond the previous summer must have had something to do with the leaves.

RESERVOIRS IN AUSTRALIA

Then, in early May 2007, I was in Dubai. One evening I had dinner at a Mexican restaurant with several people including Jeff Ferney, an expatriate Australian who came to the United Arab Emirates as manager of the landscape maintenance division of a local company based in Abu Dhabi.

During our dinner, Jeff talked about the serious problem Australia was having with a toxin, produced by blue-green algae, found in reservoirs. This was, potentially, a serious human- and livestock-health problem. I remembered my conversation with Sutula in January 2006 and said I would pass on Agdia's contact information to him.

DISEASED GREENS

The final part of my serendipity took place in mid-May 2007. I visited a golf course where a greens-disease problem began on nine holes in the fall of 2006. The symptoms returned in the spring of 2007. As I rode with the golf course superintendent, he said he was having problems with the greens, tees and fairways on these nine holes, which didn't respond to fertilizer as the turf on the adjacent nine did. Those nine holes had never had any greens-related problems, even though they were maintained identically.

I asked about the source of irrigation water for these two nines, assuming the source was the same for both nines.

"Oh no," replied the superintendent. "The nine with no problems has its own irrigation pond and pump station, as does the nine with all the problems."

I asked if the separate sources of irrigation water had been tested. They had been, and the water quality test results showed no distinct differences. The superintendent also indicated he pulled soil samples for nematode and standard soil fertility testing, and these tests also showed no difference between the good and bad nines.

Could there be a toxin being produced in the irrigation pond serving the bad nine that was affecting turf quality, perhaps making a conventional disease more difficult to control or cure? I called Agdia and spoke with the scientist working on the toxin test. The test was a microcystin toxins immunostrip assay, and Heather Chambers, a scientist at Agdia, provided me with more background informa-
Agdia agreed to run samples from the good and bad nines, specifically water from each pond, as-irrigated samples from each nine and samples of badly affected turf (in areas with a heavy blue-green algae buildup). The sample test results were startling. The good nine samples all tested negative, while the bad nine samples all tested positive for microcystin toxins. Might microcystin toxins produced by aquatic forms of blue-green algae exist in other golf course irrigation ponds as well?

**TESTING THE WATER**

During the following months, I requested, and had sent to my laboratory, golf course pond and as-irrigated water samples from 35 golf courses in Florida, Alabama, Georgia, Louisiana and Texas. Microcystin toxin testing of all samples was carried out by Agdia, using its immunostrip assay and, in certain cases, a standard immunooassay. Positive samples came from golf courses in Florida, Alabama, Louisiana and Texas. Four of the courses which tested positive for microcystin toxins had unusual and/or difficult-to-control disease or disease-like problems on their greens. Water samples from more than 50 percent of the ponds tested contained microcystin toxins.

Selected samples archived by freezing were sent to Linda Lawton, Ph.D., at the School of Life Sciences at The Robert Gordon University in Aberdeen, Scotland, for additional testing by conventional analytical techniques. On January 9, 2008, Lawton's lab confirmed the presence of microcystin-LR and microcystin-LA. In addition to analytical capabilities, Lawton is recognized as an expert in the area of microcystin toxins toxicity to plants.

Microcystin toxins are produced by a number of genera of blue-green algae, which almost always grow in an aquatic environment. These toxins are hepatotoxic cyclic heptapeptides. Microcystin-LR is one of the most investigated of these toxins. It has been found in rivers, lakes and ponds throughout much of the world. Factors influencing toxin production and its sometimes immediate production cessation aren't clearly understood.

The major concern about the presence of microcystin toxins is their known mammalian toxicity. Most current water quality standards mandate potable water contains no more than 1 parts per billion and no more than 10 to 20 parts per billion in recreational water. Many countries, along with the World Health Organization, have introduced such standards. Currently, the United States has no microcystin toxins standards, although the U.S. Environmental Protection Agency considers these toxins of interest.
Anti-chemical activist groups have expanded beyond Washington into city council sessions and town hall meetings with an agenda to ban or restrict the pesticide and fertilizer products you use.

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and is headed toward regulatory authority. The impact of these toxins on plant growth is being examined further.

FUTURE PLANS
So where do I go from here? I've made my findings known to several organizations, including the U.S. EPA, with hope of finding sponsorship for a much larger survey. Until then, I'll continue to seek courses that have difficult-to-control disease or disease-like problems and recommend conventional plant disease diagnosis, along with multiple samples of pond water for microcystin toxins testing. Soon, I plan to have a PowerPoint presentation that can be shown remotely. GCI

Michael J. Healy is a turfgrass pathologist based in southern Alabama. He can be reached at 251-986-6240, mjhealy@gulftel.com or through his Web site, www.sportsturfdiagnostics.com.

Typical cyanobacterial bloom in an irrigation pond. Blooms are pushed by wind or drawn to the induction point of the operating irrigation pump. Photo: Mike Healy
Wild blue yonder

In a green-obsessed industry, estate manager Scott Resetich has learned there's no green without blue.

Pond management is a chore for many golf course superintendents, but for Scott Resetich, estate manager at Rich Harvest Farms in Sugar Grove, Ill., it's become a passion.

Resetich was in charge of all aspects of course maintenance when he started at ground zero at the 18-hole, 1,820-acre course 20 years ago. Since then, the facility has hired two turf managers, Jason Funderburg and Jeff VerCautren, allowing Resetich, who officially oversees horticulture and grounds activity, to make water quality his priority.

When you're new to pond management, practice makes perfect — and with 7 acres of on-course water under his care, Resetich gets plenty of practice. The course has three treatable lakes: Clyde, Katherine and the course's irrigation source, Rainbow. Resetich treats them about every 10 to 14 days with herbicides, algaecides, surfactants and dye. The exact frequency of application depends on the weather and environmental conditions.

"In 2007, we did quite a few applications throughout the season — the most ever," Resetich says. "It was rainy, and we didn't adjust water levels on two of our lakes."

Resetich sprays approximately equivalent concentrations to the 3.75-acre Lake Clyde and 1-acre Lake Katherine, but the 1.5-acre irrigation lake receives special treatment. For pesticide applications to Lake Rainbow, he reduces the concentration of Reward (diquat dibromide) and restricts other herbicides.

You have to be attentive to maintain a delicate balance, Resetich says, and you can't overdo it with pesticides, es-
especially when you’re committed to Audubon standards. He stocks a thriving fish population in each pond, including large-mouth bass and trout in Lake Rainbow, plus hybrid bluegill, catfish, walleye, northern pike and muskie, so fish populations are another consideration when it comes to pesticide applications.

Consequently, Resetich has reduced aquatic pesticide quantities, using about 2 pints of the surfactant Aqua-Prep and between 48 and 64 ounces of Reward per lake application.

“Reward is a little more effective from a contact standpoint, and it works well on rooted vegetation,” he says.

Curly leaf pondweed mainly affects the waters at Rich Harvest Farms, as do algae varieties hydrodictine, photophora and spirogyra. Cutrine Plus (elemental copper) is systemic and works well to keep algae at bay, Resetich says. He uses an average of 3 gallons of the algaecide per lake application.

After each pesticide application, Resetich sprays Precision Laboratories’ True Blue, a dye he switched to from Aqua Shade (acid blue 9, acid yellow 23) almost seven years ago. Resetich was happy with the Aqua Shade dye but wanted to build on his relationship with his water management product distributor, Scott Armstrong of agriculture cooperative Conserv FS in Tinley Park, Ill.

“Scott carries all the other pesticide products, so it was really a matter of convenience,” he says. “I can call right now and place an order, and they’ll drop it off this afternoon. It’s service oriented. I can’t beat that.”

Precision recommends applying at least a gallon of dye per 4 acre/feet. Resetich applies as much as 2 gallons to Lake Rainbow and another 2 gallons to Lake Katherine. Lake Clyde receives 3 to 4 gallons of dye.

“Sometimes, I have to consider how high the water level is,” he says. “I want as much of the shade as possible to ward off that algae growth.”

Fluctuating water levels can affect the amount of algae in a lake at any given time, causing it to produce at even double the rate. Resetich says. Usually he can keep up with water management on his own, but when rapid growth requires more time than he can commit, he’s able to reach out to a local aquatic management contractor, Marine Biochemists. Based in nearby Elburn, the company has sent a marine biochemist out to the facility for two treatments the past month.

“I can actually do my own in-house applications,” Resetich says. “I’ve been handling pond management pretty much on my own for the last 20 years, but with all my priorities, I’ve had contractors fill in for me periodically.”

With such large lakes, water treatment can be quite an elaborate set-up, Resetich says. He goes out with another crewman in a 14-foot john boat with an 8-horsepower Johnson motor and a 4-horsepower chemical injector.

“It’s a good four to six hours by the time you get your logging done and your cleanup finished,” he says.

Maintaining the lakes on property is almost a full-time job, so in addition to Resetich and the two turf managers on staff, the facility keeps a 38-man, on-season staff during growing season. Labor is included in the facility’s maintenance budget, which is about $1 million.

Water management products also are part of the maintenance budget. The price of Reward increased recently to $136 per gallon. Cutrine Plus costs about $30 per gallon and True Blue is about $39 per gallon.

“I get a small discount on aquatic products,” he says. “But service is what’s important to me. If I’ve got to pay a little more to have service at my fingertips, so be it.”

Quality, not quantity, then, is Resetich’s primary concern about pond management, and it’s a mantra that’s propelled the course through the Audubon certification process. The facility has one more project to complete before it’s a Certified Sanctuary. The estate manager says he’ll focus on this during the winter and then prepare for his next big project: hosting the LPGA Solheim Cup in August 2009.

“During tournament prep, aesthetics become so important from a management standpoint,” he says. “Medinah Country Club practically had a management team on site waiting to stay on top of algae in lakes, just for appearance, during the PGA Championship in 2006. We might be at the same point just to stay on top of it. Frequency will vary a little bit then. It’ll probably stay about the same up until two weeks before, and then we’ll watch it a little closer.”

Resetich estimates 95 percent of golf courses with any kind of algae problems or vegetation will hire water-quality control out to contractors, and with the amount of effort involved, it’s easy to see why. But Resetich only wishes he had more time to devote to his passion.

“If it was my choice, as a grounds manager, I’d prefer to do water quality – from stocking to algae control to overall aeration – over any of the other specialties, turf management or horticulture,” he says. GCI
In limbo on the lakes

Two superintendents at Purgatory Golf Course suffer through scorching heat to keep on-course lakes under control.

During the past year, golf course superintendent James Brown and his assistant Larry Wilk have been through hell at Purgatory Golf Course.

Opened in 2000 on 218 acres of land in Noblesville, Ind., the 18-hole facility has 16 total acres of water divided into five lakes. Last July, pond management jumped to the top of their priority list during a serious drought when one of the four major lakes on the course dried up. The trouble wasn’t only the lack of water. As the lake depth plummeted, the algae population, thriving in the summer heat and shallow water, multiplied.

“The algae got to be about 8 inches thick,” Brown says. “It wasn’t pretty, and it smelled like a dead animal.”

Fortunately, the lake was built on top of a pipe system. A pump was installed, and Brown and Wilk were able to pump fresh water into the lake at several hundred gallons a minute.

“Without that fresh water supply, it was just a festering wound,” Brown says. “But once we put another well in, the lake took care of itself.”

This past spring, though, the lake couldn’t manage itself. Brown and his crew usually take the month of January off, and when they returned to the course this February, they found one of their lakes entirely overgrown with aquatic weeds, mostly free-floating duckweed and watermilfoil.

“It was just a mess,” Brown says. “We were unaware you could even get growth in the winter, but I guess it never stops.”

Brown and Wilk consulted with local SePro representatives for crisis management. The course opens around St. Patrick’s Day every...
year, so with no way of knowing how long it would take to get the weeds under control, there was no time to lose. They purchased aquatic herbicide K-Tea from Advanced Turf Solutions and sprayed it right away.

“We put 5 gallons of K-Tea down, and it knocked the plants down immediately,” Brown says. “Two days later, everything was gone. It was impressive.”

Luckily for Brown and his crew, this past spring was a wet one, which kept plant growth at bay — but Brown and Wilk feel confident K-Tea will handle any aquatic plant growth. To apply the K-Tea, a two-person crew — one sprayer, one driver — uses a 13-gallon sprayer, which shoots about 8 feet, to target growth spots.

“I’d like to get a boat to be more deliberate,” he says. “When you just go around the edges, you don’t quite get everything.”

Nonetheless, he says, his method of applying the herbicide is more effective than his prior technique.

“We used to get straight copper sulfate in bags and drive around on a Jet Ski to spread it in the water,” he says. “There are all kinds of things on the market for lakes, but the K-Tea works best for me.”

The crew applies K-Tea as needed, and last summer’s drought-afflicted lake — Brown calls it his problem child — is the most frequent recipient, with 2 gallons of herbicide per treatment.

Brown hopes to be able to devote more time and money to his pond management regimen. Purgatory’s lakes cost about as much as one fairway to maintain.

“I like the idea of biological chemicals to control water,” he says. “It’s just a little pricey. I thought it was doable with our budget, but we spent about $20,000 on the pump last summer.”

So, for now, the crew applies Pond Champs black onyx dye every few weeks. Brown prefers the natural look of black water to bright blue, he says — plus, it’s an effective way to control plant growth.

“If you can see a golf ball in the water, there’s not enough dye,” he says.

Aside from regular dye and as-needed herbicide applications, the crew’s only other water treatment is an annual early spring application of Sonar (fluridone) to the main and irrigation lakes. The crew applies slightly less of the systemic herbicide to the irrigation pond because of its “Caution” label, which is the lowest toxicity category from the U.S. Environmental Protection Agency. It’s safe to irrigate with the herbicide in the water, but Brown and Wilk prefer not to.

Thanks to the wet weather, Brown anticipates they’ll finish the season without any significant water management issues. The drought last summer was his biggest challenge in his 10 years at Purgatory.

“It was stressful for a lot of people in the area,” he says. “Water was in short supply. I wasn’t watering the driving range at all, and I had to let the greens on the driving range go.”

This year, rounds are fewer than average, not just at Purgatory but throughout the Midwest. It’s hard to catch up on what you lose in the spring, Brown says, but he strives to maintain the entire course under budget. With pond management, that means he has to forego some of the methods and applications he’d like to try.

“We’re a high-end course with a relatively small budget,” he says. “But there’s lots of ways to skin the cat.”
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PREPPING FOR THE MEMORIAL

Q Why would Jack Nicklaus furrow the bunkers at Muirfield Village Golf Club in Dublin, Ohio, to make them so penal?

A Nicklaus believes sand bunker preparations have created a safe haven for players nowadays. They've become the preferred place to be, and it's easy to get in and out of them without much penalty. While playing into a bunker isn't a new philosophy, with today's bunker preparation, players feel extremely confident they can make a sand save without issue.

This era has ended at Muirfield Village, where golf course superintendent Paul B. Latshaw, at Nicklaus' request, reviewed bunker preparations and decided to make bunkers more hazardous. The following ensued:

• First, Latshaw and Nicklaus reviewed bunker sand quality, shape, particle size, firmness, drainage capabilities and depth to see if the sand could be raised and furrowed.
• Next, the crew found an old-fashioned wooden leaf rake with teeth long enough to provide the proper furrow depth. This wasn’t an easy task.
• Latshaw and Nicklaus reviewed tooth depth and spacing. Latshaw settled on a 1.25-inch tooth length and a 1.75-inch space between teeth. The goal was to have more sand around the ball to influence the shot.
• They reduced rake-head size and varied the handle lengths to allow workers to reach all portions of the steep-faced bunkers, capes and bays.
• The crew irrigated sand by hand each night so moisture content was proper for the next morning’s work. They occasionally applied a soil penetrant to reduce surface tension and allow sand particles to fall together, especially on the steep faces.
• Each morning before play, the raking crew would hand-rake the furrows into the sand slowly. There were front and back nine crews to accomplish this.
• Furrows remained in place until a ball entered, and caddies raked the mark left from an explosion shot.

This process shouldn’t be the daily practice at your golf course. The tournament goal of providing an additional penalty for those who miss-hit their approach shots worked during the Memorial and frustrations followed. After all, a bunker is a hazard.

Q How was the golf course preparation work and done so quietly?

A The club is located within a housing development. The first and 10th teeing grounds and the practice green, being located near the clubhouse where traffic volumes were high, required a stealth-like maintenance operation.

Palletized rubber material was used to pave the cart paths around the clubhouse, first and 10th teeing grounds, and practice green. This reduced the noise of the equipment, people, competitors and machinery moved and transported. The rubber material can be mixed similar to concrete so it can be included in the cart path material as well.

When cutting the fairways from teeing ground to putting green approach, the mowing units would return along the cart paths for their next mowing pass, eliminating transport noise.

All metal-on-metal contact was reduced by coating each component with the rubberized material. Even the tool boxes and tools were wrapped with cloth or plastic to eliminate noise.

Finally, the air generator is battery-powered, not gas-powered, to reduce noise.

Q How does the mechanic staff service equipment and help people if there’s a breakdown?

A Bill Clayton, the club’s equipment manager, has a chase vehicle he uses to traverse the property to check on all people and equipment. The vehicles include:
• An enclosed driver’s cab to protect Clayton from the elements and reduce the noise from his conversations with employees via radio transmissions, cell phone calls and text message alerts.
• Extra-wide tires for noise reduction, stability and off-road capabilities.
• An Internet connection for ordering parts, reviewing equipment specifications or locating vendor information.

If you elect to prepare a response unit of this sophistication, consider including the following:
• Two tool boxes containing standard and metric tools for any type of equipment repair.
• A portable air compressor mounted on the unit’s bed.
• A small lift capable of fixing flat tires, mower work, reel repair and height of cut adjustments.
• A supply of the most often repaired parts for the most-used pieces of equipment during tournament preparations.
• Lights for early mornings and late nights, and portable lights for repairs or directing crews, mowers and people around the golf course.
• Trailer hitches and able to pull medium-sized turf equipment back to the maintenance facility.

Q Why did the intermediate rough cut extend from each teeing ground in a V-shaped cut to the edge of the fairway? Did this make the tee shots easier?

A Nicklaus fanned the intermediate cut to open up the fairway target from the teeing ground. Having thick, high-cut rough occasionally prevents balls from reaching the fairway on a long carry. This cut eliminates players getting caught in thick rough if they can’t reach the fairway, enhances the formal look of the course design and gives direction off the teeing ground.

The shorter cut didn’t reduce the labor involved in preparing this area. Mowing increased because of the height of cut, which required more mower adjustment time and additional labor and equipment. In the final analysis, time, labor, fertility, irrigation and pesticide use increased.
Terry Buchen, CGCS, MG, is president of Golf Agronomy International. He’s a 38-year, life member of the GCSAA. He can be reached at terrybuchen@earthlink.net.

**Tow and mow**

The crew at the Round Hill Country Club in Alamo, Calif., creates striped mowing patterns with the 22-inch National I-Stripe, a walk-behind rotary mower with a ribbed rear drive roller, which is similar in size and diameter to a walk-behind greensmower drive roller. A Smithco Mow-N-Go trailer, once used for transporting walk-behind greensmowers, hauls the rotary mower where needed.

A 1/8-inch-thick scrap metal bracket is bolted to the front of the mower deck with two 3/8-inch-diameter bolts, lock washers and nuts. Also, a 3/8-inch-diameter hole is drilled on the end of the metal bracket, which is bent horizontally. A 1/4-inch-thick piece of scrap metal, bent at a 90-degree angle, is welded to the trailer tongue. A chain with a 1/4-inch-diameter lynch pin, which slips through a 3/8-inch-diameter hole drilled into the top, is attached to the other end of the L-shaped bracket. This keeps the mower in place during transport.

The greensmower brackets, which are on both sides of the rotary mower, hold the mower in place and prevent it from sliding sideways. The front tires hang over the front of the trailer and also help hold the mower in place.

Timothy Lindstrom, golf course mechanic, came up with the idea for Dean Cravalho, golf course superintendent, and James Young, assistant superintendent.

The scrap metal was in stock, and it took about 1.5 hours to build.

**Lock ’em in**

Timothy Lindstrom, golf course mechanic at the Round Hill Country Club in Alamo, Calif., purchased a hand truck/dolly with pneumatic tires and fitted it with removable framework to transport three spare Toro Greensmaster 3100 triplex greensmower cutting units around the shop.

The 1/2-square-inch metal tubing framework is welded together to hold each cutting unit horizontally with the reels facing downward. One 1-square-inch-diameter tubing guide, about 2 inches high, was welded onto the top and bottom inside corners of the dolly’s framework. A 1/2-inch removable rod slides into place on either side into the 2-square-inch tubing guides, which hold the cutting units in place. The rod is held in position with a 1/8-inch-diameter lynch pin placed on both sides at the top. Radiator clamps — at the top and bottom — attach the portable framework to the dolly.

The dolly was purchased at Costco for about $100, and the square tubing cost about $75. It took about 3.5 hours to build.

Travels With Terry

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He will share 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.
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DYING A SLOW DEATH

If you visit Google and search for “slow play” and “golf,” you’ll find 115,000 results. (Warning: If you search for “slow play” by itself, you’ll find a few sites unsuitable for children.)

Research shows the time it takes to play the beautiful game of golf is second only to expense on the list of reasons why people don’t participate. In short, speed – or the lack thereof – kills.

The causes are many. It’s easiest to blame televised Tour golf. The hacks at home watch and copy notoriously deliberate play.

The beautiful game of golf is second only to televised Tour golf. The hacks at home don’t participate. In short, speed - or the expense on the list of reasons why people lack thereof - kills.

The causes are many. It’s easiest to blame televised Tour golf. The hacks at home watch and copy notoriously deliberate players such as Bernhard Langer and Ben Crane, who take eons to select clubs and line up putts. I’ve always thought slow professional groups should be haunted by the ghost of Rodney Dangerfield’s “Caddyshack” character screaming, “Hey! While we’re young!” when they lag. Yet, the Tour hasn’t fined a pro for slow play in centuries, so where’s the penalty for being a bad example?

Some people blame more difficult designs that include nastier bunkers, environmental areas, fairways as narrow as a ’60s necktie, higher rough and the like. I’ve played a ton of high-end daily fees, many designed by an architect whom I shall not name (hint: rhymes with “Fickless”), and too many are ball-eating monsters for the average schmuck.

By the way, I’ve come to start calling facility managers “rangers” as an example? I was reminded of the effectiveness of most rangers when I received the following “Top Ten Rules for Rangers” from my superintendent friend Junior down in Naples, Fla.:

1. Never read yesterday’s newspaper while on the job.
2. Never pick up lost balls until they stop rolling.
3. That sign that says, “Do not enter – nature preserve,” doesn’t apply to you.
4. It’s always OK to start people on the back, especially if it’s one guy by himself.
5. Employee lunch means get as much trash, now did he?
6. When you play at the course, the signs and rules don’t apply to you. Go ahead and park right on the greens.
7. You’ll never make as much money here as you’re worth. You’re an irreplaceable cog in the cosmic wheel of golf.
8. God didn’t intend for you to pick up trash, now did he?
9. Just because they told you, “No golfers start before 7:10 on this side,” doesn’t mean you have to listen. Send them off as soon as they get there.
10. That shady tree over there was made just for rangers.

Slow play is a curse, but it’s also a mixed blessing brought about by the still surprising popularity of golf. The way I see it, incentivizing fast play might be better and easier than penalizing slowness, so think of creative ways you can use a carrot instead of a stick to move that donkey along.

Why not publicize underused, off-peak tee-time blocks and promote a four hour (or less) round for people who book during those times?

Why not print a set of tips for speedy play on the scorecard or a decal on golf cars?

Why not offer a free frosty beverage of the player’s choice if he finishes by the deadline?

Why not adjust green fees to create an incentive for good, fast players to pay a bit more for tee-times that are staggered at 10 minutes instead of six at certain times on peak days?

Why not make a commitment to speedy play and – mimicking a facility in Texas – market yourself as the home of the guaranteed four-hour round. At a time when many courses don’t have a special niche in their local market, that’s a pretty damn good one.

Do some research, ask around and find out if your facility has a reputation for taking forever to play.

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