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INSIDE

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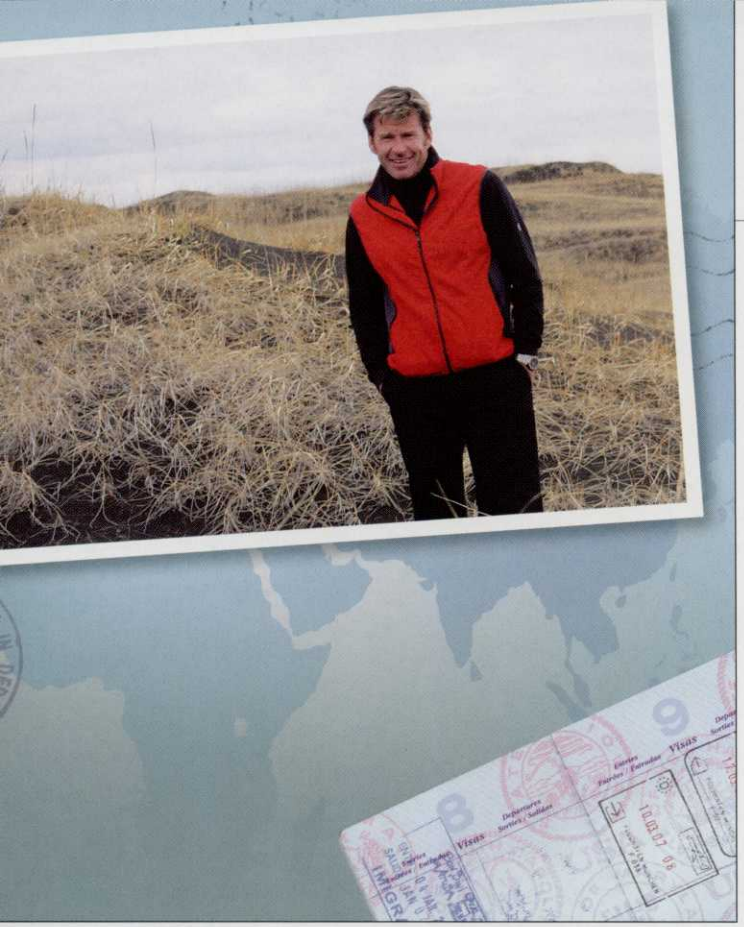

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Did You Know?

As much as **90 percent** of the weight of a grass plant is in its roots.

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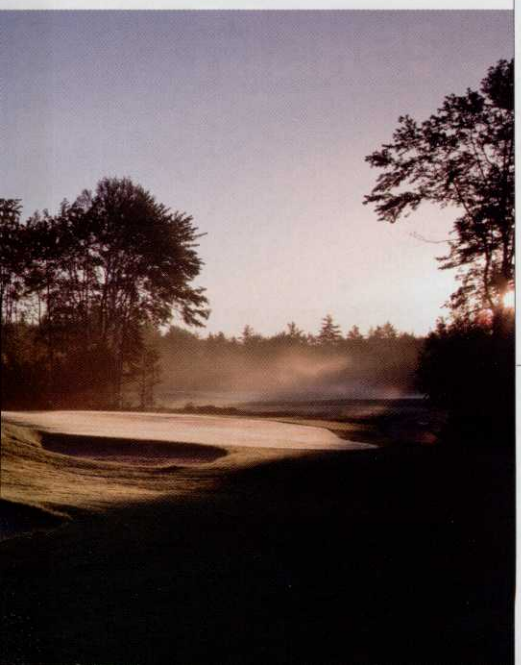
Winner of a national magazine award for the fourth year in a row

FOLIO: EDDIE AWARD
BRONZE WINNER



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THE REEDUCATION OF A LOW PLUGGER

Colton Smith provides a first-hand account of cutting the cups on the front nine holes during the Liberty Mutual Legends of Golf event at Savannah Harbor.

A NEW DIRECTION

Former superintendent at Colbert Hills Golf Course in Manhattan, Kan., David Gourlay, shares tips for transitioning into a general manager role successfully.

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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.

John Walsh
Editor

LOSE THE EGO

While talking to several American golf course superintendents working abroad for a sidebar accompanying the cover story in this issue, one comment stuck out like a weed on a fairway at Augusta:

"I like the thought of being listened to more than what you get in the States. In the States, golf is run by opinionated businessmen who don't listen well and are difficult to work with. Overseas, people are looking for information. It's refreshing. People appreciate what you're doing."

Those are the thoughts of David Brinkel, vice president of Dubai Golf City in the United Arab Emirates. Brinkel likes it overseas so much he's been over there for about 20 years. Though it's just one person's view – although I know Brinkel isn't alone with his sentiment about those running private clubs in the U.S. – it says a lot about golf course operations here in the States. Brinkel's thoughts should spur green committee members and club presidents to think about their relationship with their superintendents. Is this how your superintendent views you?

This isn't the first time I've heard such sentiments from superintendents about those who run private clubs. In fact, I hear it regularly. Take hiring, for example. Those making the decisions to hire superintendents at private clubs know less than the interviewee about agronomy and course maintenance in general. But they're the ones asking the questions because they own the clubs. Rightly so. In the mind of some committees, it seems a superintendent's personality, previous employment (read prestigious clubs) and connections trump agronomic knowledge, a keen business sense, and managerial and organizational skills. Is that the best way to hire?

Then there are the stories about superintendents losing their jobs – not because they can't grow grass but because they didn't see eye to eye with a green committee chair or club president or didn't continually meet members' unrealistic expectations. Some superintendents are tired of dealing with know-it-all wealthy businessmen on a power trip when it comes to maintaining their playground. Go figure, politics screws up a good thing at many clubs.

Money, power, politics, ego … sounds like the ingredients for a racy Hollywood thriller, when in reality, superintendents deal with those aspects of club life regularly.

The decision makers at private clubs aren't necessarily the most educated people when it comes to golf course operations. Just because they have a lot of money and a big, green playground doesn't mean they have to deal with superintendents in such negative ways that drive them to other clubs, sales positions in the industry or even countries.

Of course, not all club members are such a pain. There are those who learn as much as they can about course maintenance, don't complain much about course conditions, understand superintendents' jobs, treat them with respect and actually listen to them. But you don't hear about that type often.

I'm sure there are many more David Brinkel's out there who are dealing with the egotistical volunteer leaders who just don't get it when it comes to club operations. It's too bad. Members should keep in mind the companies at which they're executives operate differently than their golf clubs.

Despite individual wealth and equity in their club, these difficult-to-work-with members should lose the ego, get off the power trip and take it easy on superintendents. Doing so is only going to improve course conditions at their club, although it will happen without as much input as members would like to give. But members shouldn't worry, superintendents can handle it. **GCI**

We would like to hear from you. Please post any comments you have about this column on our message board, which is at www.golfcourseindustry.com/messageboard.

GOLF COURSE INDUSTRY
Serving the Business of Golf Course Management

Vol. 20 No. 10

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Golf Course Industry is published 12 times a year by GIE Media, Inc., which also publishes *Lawn & Landscape, Commercial Dealer, Snow Magazine, Pest Control Technology* and *Recycling Today* magazines. GIE Media is a leader in custom publishing, book publishing, database marketing, conferences and special events.

The right focus

John Walsh's editorial, "Focus on opportunities" (August issue, page 6), hits the nail on the head. I deal with two golf courses that suffer horribly from the lack of conditions he outlines as the two key characteristics for success – great course conditions and attentive customer service.

The course where I'm employed has fantastic conditioning – from all the feedback I've received – but poor service. A resort where I consult has poor conditioning and terrible service. I'm trying to solve the problems at both places, but these situations are more complicated than can be addressed in this space. I'm in a pivotal position at both places to implement change and am working to do so.

Kendall Marquardt, CGCS
Kenne Enterprises
Mazomanie, Wis.

Slow play

For years I've been saying that we're walking into rounds of golfers who learned the tempo of play by watching pro golf Sunday afternoon on television ("Dying a slow death," August, page 74). I'm a marshal at Stanford University Golf Course, and I see this all the time.

Several years ago, when Tiger Woods was still at Stanford, I was asked to drive his father, Earl, around following Tiger's group. Earl quietly mumbled about the slowness of play. Oh, did he ever. Finally, on a par-5 16th hole, the players were looking for yardage markers, eyeballing their second shot, checking the markers again, eyeballing some more, when Earl shouted at them: "Just hit the goddamn thing!"

Ted Bache
Marshal
Stanford University Golf Course
Stanford, Calif.

Pat Jones' writing about slow play ("Dying a slow death," August, page 74) is on the money when he says five-hour-plus rounds are taking away from golf courses.

Our course is consistently trying to improve pace of play by training player assistants to help golfers move faster rather than say, "You're falling behind, and we need you to pick up the pace." We've tried giving away free beer to those who finish in a recommended time, but to be honest, all that did was give our early morning players, who finish in less than four hours anyway, a free beer. It also made customers playing later in the day even more upset about their slow pace because they'd been held up by slow players and didn't finish within the recommended time.

We're finding a slow player is a slow player. It's easy to slow someone down but difficult to speed him up. It's frustrating for our staff to know that when Mr. Smith tees it up every Saturday at 7:15 a.m. he's going to hold up the course with his slow play unless we help him move faster throughout his entire round. We also have families who seem to never have played before or maybe not since Arnie's prime.

Presently, we run seven and eight minute times with starter times booked every other hour to help space groups out. We're considering spreading out our tee times. One reason for us leaving intervals this way is that if we have 100 rounds or 200 rounds it could take the same five hours to play because of one or two slow groups.

The bottom line is that we don't want to die the slow death. If we can get our pace of play at its slowest period to be around 4.5 hours, then we'll be capable of fixing any course's pace-of-play nightmare.

Donn Hess
Head golf professional
The Pines Golf Club
Tucson, Ariz.

I loved Pat Jones' article, "Dying a slow death," in the August issue (page 74). I've always wondered when this silly game people play will die out soon and why they pay us so much to provide an area for adults to play. Additionally, I wonder when I'm going to call my green chairman to tell him we can't cut greens anymore because there's no more fuel.

Jeffrey Urquhart
Golf course superintendent
Milton-Hoosic Club
Canton, Mass.

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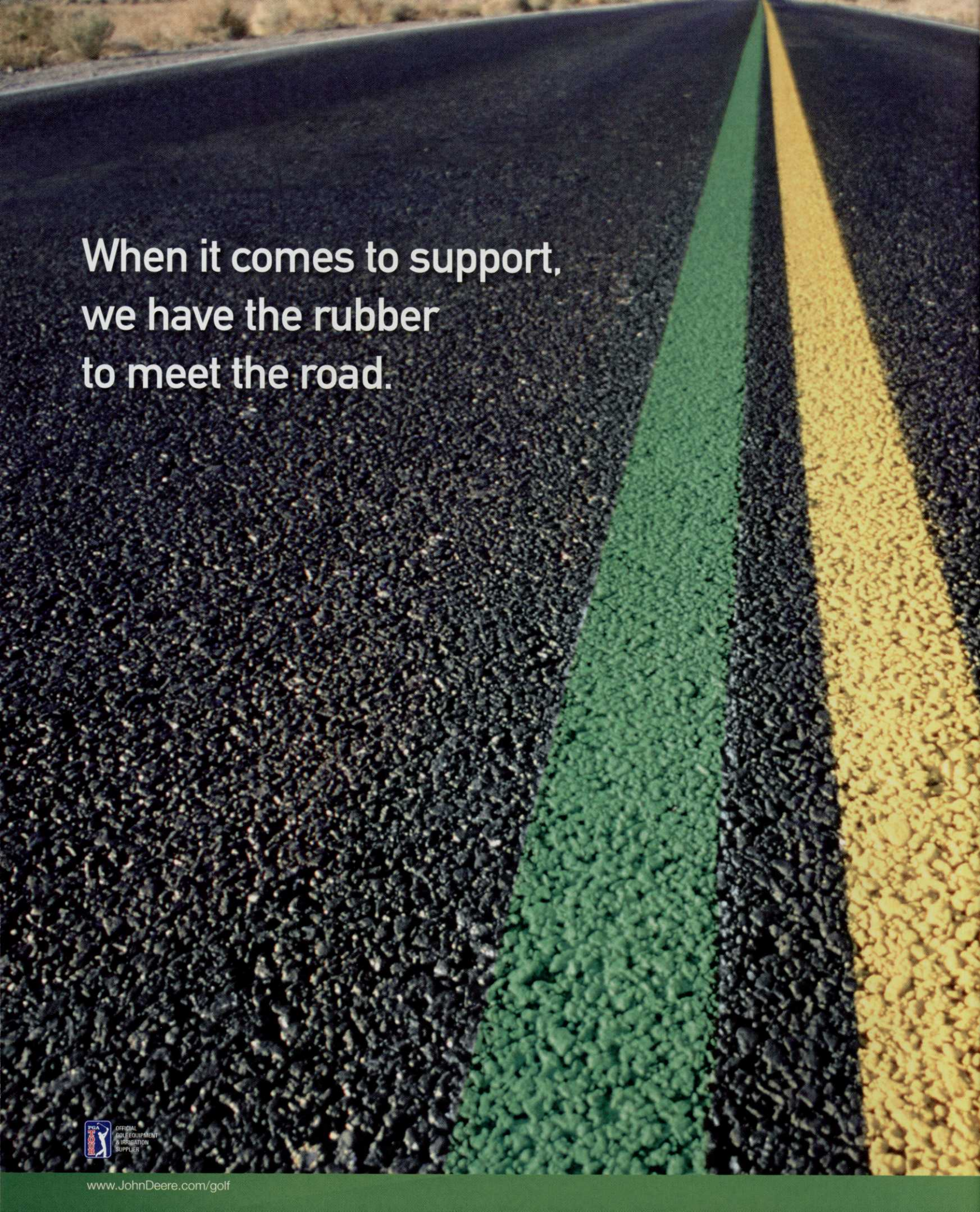
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GET YOUR FINANCES IN ORDER

This has been a difficult year for many individual investors and businesses. At press time, the Dow Jones Industrial Average is down nearly 17 percent year to date, the S&P 500 is down nearly 19 percent year to date and Congress just passed a $700 billion financial institution bailout package. While there's nothing we can do about the market's downturn, it's important for us to know our personal financial situations – retirement options, investments, insurance and savings. Although I'm by no means a financial expert, I want to pass along some helpful information I've picked up along the way.

RETIREMENT/INVESTING

It's important to understand what your company offers for retirement and if you're contributing to it. Employers commonly offer a 401(k) plan, to which employees can make contributions (a compensation reduction) on a posttax or pretax basis. Employers can choose to make contributions to the plan as well. Sometimes they match employee contributions; sometimes they don't. Employers also can add a profit-sharing feature to the plan.

What makes these investments attractive is that the earnings grow tax deferred, which means your investment grows tax free until you withdraw the money. If your employer offers a match, it's important to understand the percentage. You might have options about how you want to invest your money within the plan, choosing from a few to many investment products. Beware: There are penalties if the money is withdrawn before the retirement age defined by the plan.

Another important retirement product is the Roth IRA (individual retirement account). This year, if you're 49 or younger, you can contribute $5,000 to the account. If you're 50 or older, you can contribute $6,000. In a Roth IRA, contributions aren't tax deductible, and qualified distributions are tax free. Similar to other retirement plan accounts, nonqualified distributions from a Roth IRA might be subject to a penalty when withdrawn. A qualified distribution is one that's taken at least five years after a taxpayer establishes his first Roth IRA and when he's 59.5 years old, disabled, using the withdrawal to purchase a first home (a $10,000 limit), or deceased, in which case the beneficiary collects. Because qualified distributions from a Roth IRA are always tax free, some argue a Roth IRA might be more advantageous than a traditional IRA. Visit www.investopedia.com for more information.

When it comes to investments such as stocks and mutual funds, diversify your investments. Diversification is simply spreading your investments across several sectors and risk levels. Mutual funds consisting of many stocks can help you accomplish this. Also, you can lower your risk by choosing mutual funds with a 10-year-or-more track record of producing profits. However you choose to invest, pay attention to the fees/commissions associated with each product. One example is a load fee, which is a commission charged when purchasing or redeeming shares of a mutual fund.

INSURANCE

There are many types of insurance available: Health, disability and life are a few. Generally, don't be afraid to shop around for a reputable company to find the coverage that best fits you and your situation.

With health insurance, it's important you have it, make sure you're adequately covered and understand how much you have. Take the time to understand the differences between an HMO, PPO, HSA, etc. You might think, "Do I really need it?" The answer is absolutely. A major accident can cost hundreds of thousands of dollars, and medical bills are the No. 1 cause of bankruptcy. Visit http://www.daveramsey.com/etc/cms/health_insurance_5280.htmlc for more information.

Disability insurance is important for those of us in positions where the risk of injury is much greater. This type of insurance replaces your income if you're injured or medically unable to work. Short-term disability replaces your income for a short period of time – a few months to a few years, depending on the policy. It's great if your employer offers it. If it doesn't, I'd advise you to save enough money to cover your living expenses for three to six months. This way, you don't have to purchase disability insurance and are covered in case you have to miss work because of injury. Long-term disability insurance replaces a portion of your income if you're disabled and will pay until you retire, reach 65 or some other specified term, depending on the coverage. The three-to-six-month living expense fund is important because most long-term disability policies don't start paying until a few months after the injury.

Life insurance offers two main types of products – term and whole life. Term insurance has a duration limit or term on how long you're covered. Once the policy expires, you must decide whether to renew or let the policy expire.

On average, term insurance is much cheaper. The difference is that whole life (cash value) insurance products combine insurance with savings. Invest wisely with these products. Understand the fees and commissions associated with these products and use caution when you see the projections and estimates offered. Do your homework, and choose the option that best fits your situation.

SAVINGS

When you put together your facility's budget, the adage "you can't manage what you don't measure" is essential, and it's just as true with your personal finances. I can't overstate the importance of knowing where every dollar of your money goes each month. If you don't, try this simple exercise: For 30 days, record every purchase you make. At the end of 30 days, sit down and look at where you spent your money. Does it surprise you? From there, put together a budget – a plan of how you'll spend your money. You can find budget templates from many different financial books and Web sites.

Knowing the investments you have in place is important now and for your future. Looking at your retirement options, insurance coverage and savings is the first step in gaining financial success. **GCI**

Searching For A Cost-Effective Solution To Control Dollar Spot?

Phoenix
ENVIRONMENTAL CARE

Problem:
Dollar Spot

Dŏl'lər Spŏt n.–The fungus Sclerotinia homoeocarpa ("Dollar Spot") commonly attacks low-cut creeping bentgrass. It thrives in damp clippings or moist, cool soil.

Symptoms:
Fast-spreading Dollar Spot begins as small discolorations. Grass blades bleach, forming dead patches on turfgrass surfaces. Spreading infection causes ugly, tan-colored spots 2-3" wide (silver dollar size).

1. Many small, round dead patches
2. Hourglass-shaped lesions
3. Cobwebby white mold
4. Damaged putting greens

Solution:
Kestrel®MEX

Kestrel®MEX is a broad spectrum fungicide ideally suited for control of Dollar Spot and more than 20 other troublesome turf diseases. Based on a unique, value-added formulation of the proven ingredient propiconazole, Kestrel MEX is one of Phoenix's new NexGen products, a line of enhanced, post-patent pesticides that comprises the highest-quality, top-performing formulations. Kestrel MEX can be tank mixed with a variety of other fungicides and insecticides and is also available in a BATPak®, Phoenix's convenient, returnable packaging concept.

Phoenix Environmental Care gives you superior industry support and top performance by offering high-quality, post-patent chemistry in a wide choice of products. For more information, call 888-240-8856, or visit www.PhoenixEnvCare.com.

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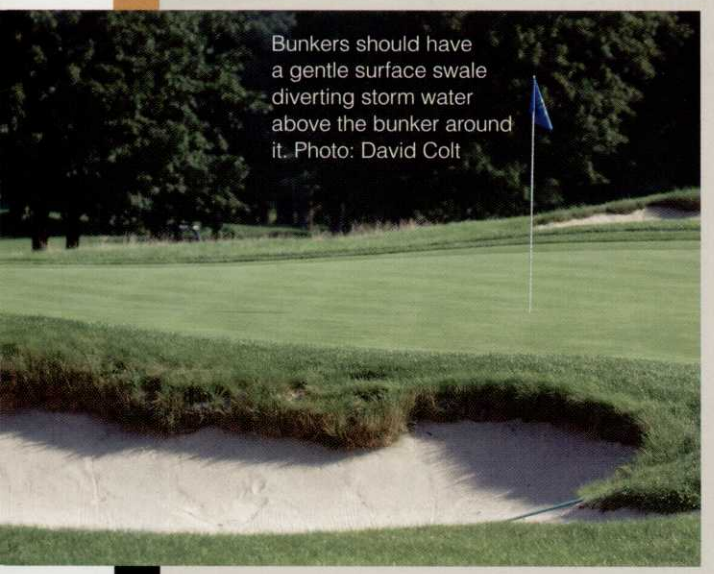
DRAIN BUNKERS BETTER

While a "perfect bunker" probably requires flat bunker slopes, liners and angular sands, improved drainage is the quickest route to better bunkers. Overall bunker drainage includes surface drainage above the bunker, interior drainage and disposing of drainage beyond the bunker.

Previous generations of golf course architects were meticulous, to a fault, about preventing surface water above the bunker from entering it. During the 1990s, designers, including yours truly, used bigger-scale support mounds that naturally created more drainage inflow to bunkers. As a result, tiles clog more frequently, and sand deteriorates more rapidly.

Newly constructed or reconstructed bunkers should have a gentle surface swale diverting storm water above the bunker around it. Ideally, no more than a few feet of bank should be allowed to drain into the bunker. The swale can be small, unless you routinely notice flow several inches deep in the area. At Colbert Hills Golf Course in Manhattan, Kan., Dave Gourlay and his crew improved bunkers by peeling back the sod and hand cutting 1-inch-deep swales.

Valleys in support mounding tend to concentrate damaging flow into bunkers.



Bunkers should have a gentle surface swale diverting storm water above the bunker around it. Photo: David Colt

I add small catch basins above the bunkers at those valleys, or wherever slope or tight quarters make swales impossible, even tied into the main drain tile through the bunker, which is preferable to allowing overland flow into the bunker.

> Improving bunker drainage should enhance conditions considerably, regardless of whether you can afford to go all out ...

Interior surface drainage also is important. Concave shaping of a subgrade cavity with a 3- to 5-percent slope in flatter areas to a single low spot is preferable to building a flat bottom and steeper side slopes. Water should collect in one defined low area. Because most bunkers are built to collect water, interior subsurface drainage is critical.

The traditional, and minimal, 4-inch perforated drain in the bunker bottom is inadequate. Most golf course architects now use 6-inch perforated drains for low areas and exit pipes. Installing a horizontal drain box, or a 6-by-6-by-6 T fitting with a solid cap, allows crews to unplug the drain to open the system for quicker water removal after heavy rains.

Most golf course architects use a herringbone pattern of 4-inch perforated drains throughout the bunker. These patterns are similar to those in greens. Placement should be perpendicular to the flow, and spacing should allow water to keep a maximum flow to reach a pipe no more than 10 to 15 feet away. Tiles should reach to the top lip of the bunkers, which often requires hand digging trenches or, at the very least, some contorted trencher positioning.

By extending tiles above the bunker and creating an air vent, you'll increase air flow in the tile, which will increase water flow. (For a simple demonstration of this principle, fill a straw with water, plug one end with a finger and then let go.) This can be a small catch basin made with a T fitting and an open grate.

While I don't recommend using the old flexible PVC drain pipe, if you're using it you can simply bend the pipe vertically and place a plastic grate on it. Each bunker might have a few of these, and each air vent can double as a surface drain. This allows you to use a hose to flush out the pipe occasionally.

The added tile drainage at the top and bottom of bunkers helps maintain bunker sand quality. The upper tiles capture flow on slopes before it builds up speed down the slope. This reduces sand displacement and helps keep soil from moving down the slope with it. The larger tiles and emergency drain outlet caps in the low point reduce saturation, which keeps soil contaminants from floating back up into the sand in big rains. Both reduce the bunker's degree of soil contamination from fines mixing with the bunker sand.

The last essential component of bunker drainage is the outlet pipe, which must be laid with sufficient slope to be self cleansing to avoid repeated clogging. For corrugated PVC pipe, minimum slopes are about 1.25 percent for 4-inch pipe and 0.85 percent for 6-inch pipe. Open outlets function better than gravel drain sumps. If you're going to a pond or stream bank, locating the outlet above normal water level allows the pipe to function even when water rises. Where the tile also drains greens or turf and filtering runoff is required, the outlet pipe might have to run through filter chambers before exiting to its natural drainage outlet. For future reference, mark pipe connections with small surface catch basins and record them on as-built plans.

Improving bunker drainage should enhance bunker conditions considerably, regardless of whether you can afford to go all out with liners and imported bunker sand. **GCI**

Jim McLoughlin is the founder of TMG Golf (www.TMGgolfcounsel.com), a golf course development and consulting firm, and is a former executive director of the GCSAA. He can be reached at golfguide@roadrunner.com or 760-804-7339. His previous columns can be found on www.golfcourseindustry.com.

NICHE RECOVERY

The higher they climb, the further they can fall. I've known few golf course superintendents who have had to recover from a more precipitous fall than Steve Renzetti, CGCS. There can be no better case study for superintendents to learn how to recover from a job loss. But first, let's look to see how effectively Steve Renzetti built an exemplary career.

Steve first was employed as a golf course superintendent at Burning Tree Country Club, a well-respected private golf club in Greenwich, Conn., in 1989. Three years later, he moved on to the nearby Wykagyl Country Club in New Rochelle, N.Y. Wykagyl recently enjoyed a No. 87 national ranking in Golfweek's Top 100 Classical Courses. It was consistently independently rated within the top five golf courses agronomically throughout the region's 200-plus courses during Steve's tenure. Wykagyl also hosts the long-running LPGA Tour's popular Sybase Big Apple Classic (formerly, the JAL Classic). This affiliation with Wykagyl led the LPGA Tour to engage Steve in 1999 as its exclusive (part-time) consulting agronomist to ensure the turf quality of the golf courses it visits throughout the year.

Having earned the respect and recognition this career path generated, Steve regularly found himself on the short list of candidates invited to apply for the country's better vacated golf course superintendent jobs at such renowned U.S. Open venues like Winged Foot, Baltusrol, Congressional and the Baltimore Country Club (U.S. Women's Open). Always a finalist, Steve turned down an offer from the Baltimore Country Club to accept an offer from the Quaker Ridge Golf Club in Scarsdale, N.Y., in 1999. Quaker Ridge is an A.W. Tillinghast design that has hosted the Walker Cup and peaked at a No. 14 national ranking in Golf Digest's America's 100 Greatest Golf Courses.

After six mutually rewarding years at Quaker Ridge, Steve got caught in the middle of the classic political debate between the old guard and the new guard factions at the club. Trying to accommodate both member elements distracted him. The quality of his work suffered, which predictably led to a mutually agreed decision that he would leave club employment at the end of the 2006 season.

Steve immediately set about arranging priorities for developing his future career path, which drove him to quickly complete the preparation of his personal career Web site (www.stevenrenzetti.com), which, once done, set a new standard at the time for superintendents' personal Web sites. While the quality of Steve's Web site guaranteed he would be interviewed when he applied for jobs after leaving Quaker Ridge, the pitfalls of losing a highly visible prominent job consistently trumped the situation.

> ... it's essential to identify a niche that will address defined market needs where one's experience and talents will directly apply.

Realizing he would have to develop an alternate career plan for the coming years until the dust settled around his Quaker Ridge departure, Steve quite wisely identified the following set of issues he felt he had to address effectively if he was to succeed at developing a second career:

1. The predominant thought Steve had as he looked to define his future was that he would succeed only if he would be doing something that he enjoyed. He quickly realized the one thing he enjoyed doing beyond all else was helping golf course superintendents solve problems through access to new ideas and better products.

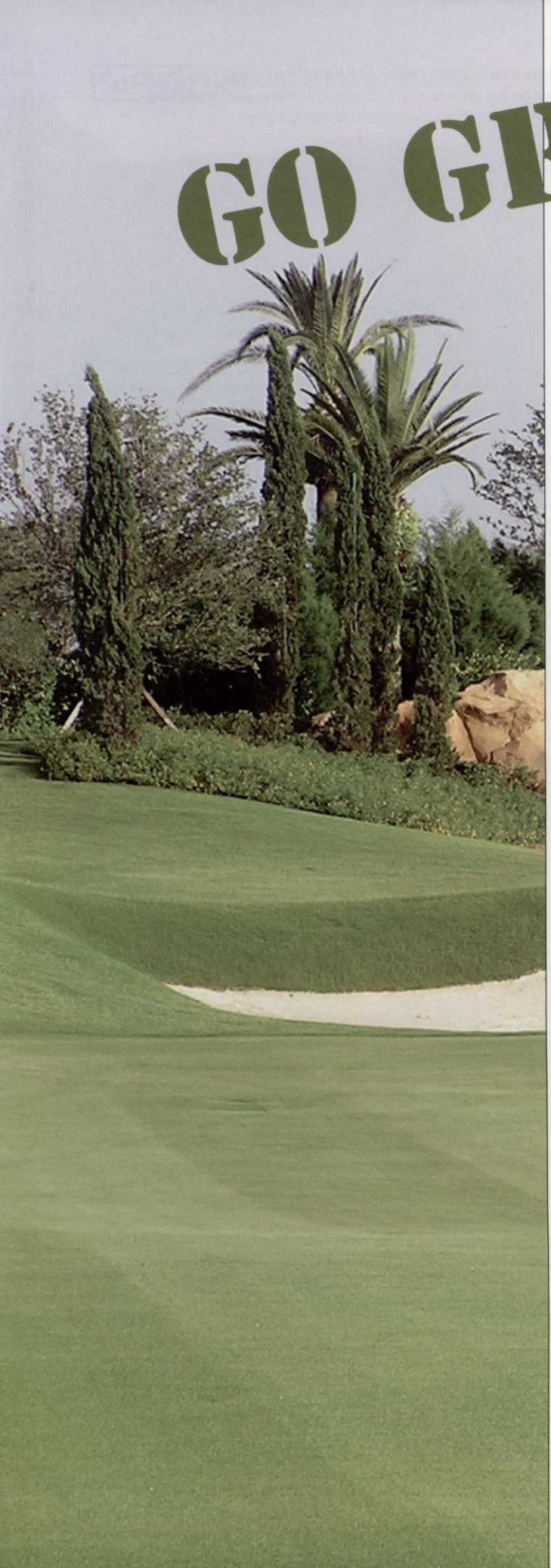
2. Next, Steve queried sales reps, course operators and golf course superintendents and asked each what they liked and disliked about what they were doing and what they expected from each other? The predominant answers that surfaced were (i) that superintendents wanted access to new thinking and better products and (ii) that golf course superintendents and sales reps readily identified with the concept of independent, mobile, socially conversant, knowledgeable salesmen providing products/services that make a difference.

With these insights on board, Steve made the decision to start a company that would provide exclusive, cutting-edge products and services to the world of the golf course superintendent. Following necessary due diligence, he partnered with the following companies to provide support for his newly formed company, Pinnacle Turf (www.pinnacleturf.net): the International Turf Sports Research Center (ITSRC) to provide physical properties analysis services; the Tri-Terra Co. to provide a unique system for delivering beneficial microbes; and the Floratine Products Group to offer premium foliar and soil nutrients.

Because Pinnacle Turf has been successful to date, Steve no longer thirsts to return to golf course superintendency. He has effectively reinvented himself in a tough, competitive world.

The primary lesson to be learned from Steve's recent journey is that when looking to develop an alternate career, it's essential to identify a niche that will address defined market needs where one's experience and talent will directly apply. The corollary that flows naturally from this lesson is that there's no need to wait until a job is lost before looking to develop an alternate career. Employed superintendents (especially the more veteran) can work in partnership with retired superintendents and/or other freelancing qualified individuals to develop start-up companies that would run parallel to the superintendents' jobs until each superintendent elects to retire.

Steve Renzetti reminds all superintendents that career glass ceilings can be a thing of the past. **GCI**



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Jack Brennan founded Paladin Golf Marketing in Plant City, Fla., to assist golf course owners and managers with successful marketing. He can be reached at jackbrennan@tampabay.rr.com.

SALES TRAINING SECRETS

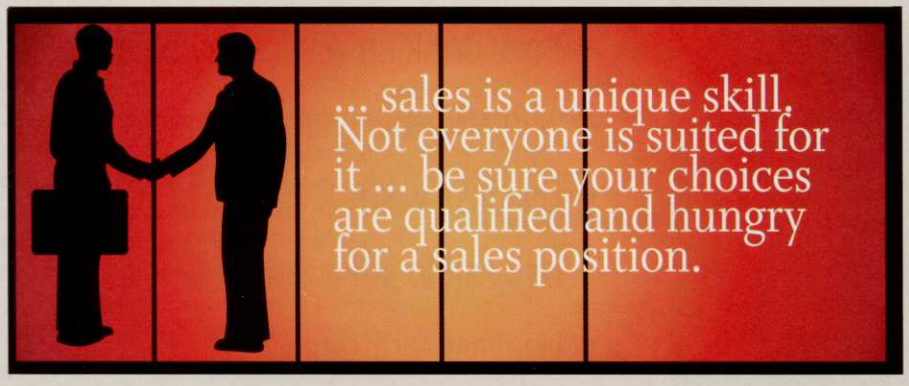
It doesn't matter if you own or manage a private or public facility, the secret to marketing success is hiring and training a qualified and dedicated salesperson. The secret isn't a marketing service that you contract for $500 a month or software you buy for $3,000. Dedicated sales is the key to a healthy golf course and industry.

I'll bet if I went back through my all my GCI columns, I have mentioned sales or alluded to sales in almost every one. Every year I receive more calls from superintendents, golf professionals, general managers and owners asking marketing questions. How do you start a marketing plan? What are the most important elements of a marketing plan? How do you monitor the plan? How do you determine the priorities of a marketing plan? How do you know if a plan is successful? These questions, and their frequency, lead me to believe the industry is becoming more progressive and sophisticated.

Many owners realize they have to do something different to compete in the current oversupplied market. You have to compete successfully, or you won't be in the golf course ownership business long. I use the term dedicated sales effort because each staff member has a full-time job. Putting a part-time effort into generating the incremental revenue you need isn't going to get you where you want to be.

Sales is an investment. If you can afford to make the initial investment, a salesperson should be able to pay for himself relatively quickly. Then he can begin to return three, four, even five times his total cost of sales (base salary, commissions, benefits) to your bottom line.

Realize sales is a unique skill. Not everyone is suited for it. I guarantee you won't be able to just pick someone you like or know and put them into a sales position and watch him flourish. If you're going to make this initial investment, be sure your choices are qualified and hungry for a sales position. Most of my best hires come from "intangible" sales backgrounds: hospitality, insurance, financial, etc. They're service salespeople, not car salespeople. If trained properly, they assure your prospects they'll be personally responsible for their experience at the club, not just sell them memberships or outings.



The most important step in hiring salespeople is qualifying them as service sales-oriented. This is accomplished by classified advertising to determine what sales talent is available, followed by interviews and aptitude testing to determine if they're predisposed to sales.

The next most important step is organizing their efforts to generate the most revenue possible. I've never liked the term job description, so I call my written organizational plan "daily sales tasks and objectives." Here's what's included in such a plan to organize the efforts of your salespeople:

Standard work week. Typically, I include the standard work week Monday through Friday, 8:30 a.m. to 5:00 p.m. The reality is a salesperson is on call when a prospect needs him. If your chosen salesperson wants his work hours defined specifically, choose a different salesperson.

Prospecting expectations. I start salespeople off with all priority sales lists and require 20 new contacts – not calls, contacts – per day. Once they begin following up with prospects, this daily new contacts number will be adjusted based on response.

Priority sales calls and contacts. A prospect walking in your door desiring information about membership or an outing, for example, will always be your first priority. Start there, and fill out the list: promised follow-up calls, new contacts, etc.

Record-keeping and reporting. Set up a system of daily, weekly and monthly call reports and a summary of sales efforts compared to previously set goals.

Sales paperwork. These include contracts, proposals (taxable and tax-exempt), client-needs forms for operations and food and beverage, thank-you letters and follow-up service surveys.

Weekly sales information meeting. This sounds easy, but it will be one of your greatest challenges. Pick a day and time for all department heads to meet weekly for a review of all contracted events planned for the upcoming two weeks. If clients' needs and expectations are reviewed with all departments well in advance, there can be no mistakes, right?

Ideal time to hire a salesperson. Thanksgiving. During the holidays (Thanksgiving through New Years), the sales cycle is low. This is the time to set your marketing and sales goals for the next year. From Jan. 2 through Easter, my expectations are that a minimum of two-thirds of all sales goals (contracts signed and filed) will be accomplished.

The golf business has changed. Are you changing, or are you staying the same and toughing it out? GCI

This is a glimpse at how golfers' behavior impacts the business of facility maintenance and management. Throughout the year, we'll publish trends, likes/dislikes, suggestions and other information about your customers.

Rounds abroad

To allow golf courses to benchmark themselves against the average of their performance group, KPMG calculated the average number of total rounds for the top 20-percent performers in each surveyed region. The chart at the right shows top performing 18-hole golf courses located in Central Europe, Great Britain and Ireland, and Western Europe achieved 70 to 90 percent more rounds than the average of their regional markets.

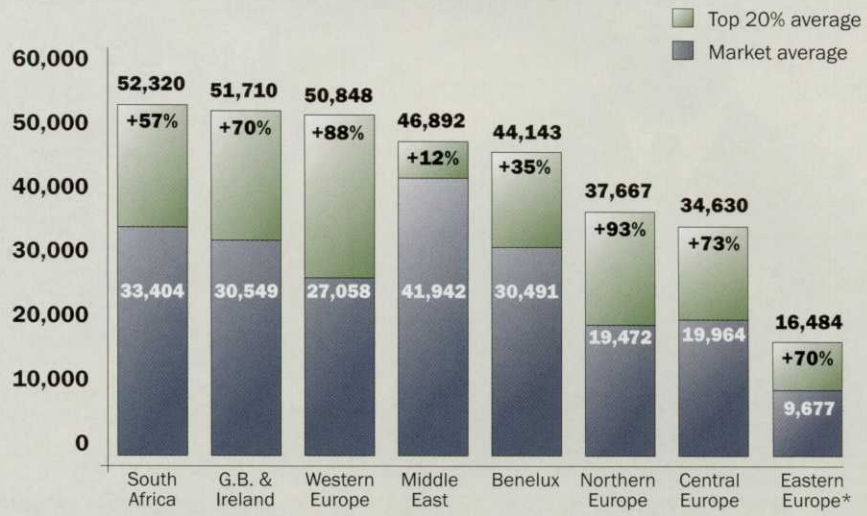
The chart below compares the average performance of golf courses by size in selected European regions. As an indication, KPMG's research confirms nine-hole courses generated between 45 and 60 percent of the total rounds achieved by 18-hole golf courses. Based on the analysis of surveyed golf courses, certain performance indicators of nine-hole golf courses (e.g., revenue per utilized round, staff size, etc.) are on average about two-thirds of those of 18-hole golf courses in Northern and Western Europe.

For more information regarding the performances of a nine-hole courses and 27-hole or larger facilities, please refer to the regional reports of the Golf Benchmark Survey 2007 (www.kpmg.com).

Almost 1,500 golf courses from 35 countries in Europe, the Middle East and Africa completed the 2007 Golf Benchmark questionnaire. About two-thirds of the participating golf courses were 18-hole facilities, while nine-hole and 27-hole or larger courses consisted of about 15 percent each.

Source: KPMG's Golf Benchmark Survey 2007

Average number of rounds of top performers at 18-hole golf courses versus regional market averages



* Average and top 30% performers

Average number of rounds by size of golf courses in selected regions

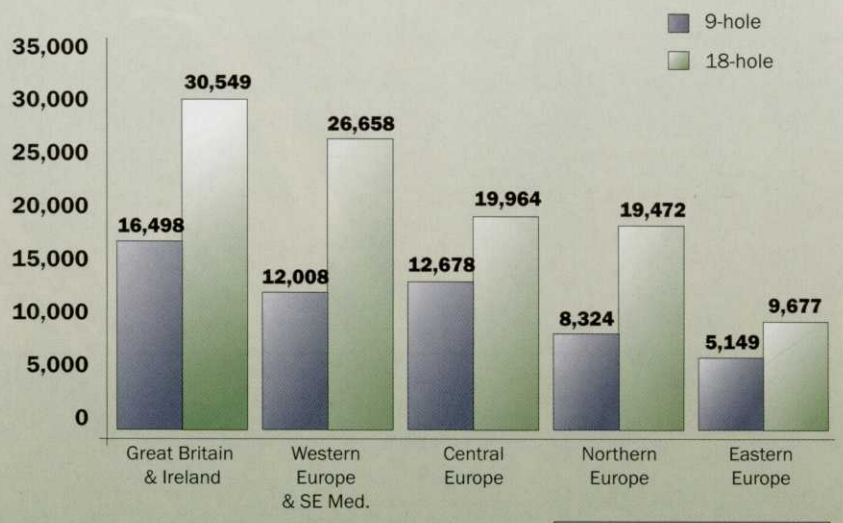


Photo: Dave Colt

Surviving and

Thriving

Battling cancer changed Steve Curry's outlook on his life, job and profession

By Pat Jones

Ironically, Steve Curry's father, a noted oncologist, was one of many who told him not to worry when he began to feel weird a couple years ago and fretted about the possibility of having cancer.

Unfortunately, the senior Curry was wrong on this occasion, and Steve found himself facing one of the most serious medical challenges imaginable – a brain tumor. Now, after facing down cancer, chemo and the prospect of his own mortality, the Berkshire Hills (Mass.) Country Club superintendent has a different outlook on his life, job and profession.

Steve Curry says he's vaguely from Connecticut, but his dad's career led the family from New York to North Carolina, Texas, Pennsylvania and other stops along the railway line of life in medicine.

But one constant along the way was his dad's love of golf, which quickly rubbed off on the young Curry. During the family's time in Hershey, Pa., he got his first glimpse of the big time.

"The old LPGA Keystone Open was played at Hershey Country Club, and my sister had a swim meet there during the week of the event," he says. "I wandered off from the pool, and there was this lady out on the putting green. She asked me if I wanted to join her, loaned me a putter and showed me some things. Pretty soon, my dad came looking for me. He was pretty irate and barked at me for bothering her. Turns out it was Joanne Carner."

Like many, Curry ended up in golf course management through a roundabout route. A typical kid, he mowed many lawns and eventually got to know the greenkeeper at a little nine-hole facility in Litchfield, Conn., near his family's home. He worked there summers before heading off to college to study engineering. Then, at about the same time, a college friend changed majors to turfgrass management, and a hometown acquaintance, Rick Christian, landed the head superintendent job at the famed Pine Valley Golf Club in New Jersey.

"All of a sudden, I realized this could be a serious career option for me," he says.

Curry transferred to UMass and, in between undergraduate classes, worked with Rich Cooper, Ph.D., and Pat Vittum, Ph.D., on research projects. He received a coveted internship at Pine Valley for one summer and was torn between returning to do graduate research and staying in academia or continuing as a superintendent. Eventually, the lure of being at a course every day helped him make up his mind, and he began his career as an assistant at Hominy Hill Golf Course, the well-known rounds-factory course in Monmouth County, N.J.

"It was one of those places you hear about where guys would sleep in their cars overnight to get a tee time," he says. "I even had to do it once when a friend wanted to play there."

Curry had married and had a daughter at that point, but the union didn't work out, and his now ex-wife and child were moving to Massachusetts, so he decided to follow. He took his first superintendent job at Egremont Country Club, a small low-budget place Curry describes as kind of a home-brew course that needed some tender loving care.

"It was great because I got to do everything," he says. "At Pine Valley, we had professors flying in to consult and every resource at your disposal. Egremont required Yankee ingenuity. I loved working with my hands and taking stuff apart, so I was happy. It was management by trial and error."

Curry had learned an important credo along the way: Greens come first.

"The local county allied golf association had an outing at Egremont, and many people came because they'd heard about our greens. My trick there was an ancient, three-barrel greens roller filled with concrete. The greens could be cut at a ¼-inch, and after you were finished rolling with that thing, they were like pool tables."

Curry's success at Egremont earned him a shot at the job at Berkshire Hills, an area gem. He's been there since 1998 and has established a reputation for a running a high-quality facility

> ... they found a large brain tumor in my right frontal lobe. After surgery, radiation and chemo, I've been weedfree – to put it in turf terms – for almost two years.
>
> - STEVE CURRY

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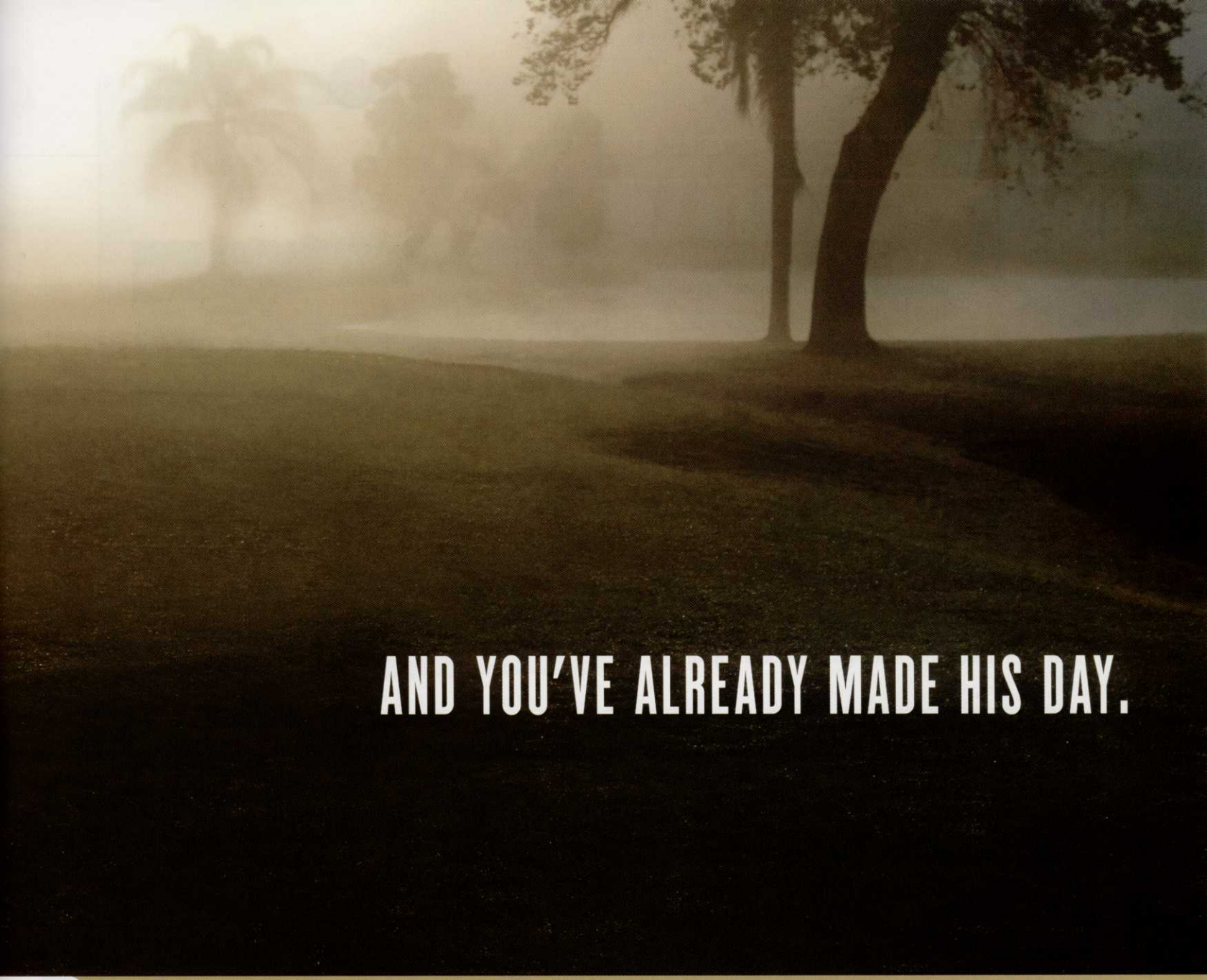


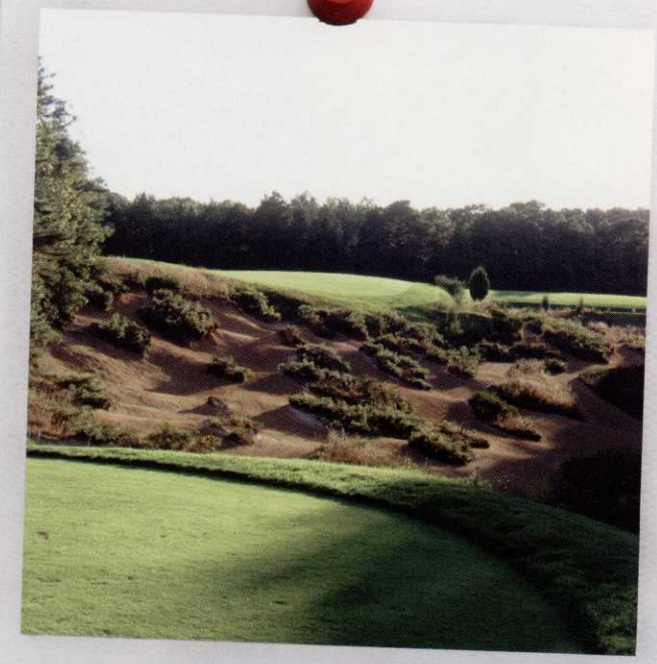
and having a no-nonsense attitude. That attitude – and the love of family and many friends throughout the industry – might have been one of the biggest factors in taking cancer head on and not only surviving, but thriving.

How's your season been?

Very busy and the wettest I've been through. The upside is that we've had less stress and hand-watering. But, we've lost rounds. Personally, my energy level is significantly higher than the past few years, which is great. Because of that, I'm working and playing more and sleeping less. That shows in the course. It sounds egocentric, but I was dragging last year. My guys did an outstanding job of keeping up because I was much more tentative than usual.

Tell me something new you've learned lately about the business.

I've been amazed firsthand and secondhand by the caring and generosity of the wonderful people in and around the game of golf. With my situation, there was a tremendous outpouring of



Steve Curry's personal passion is photography. It's his break from the golf business. Photo: Steve Curry

prayers, well wishes and support. I recently attended the Bob Labbance fund raiser (Labbance succumbed to Lou Gehrig's disease late this summer) and experienced the same energy directed toward him and his family. I also followed along closely with Greg Rita's (a Tour caddy in Florida) progress and am amazed at the level of support he has experienced. I'm jealous he was invited to throw the first pitch at a recent Red Sox game, but I'm glad because it sounds like he did much better than I would have.

On the agronomic side, I'm always surprised about how much we think we know, but then years like this come along, and you find out new stuff. A year ago, anthracnose was believed to be brought on by topdressing. Joe Vargas, Ph.D., and Bruce Clarke, Ph.D., say light topdressing actually helps more than it hurts. You find out everything you thought was right yesterday is wrong today. The bottom line is you have to be dynamic and be able to flow with change.

How are clubs in your area defying the odds and being successful?

By staying as thrifty as possible and, at least from our perspective, having a vibrant banquet business. You have to be diversified. It's not a huge factor overall, but our banquet revenue has been consistent. Even in a bad economy, people still get married, have anniversaries and die.

Tell us about that big old scar on your noggin.

A few years ago, I started to notice my energy wasn't there. I told people for a long time, including my father, I had cancer, and they said I was full of crap. I finally went to the doctor just about two years ago, and they found a large brain tumor in my right frontal lobe. After surgery, radiation and chemo, I've been weed free – to put it in turf terms – for almost two years.

The scar is a small price I've paid. My hair is still quite thin from the radiation, which I pass off as having survived a nuclear attack. All told, I'm thankful for the experience. I had always told whining staff or children, "If it's tough, it's good for you." Well, I got a taste of my own medicine. As they say, what doesn't kill you only makes you stronger, and pain is fear leaving the body. I'm a much stronger and more driven person today than I was prior.

How else did it change you?

It definitely made me feel there's a God or a higher power. Beyond that, the experience has greatly increased my connection with my family and my desire to focus on time with them.

What's your advice to young folks considering a career in the profession?

It's a tough business, and at the moment, it's extremely competitive. Unless you have common sense and drive, you might as well head in a different direction.

Also, think about taking a position at a club with unlimited resources then, at some point, one with very little. I've found my time at Pine Valley was invaluable as well as my time at Egremont. At Pine Valley, I was immersed in everything new and exciting. While at Egremont, I learned how to achieve as much with very little. Each of those experiences has been essential to my achievement.

Tell us about the consulting work you do outside the club.

It started a few years ago when I was called by a division of General Electric to consult on lawns they had remediated for PCBs, and they failed. I asked my green chairman and was given the go ahead with the caveat that it wasn't to interfere with my performance here at Berkshire Hills. I'm a workaholic, so this wasn't a challenge.

Another example was working at the estate of a wealthy couple who hired an architect and sizable construction company to build a three-hole course in the back lawn. It was an unusual job, to say the least.

When you're not working, what's your favorite thing to do?

At the top of the list is family time. I look forward to the times when I can get away and spend time with my wife and children. My oldest daughter is 15 and mostly with her mom, but she visits us. My stepson, Spencer, is 16, so my wife and I are enjoying his teenage years, too.

My personal passion is photography. It's my break from the golf business, even though I do most of it on the course. I'm kind of an accidental photographer. I always have a camera with me. I think I have a good eye about what has value and interest to the viewer, but most of it is just being in the right place at the right time.

Right now, we're getting geared up for the USGA Mid-Am. I get so excited about what goes into the preparation, and I love capturing that awe-inspiring feeling with a camera. **GCI**

Nick Faldo is Steve Smyers' design partner on Black Sand Golf Club in Iceland. The 900-acre property on the Atlantic Ocean sits a short distance southeast of the capital city of Reykjavik. Photo: Steve Smyers

Globe-trotters

U.S. architects keep busy by exporting American style overseas

By Mark Leslie

Just as Scots and Brits such as Donald Ross, Alister Mackenzie and Willie Park Jr. stormed the shores of America with the game of golf more than 100 years ago, American designers are carrying the torch around the globe during the 21st century.

Long after Robert Trent Jones Sr. became the first globe-trotting American course designer, others are following. Most notable might be his namesake, Robert Trent Jones Jr., who now lays claim to the most golf courses designed outside America – more than half of his 248 courses. The American style is in demand throughout the world so much that many lesser-known designers are busily examining topographic maps to lay out golf courses in almost every country imaginable.

"Throughout Europe, Africa, South America and the Pacific Rim, people realize some of the greatest golf architects in the world are from the U.S.," says Ray Hearn of Ray Hearn Golf Design in Holland, Mich. "I'm not slighting the fine architects of Australia and the British Isles, but as a group, it's thought if you want the best, come to America. That's a testimony to what American architects have done collectively."

Hearn cites a British developer in southern France who called a site so spectacular it deserved an American architect.

"That's a hats-off to all of us here who practice golf course architecture," he says.

The American Society of Golf Course Architects is the predominant brand in the world, says Jones Jr.

"The American brand is something the world wants because we design and build more playable, more interesting, more dramatic, more scenic, more environmental, more competitive golf courses than others do," he says. "That's because we know more about it and have the know-how."

If that feeling is representative among golf developers worldwide, it's a good thing – and perfect timing – for American architects. Golf projects in the United States have largely withered on the vine, but in many countries, the golf world is in a "Eureka!" frame of mind – wanting more golf courses.

Golf course designer Gary Roger Baird of Brentwood, Tenn., says 90 percent of his workload is overseas right now. That might be the highest percentage among architects, but many of his colleagues report a similar disparity. Rees Jones of Montclair, N.J., Trent Sr.'s other son, and Kyle Phillips of Granite Bay, Calif., peg their international-domestic split at 80-20, while Jones Jr. pegs his at 75-25, Hearn at 60-40 and Steve Smyers of Lakeland, Fla., at 50-50.

Some Americans – such as Bill Coore of Coore & Crenshaw in Austin, Texas, and Jeff Brauer of Arlington, Texas – aren't testing the global market by choice. That is, except for Coore & Crenshaw's relenting to do a second course on one of the universe's great sites: Barnbougle in Tasmania. Others, such as Dan Schlegel of Annapolis, Md., who has gotten a few nibbles from South America, Lebanon and Russia, aren't abroad because the opportunity hasn't yet arisen.

Still, others who've labored extensively abroad for decades have found themselves on solid ground, unaffected by the U.S. downturn.

"For a while, I didn't even realize we had a recession, golfwise, going on in the U.S.," says Phillips, who had worked overseas for Jones Jr. for some time until starting his own firm a decade ago.

WHERE THE WORK IS

For a growing number of architects, the gold rush is on, and they're not loading up the pack mules here in America. Where then? Here's a sampling:

- Jones Jr. is working on projects in Mexico, Puerto Rico, China, Korea, United Arab Emirates, Tunisia, Sweden, Denmark, Italy, Greece and Poland.
- Brother Rees, preferring to remain in relatively the same time zone, is busy in Mexico, Barbados, Costa Rica and the Bahamas.
- Smyers has projects in Iceland, Dubai, Brazil, Bermuda and the United Arab Emirates.
- Baird is engrossed mostly in South Korea, where he has a half dozen projects, and China.
- Hearn is working in Russia, Kenya, Brazil, Vietnam, Korea, the Bahamas and, soon, France.
- Arthur Hills and Steve Forrest of Toledo, Ohio, have projects in Norway, Russia, Portugal, Morocco, Mexico and the Caribbean.
- Phillips's jobs abroad are in Ireland, Sweden, Slovakia, Sicily, Holland, Spain, United Arab Emirates, Morocco and Brazil.

And on it goes. Whatever the hemisphere, whatever the continent, American golf course architects are plying their trade. The reasons are few but powerful.

"There are 16,000-plus golf courses in America alone but only 16,000 outside America," says Smyers, who first built overseas courses with Nick Faldo in England and with Nick Price in South Africa. "What's happening is the middle class in all these developing countries is becoming wealthier and more influential. And golf is a sport you can play your entire life, a great socialization sport. Plus, people in other countries don't have the multiple entertainment choices

About 75 percent of Robert Trent Jones Jr.'s work is abroad in places such as China, Korea, the United Arab Emirates, Tunisia, Sweden, Denmark, Italy, Greece and Poland. Photo: Robert Trent Jones II

Americans have, so golf is very attractive."

Consider the results of a KMPG study released last month: In 2006, more than 160 new golf courses and almost 100 significant course expansion projects were underway in Europe, the Middle East and Africa. The revenue generated by these capital projects (including renovations and facility improvements) was $5.5 billion – almost two-thirds of that generated in the much bigger U.S. golf economy.

A tremendous catalyst in many of these countries is how well their professional golfers are doing, Smyers says, citing Argentinian Eduardo

Superintendents find working abroad worthwhile

By John Walsh

With more development happening outside the United States, opportunities are available for those who wish to travel. But working overseas can be quite different than working in the U.S., especially for superintendents. David Brinkel, vice president of Dubai Golf City in the United Arab Emirates, and Mike Heacock, v.p. of golf course maintenance for Pacific Golf Management in Tokyo, shed light on what it's like to work afar.

Brinkel first worked overseas in 1984 in Germany with architect Jim Engh. He has been working overseas since, except for a two-year stint in Florida with Toll Brothers more than five years ago.

"I've got 100-percent support from my family," he says. "My wife is happy here, and my daughter just finished high school here and is back in Florida attending college."

The two biggest pros about working overseas are the pay and benefits, Brinkel says.

"We're usually provided with a place to live and a vehicle," he says. "Sometimes it's not that different from working at a high-end club in the States.

"I like the quality of life over here, although the stress is high," he adds. "I like the thought of being listened to more than what you get in the States. In the States, golf is run by opinionated businessmen who don't listen well and are difficult to work with. Overseas, people are looking for information. It's refreshing. People appreciate what you're doing."

Heacock agrees. He likes working in Japan because the people are wonderful, the food is great, the country is beautiful and Tokyo, where his office is located, is amazing.

While there are perks to working overseas, Heacock advises those who are considering working abroad: "Make sure you know where your money is going, and be sure you know what your perks and benefits are. Will you have help with housing? In what currency will you be paid? What kind of health insurance will you have? You have to look critically at everything because it's all different in Asia."

Challenges and opportunities

The international golf market is a small world and everyone has the ability to have a reputation, which is what you have to protect the most, Brinkel says.

"I know most architects, developers, the folks at Troon and IMG," he says. "The international golf development market is a small business with good people doing good jobs, sometimes in horrific conditions."

Heacock likes the challenge of growing business in a newer market. Lone Star, a private vulture fund in Texas, is his link to Asia. The company has assets all throughout the world, including 145 golf courses in Japan and majority ownership in publicly traded Pacific Golf Management. Lone Star looked into hiring a management company to operate its courses in Japan, but decided to run the courses in-house, hiring a couple of ex-American Golf

Rees Jones is working on projects in Mexico, Barbados, Costa Rica and the Bahamas. Photo: Rees Jones

Romero's win in the U.S. Senior Open. Additionally, golf academies and instructors are expanding rapidly in these countries. Though they're way behind the U.S. regarding the knowledge and development of the game, it's a fast-growing sport.

"Because you're getting winners such as Romero and Angel Cabrera (Argentina), Michael Campbell (New Zealand) and Trevor Immelman (South Africa), that's generating a phenomenal interest around the world," Rees Jones says. "They're hiring American architects because we're the ones who've had the technology to build on all kinds of sites, and we're

employees, including Heacock. Heacock who has been a superintendent since 1976, joined American Golf when it had 25 courses in its portfolio. When he left in 2002 to pursue a career in turfgrass academia, the firm had 300 courses. Heacock looks forward to being part of growing Pacific Golf Management's portfolio in a similar way. He says Lone Star has deep pockets and he wants to take advantage of that.

Language and cultural barriers are difficult at times. In Germany, Brinkel learned the language, but it took a while to get over the communication barrier.

The language barrier also is a challenge in Japan. Heacock says most Japanese don't speak English and nobody who works on a golf course speaks English. He works through interpretation.

Overall, superintendents need a completely different mindset when working abroad.

"The guys who failed tried to do what they did in the States," Brinkel says. "You have to adapt to the culture. Superintendents usually want to buy chemicals and fertilizers right off the bat, but those things might not be readily available over here. Sometimes it takes six to eight weeks for those to be shipped here. You need to go in and open your ears and eyes and keep your mouth shut. You need to figure out how to get the job done with the tools you have. I got spoiled in Florida when the LESCO truck showed up every two weeks."

In Dubai, there aren't many pesticides approved for use on golf courses, Brinkel says. The UAE is trying to separate golf and agriculture.

"It's difficult for them, but it's getting better," he says. "We can get Daconil now. They have good organic fertilizer over here, so you make your own witch's brew. You have to think outside the box."

In Japan, the style of golf course maintenance is different from anywhere else in the world, Heacock says.

"It's more traditional because they have less access to modern techniques and procedures," he says. "For example, they don't like to fill aeration holes, and they don't get ahead of their greens' problems, such as drainage. However, everybody over here uses verti-drains."

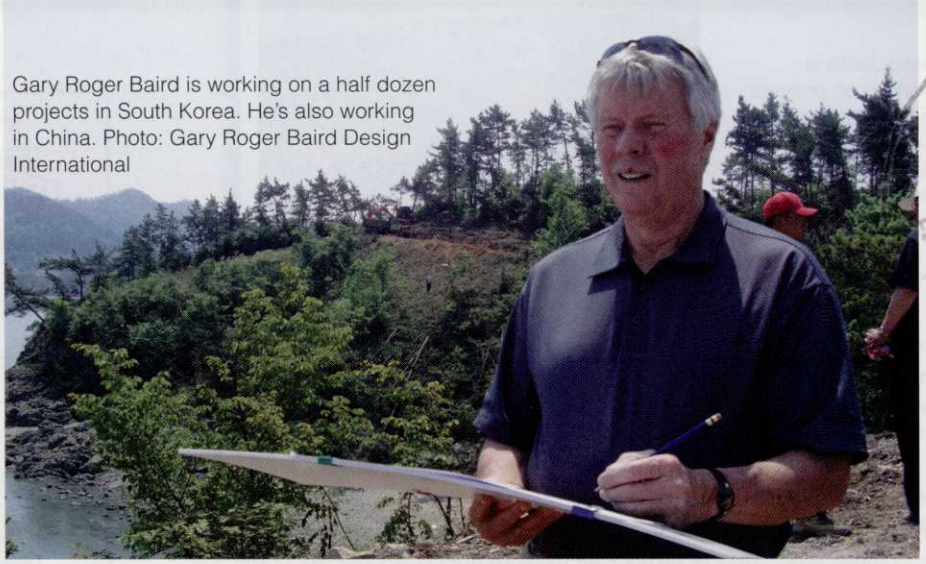
Labor, one of the biggest challenges for superintendents in the U.S., isn't a problem in Dubai. Workers come from the Philippines, Pakistan, India and Nepal. Brinkel's crewmembers speak English well enough for workplace communication and have good experience, but it's difficult to find good mechanics and irrigation technicians, he says.

Middle Easterners tend to take their time making decisions, but once those decisions are made, they expect action immediately. It's difficult to do at times, Brinkel says, adding that you need to have patience and foresight to plan ahead and cover everything you need.

Brinkel plans to stay in Dubai at least for another three years because that's how long it will take to finish the job he's working on. However, he doesn't plan to come back to the States after that.

The 62-year-old Heacock plans to return to the U.S. in a few years. Even though there aren't many American superintendents in Japan, he encourages superintendents to work overseas.

"It's a very enriching experience," he says. "I recommend it to those who aren't afraid to do it." **GCI**



Gary Roger Baird is working on a half dozen projects in South Korea. He's also working in China. Photo: Gary Roger Baird Design International

recognized as being in the top echelon of the business."

"Look at the sports column any week," Baird adds. "Who are the LPGA winners? Seven of the top 10 ladies are from Korea. In Korea, there's a social strata so different from ours. Kids don't play on computers every day. They're walking to school, working and serious about life. They start playing golf at age 3. They don't hang out and do nothing like American kids."

SLOW IN AMERICA

Hills acknowledges the oversaturation of golf courses in some parts of the U.S. but also thinks there's still underdevelopment elsewhere, adding many people in Europe are prospering and looking for second homes, thus the development of more golf communities. In Europe alone, the number of courses and players has doubled since 1985, according to the KPMG report. In the U.S., the number of courses and players has leveled off since 2000.

In the U.S., a piling on penalty could be called against the forces that have converged to stop golf projects. Overconstruction is combining with flat-lined golfer growth and a variety of fears born from a soft economy. The subprime mortgage meltdown is one of the painful factors.

"We were doing fine with these real-estate developments until the subprime mortgage problem occurred," Rees Jones says. "And now people are waiting to see how the real-estate market is in certain vicinities. Those projects will go, but it's a matter of waiting to see how the real-estate market is selling in their areas."

Smyers sees domestic projects moving at a slower pace, but says that's occurring with all businesses in America right now.

"We talk about the downturn of golf in America – it's a cycle that had to happen," he says. "Throughout the world, there has been growth in golf, and then it has slowed. Thailand went through it. So did Japan. We did and so did Europe. You reach your maximum capacity, and it stagnates for a while."

THE AMERICAN STYLE

Meanwhile, the dozers keep chugging abroad. And while the Scots and Brits brought the linksland style of golf course design to U.S. shores, Americans are exporting a site-specific style. The overseas market, as a whole, wants parkland courses, Smyers says.

"We're trying to be site specific," he says. "We're from the strategic school of design. We try to assess the site and do what it will allow us to do to produce the most dramatic product. That means something different in Iceland than it does in Bermuda or Brazil because the sites, climates, elements, wind, water and topography are all different."

Styles are predicated on location, Rees Jones says.

"If you're next to the ocean, you'll have a rolling links-look golf course," he says. "If you're on sandy soil, you'll have a heathland design. If you're among trees – and in a lot of European countries, you can't take out the trees – you'll have a parkland course. The style, whether links-like, heathland or parkland, will be thought out. But it will be more of an American style on the inland golf courses."

Baird tells clients site distinctions become design distinctions. He says the Asian market demands the manicured Augusta National-type look; it's not ready for the Scottish look yet. The Augusta National look – highly manicured turfgrass, beautiful trees and color galore – is basically thought of as America's style. And most of the requests overseas are for the manicured parkland-type courses prolifically seen in the U.S., Hearn says.

Hills equates "American" with "parkland" but says it depends on whether the site is sandy.

Phillips, who works a lot in Europe, disputes the idea most foreigners want the American style, which he defines as artificial-looking, generally featuring big mounds, flatter and perimeter-weighted fairways, and big, in-your-face stuff with high-fertility maintenance programs.

"So far, you've seen the American style in Dubai and China, but in the U.K. and Europe, people aren't big fans of that style of golf," he says.

But a significant factor in whatever is done is the client on the project.

"Budgets have a lot to do with it, too," Jones Jr. says. "If Michelangelo hadn't been given a piece of Carrara marble and had to create 'David' on a budget, it would have been a lot smaller."

The bottom line, though, even visible from Brauer's perch in Texas, is this: The American style is in demand. **GCI**

Eighty percent of Kyle Phillips' work is overseas in places such as Ireland, Sweden, Slovakia, Sicily, Holland, Spain and Brazil. Photo: Kyle Phillips Golf Course Design

Strides for *Stressed* Turf

Researchers focus on the best cultivars for heat, drought and salt tolerance

By John Torsiello

Drought conditions resulting from searing heat and lack of natural water are two of the most pressing problems facing superintendents. And with increasing vagaries in weather patterns and more stringent government regulations concerning water use, these issues likely will intensify in the future.

That's why industry researchers have been burning the laboratory lights late into the night to find ways to enhance the heat and drought tolerance of turfgrass. Their efforts have produced new strategies and grasses that promise to meet the increasing pressure placed on turfgrass managers.

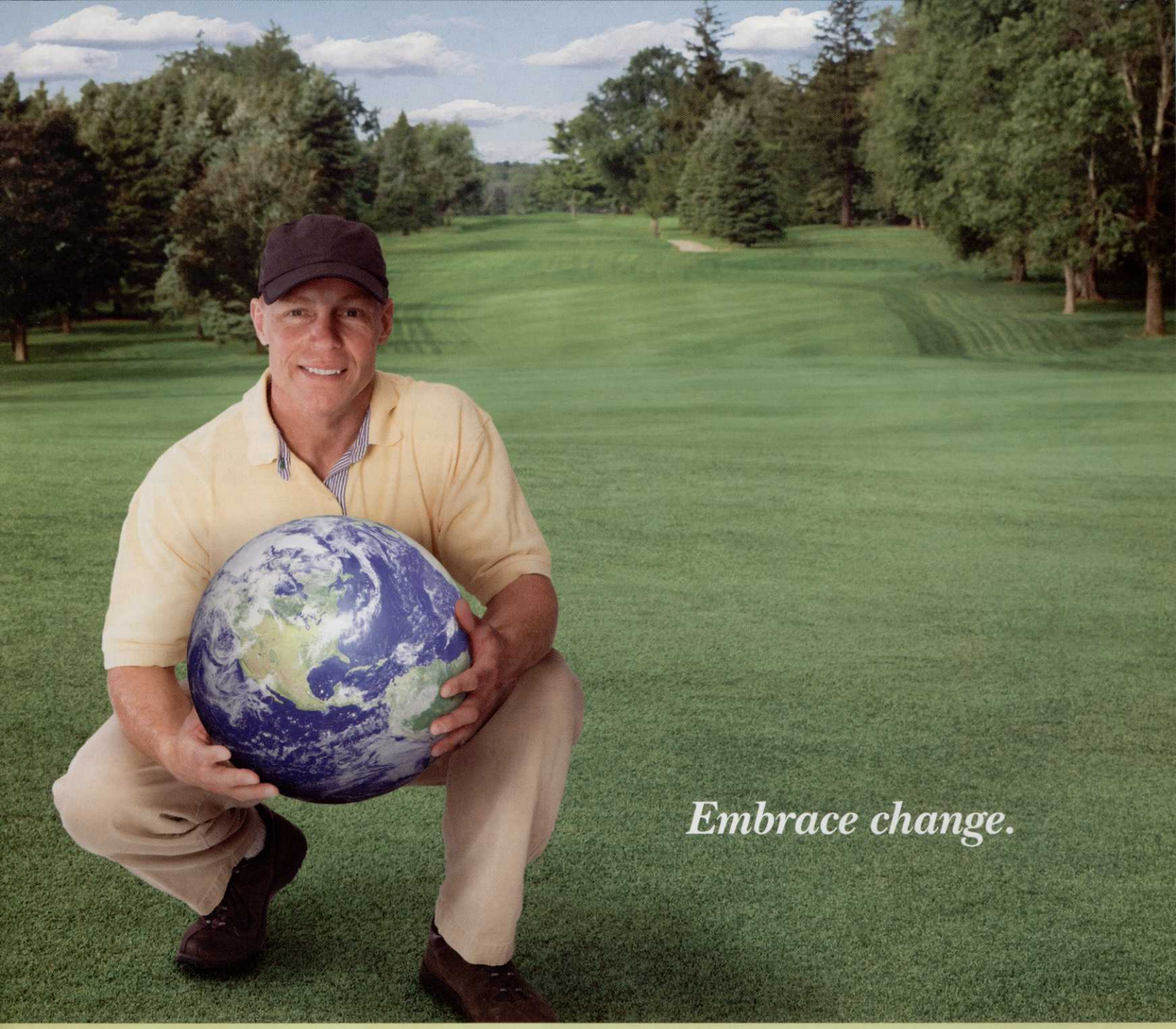
"Superintendents always look for superior turf quality, but more frequently, they're asking about other characteristics that don't sacrifice quality," says Leah Brilman, Ph.D., director of research and technical services at Seed Research of Oregon. "Many superintendents have learned they can reduce watering on many species as long as their course has a good irrigation system. Salt tolerance is critical in areas with effluent usage."

UNDER FIRE

The most desirable bentgrass characteristic expressed in a recent survey was better heat tolerance, says Douglas Brede, Ph.D., research director and operating officer of Jacklin Seed. Tests in Arizona demonstrated that Jacklin's T-1 creeping bentgrass surpassed other varieties in heat tolerance, according to Brede.

Corroborating this evidence is a study con-

Leah Brilman, Ph.D., says superintendents have learned they can reduce watering on many species of turfgrass as long as their course has a good irrigation system. Photo: Seed Research of Oregon



Sea Spray (not pictured) is slightly more expensive than other seed, but less is needed per square foot, says Bill Rose. Photo: Epic Creative

ducted by Dave Kopec of the University of Arizona that showed the T-1 bentgrass sailed through the hottest summer on record without a blemish, Kopec says.

Brede cites another study that showed Jacklin's L-93 creeping bentgrass variety had a higher plant and tiller density, greater root-to-tiller ratio, and more and finer roots than other bentgrass under high temperature conditions.

Researchers attributed the better performance of L-93 under heat stress to its morphological characteristics, including tillering and root growth. Such research suggests that plant breeders concentrate on varieties with narrow leaves, small plants, dense tillers, big root systems and a high root-to-shoot ratio to select heat-tolerant cultivars.

THIRSTY TURF

Drought is a huge issue because water is restricted throughout

the world, says Christiaan Arends, turf product manager for Barenbrug USA, which developed a seed-coating technology called Yellow Jacket. It contains a natural, corn syrup-based product called Zeba, which holds as much as 600 times its own weight in water.

Studies at the University of New Mexico showed seed coated with Yellow Jacket established faster and required less water, Arends says. The coating is available on various kinds of seed such as bentgrass, Bermudagrass, bluegrass, tall fescue, *Poa trivialis* and fine fescue, among others.

Barenbrug produced a Kentucky bluegrass called Baroness and a rhizomatous tall fescue, both highly rated for their drought tolerance.

When used in an overseeding program, Barenbrug's SOS system, which combines annual and perennial ryegrasses, creates a turf that makes an easier transition from cool- to warm-season grass in the spring, according to the company.

"Because of this improved transition, superintendents don't have to spray chemicals or water the cool-season grass late in spring, all of which helps conserve the environment," Arends says.

COMPARING CULTIVARS

The industry continues to make a wide variety of grasses, including fine fescues and Kentucky bluegrass, that are more tolerant to extreme heat and drought conditions, says Stacy Bonos, Ph.D., a researcher with the department of plant biology and pathology at Rutgers University in New Jersey.

"More of the recently released fine fescues that have improved turf quality will have better heat and drought tolerance than other less-adapted cultivars," Bonos says. "But one problem with fine fescues is they generally don't have good wear tolerance."

Typically, hard and blue fescues have superior drought tolerance, Brilman says. But Chewings and strong creeping red fescues have been improved significantly for drought tolerance.

"These species aren't just for shade mixtures but for low maintenance turf in full sun," she says.

Kentucky bluegrass in the Mid-Atlantic has high heat and drought tolerance and tends to produce roots under heat stress that penetrate to lower soil depths to exploit water reserves deeper in the soil profile, Bonos says. Breeders use interspecific hybridization between Texas bluegrass and Kentucky bluegrass to combine the heat and drought tolerance from

Barenbrug USA developed a seed-coating technology that holds as much as 600 times its own weight in water. Photo: Barenbrug USA

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Texas bluegrass with the improved turf quality of Kentucky bluegrass. Texas X Kentucky bluegrass hybrids have been shown to have better heat tolerance than some Kentucky bluegrass varieties, Brilman says.

"Drought avoiders tend to put down extensive root systems and mine water deeply but often require more water," she says. "Tall fescues can be drought avoiders, but in the Western United States, because they use more water, they might not be the best choice if you don't get sufficient rainfall or don't have deep soils. Drought tolerance of hybrid bluegrasses and Kentucky bluegrass needs to be looked at by individual cultivars."

Only certain hybrid bluegrasses have shown superior drought tolerance, but most demonstrate excellent recovery after being under drought stress.

Recent developments at The Scotts Co. include crossing the Texas and Kentucky bluegrasses to produce a strain that demands less maintenance, less water and stands up well to high temperature.

"Bluegrass will go dormant if it doesn't get water and then greens up when it rains," says Wayne Horman, director of Scotts seed sales and marketing. "Some might say that's drought tolerant and others might not. Sometimes it's a question of semantics."

Scotts is marketing Solar Green, Thermal Blue Blaze and Dura Blue, all varieties of heat tolerant bluegrass.

Sea Spray, developed by Pure-Seed Testing and marketed by Scotts, is the industry's first seeded seashore paspalum. Sea Spray, which has a high salt tolerance, is ideal for use in areas irrigated with effluent water or subject to naturally high saline conditions. The variety is capable of germinating with water containing less than 2,000 parts per million of salt in soil that ranges between 4.5 and 9 in pH.

The most desirable bentgrass characteristic is better heat tolerance, says Doug Brede, Ph.D.

"Sea Spray actually prefers seawater over freshwater after it has been established," says Bill Rose, president of Tee-2-Green and Rose Agri-Seed and founder of Pure-Seed Testing. "The grass was found to be growing in sea inlets in the south, and after more than 10 years of research and selective testing, a variety was developed that made seed. This is ground breaking stuff."

Sea Spray is slightly more expensive than other seed – between $50 and $60 a pound – but less seed is needed per square foot, about a pound for every 1,000 square feet, Rose says.

HOW THEY MEASURED UP

Last year, superintendent Steve Yarotsky used Sea Spray for his grow-in of tees, fairways and rough at Moody Gardens Golf Club in Galveston, Texas. The course on the ocean is buffeted by salt air, has salt-laden soil and is exposed to salt water during storms.

"Because of these issues, plus the fact that we use effluent water in our irrigation system, we decided to go with the Sea Spray paspalum," Yarotsky says. "This paspalum grass is the wave of the future."

Ed Kutt, superintendent at Annandale Golf Club in Pasadena, Calif., used turf with a mix of Thermal Blue Blaze, Solar Green and Dura Blaze seed when the club completely resodded its rough – about 50 acres – last fall.

"We wanted to have a green look year round without overseeding, which is costly and time consuming," Kutt says. "Plus, we have a property that has a lot of trees, and we feared common Bermudagrass in the rough would soon be inundated with *Poa annua*. We did some test plots using the heat-tolerant grasses before we made the decision to use them in the rough areas."

While refraining from making final judgment, Kutt says rough areas that have been heat stressed have bounced back with added water.

"It looks good aesthetically," he says. "During the wintertime, the slight difference in color between the rough and fairway made the course look fantastic." **GCI**

Florida style on the MAINE COAST

A flat site with poor drainage presented *Old Marsh Country Club* the opportunity to bring a resort-style course to New England

Photos: Larry Lambrecht

The project team broke ground Jan. 2, 2007, and the last hole was seeded Oct. 9, 2007, a record most likely for course construction in the unforgiving Maine environment.

By Hal Phillips

If it weren't the only new golf course to open in New England in 2008, Old Marsh Country Club in Wells, Maine, probably would've stood out anyway. The course design is too strong, the development history too long and tortuous, the ultimate playing conditions too impressive and the concept too anomalous compared to other course fare on the Maine coast.

But the semiprivate club, developed by Bath, Maine-based Harris Golf, is the region's only new course this year – a year where far more facilities closed their doors, were dragged into receivership or were sold for alternate, more profitable use.

"The golf market is soft; there's no getting around that," says Jeff Harris, president of Harris Golf, owner and operator of Old Marsh, Sunday River Golf Club in Newry, and Boothbay Country Club and Penobscot Valley Country Club in Orono. "But quality golf at the core of the right sort of development can be successful, and Old Marsh is proof of that.

"We're beginning to branch out across New England, but we got our start developing golf courses in Maine where the market has never been as strong as elsewhere," Harris adds. "We've been opportunistic in no small part because we've had to be. We've learned how to identify markets, develop products for those markets and build courses efficiently."

Old Marsh is evidence of all these traits because:

- It broke ground the day after New Year's 2007. The last hole was seeded Oct. 9, 2007, nine months later, a record most likely for course construction in the unforgiving Maine environment.
- York County, home to coastal Wells, is underserved in terms of golf, yet a popular vacation spot.

• Golf had first been proposed for this property in the late 1980s, but a succession of developers failed to get past the permitting process. Harris Golf, the fifth owner of the property, acquired it for pennies on the dollar.

"Yeah, I don't know what Jeff Harris is talking about with all this nine-month construction business," says New Hampshire-based architect Brian Silva with a wry smile. "I flagged this course in 1987. So, as far as I'm concerned, it's taken more than 20 years to build."

Silva designed Old Marsh and had been retained, in one manner or another, by all five owners, including Harris Golf.

At A Glance: Old Marsh Country Club

Location: Wells, Maine
Online: www.oldmarshcountryclub.com
Type: New construction
Cost: More than $5.5 million
Architect: Brian Silva
Builder: Harris Golf and AgriScape
Project superintendent: Clayton Longfellow
Project started: January 2007
Course opened: June 2008
Course length: 6,800 yards
Greens: SR1119 bentgrass
Tees and fairways: SR1119 and Providence bentgrass
Immediate rough: a blend of bluegrass, ryegrass and fescue
Far rough: a straight mix of fescue

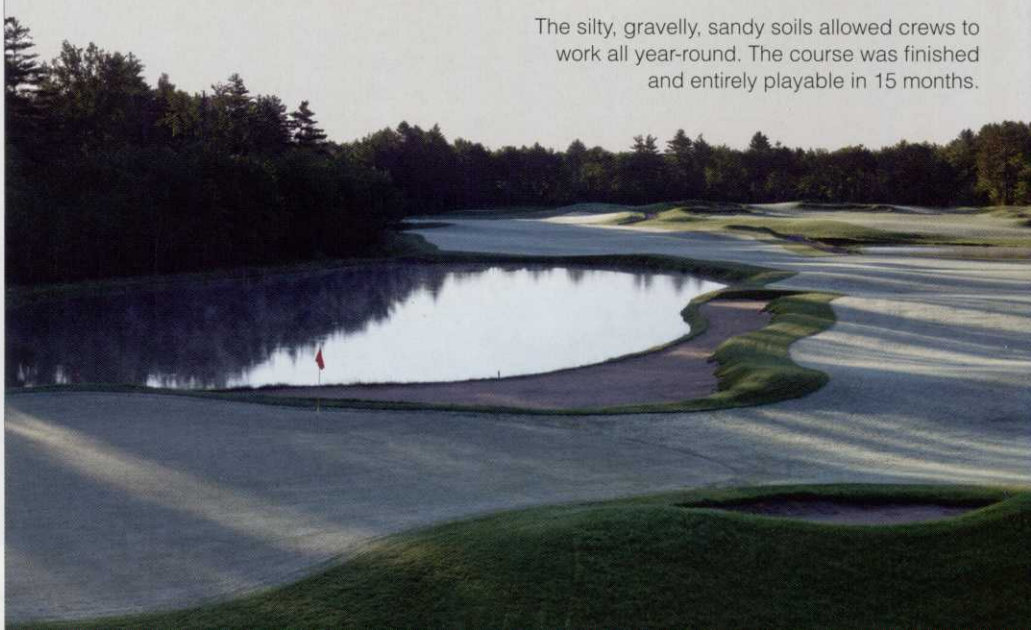
YEAR-ROUND SOILS

Harris spent more than $5.5 million on course construction. Silva laid out the course, and Harris Golf built it with collaboration from Connecticut-based AgriScape. Course builders in Maine typically wait until spring before rolling in the heavy equipment, but Harris Golf called its crew to work at Old Marsh Jan. 2, under the direction of project superintendent Clayton Longfellow. The cuts and fills – all the rough shaping – on the first nine holes were done by the end of February, says Longfellow, who also serves as director of agronomy for all the Harris Golf facilities.

"It took us 2.5 years to build Sunday River," Longfellow says. "Old Marsh essentially was finished and entirely playable in 15 months. We schemed it well and worked efficiently, but the site at Old Marsh is completely different from anything we've ever worked on before – and that's a good thing."

Because Sunday River featured heavy, rocky soils and 200-foot elevations, Longfellow says the project team could never have worked there during the winter. However, the silty, gravelly, sandy soils at Old Marsh allowed crews to work all year-round.

"In fact, we were better off using the heavier equipment during the winter, on frozen ground," he says. "In the spring, it would've been difficult to deploy that equipment with the same efficiency."



The silty, gravelly, sandy soils allowed crews to work all year-round. The course was finished and entirely playable in 15 months.

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The only way to craft the course was to excavate ponds and use the material to raise and drain the land, Brian Silva says.

BACK TO LIFE

Harris Golf has made a habit of setting new precedents. Sunday River Golf Club was another project that sat dormant (for more than 10 years) and was presumed dead before Harris Golf swooped in. It opened all 18 holes in 2006.

Old Marsh is another back-from-the-dead project. Golf was proposed there first in 1985. Since then, four owners had been frustrated with their attempts to develop the piece of land, first known as Ocean 18, then Maine National. After 20 years, all manner of environmental restrictions, impact issues and permitting squabbles had presumably doomed the project forever. It wasn't until Harris Golf expressed an interest in the property 24 months ago the wheels started turning, again.

"There were all sorts of sticking points with this project, but the environmental issues were paramount," Harris says. "There are a large amount of wetlands on site, but we learned you have to have the right consultants and engineers involved, so they can work their way through the issues and set the right course. There's give and take. In Wells, for example, we're creating and preserving about 280 acres of wetlands and wildlife habitat in return for the 14 acres we'll impact in building the golf course.

"Some developers fight with the state and federal agencies and say, 'This is my land; I can fill that wetland if I want,'" Harris adds. "Well, that's not how it works, and that sort of attitude just bogs down the process."

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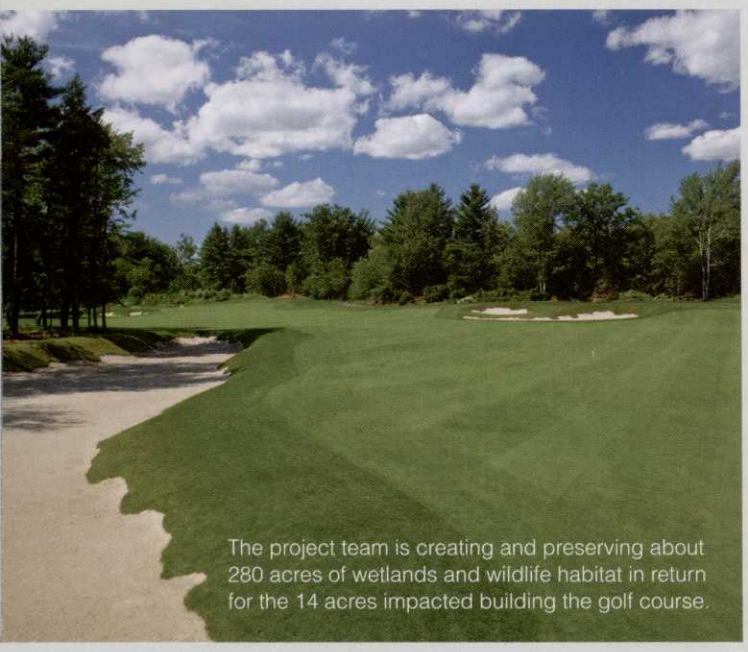


The project team is creating and preserving about 280 acres of wetlands and wildlife habitat in return for the 14 acres impacted building the golf course.

hosting major championships. It's a resort track from the old school, a Florida-style course 1,500 miles north of anything quite like it. Sand-capped fairways and copious amounts of rain in August contributed to great playing conditions.

Many New England courses feature holes that are set low, and the natural terrain imparts their character for good and bad, says Silva, who has worked throughout New England and in Florida. At Old Marsh, the terrain was basically flat, and the site didn't drain well.

"The only way to craft the course was to excavate ponds and use that material to raise and drain the land, which is the way you build courses in Florida," Silva says.

Silva's formula depended on the amount of excavation the developer is willing to undertake, which is a function of spending.

"I give Jeff Harris credit for making the necessary investment here because just clearing a few trees and pulling the stumps wouldn't have done the job on this particular piece of ground," he says. "We had to raise every square inch of the property to make sure the course was playable all season long. We needed to excavate an extraordinary amount, and that costs money. Jeff and his people gave me all the dirt I needed."

The architect used the excavation to his advantage, making the greens stand out. The first one, punctuating a 380-yard par-4, is sprawling and raised, pitched slightly to the right and incorporates four distinct lobes that fade into each other without seams.

Additionally, Longfellow was anxious about the amount of water this summer for the grow-in. The area was dry right up to early July. Nonetheless, the grow-in was

satisfactory, he says.

"After much deliberation, we made the decision to pump from the pond on No. 10 over into the irrigation pond," he says. "Shortly after we made that decision and got everything set up and running, it started to rain for weeks. The only thing missing as far as this first year was rain. You can irrigate, and you can pump, but we all know it's rain that makes a grow-in happen."

The project team received many comments from golfers about how mature Old Marsh seems for its age compared to other grow-ins.

"A lot of newer superintendents are reluctant to stray from what they learned in school," Longfellow says. "My experience out in the field is that in a grow-in situation you have to fertilize, fertilize, fertilize. You've just got to slam turf with fertilizer. Old Marsh is a good example of the success of that strategy."

OLD WORLD MEETS NEW WORLD

Silva is familiar with interpreting classic designs. He's worked on dozens of Donald Ross designs, including Interlachen Country Club in Edina, Minn., and Penobscot Valley, restoring Ross' original intents. But Seth Raynor is Silva's true spiritual guide. Raynor's influence – deep, flat-bottomed bunkers; huge greens that fall off steeply into those bunkers; numerous, randomly placed bunkers that give fairways movement and contour – is everywhere at Old Marsh.

Raynor and his mentor, C.B. Macdonald, were known for taking famous Old World holes and adapting them to the New World courses they designed and built. Silva follows suit but with his personal twists.

On the par-4 second hole, Silva combines two Raynor standards – an Alps feature and a punchbowl green. The Redan green on five sits at the terminus of a dogleg par-4. The Cape, another Raynor/Macdonald standard, is reprised several times at Old Marsh, including on 16, a long par-4 that bends around marshland.

Then there are the Silva originals. The par-5 13th is a seemingly horseshoe-shaped double cape that's reachable. The driveable par-4 14th finishes at a triangular shaped green flanked left by a sprawling, cavernous bunker and right by a giant kick-slope designed to help long drives.

The 210-yard, par-3 17th features another giant kick-slope, and the large lakeside green features a combination of swales and girth.

"The 17th is a good nutshell example of why Old Marsh works," Silva says. "There wasn't originally going to be a lagoon beside that green. We created it to enable the shaping of an enormous, flamboyant green setting.

"When you're obliged to create so much of the playing contour, Florida style, you can create any and all the angles and strategy you want," he adds. "I've always wondered why courses built like this in the Southeast aren't more interesting strategically. No one will ever level that charge at Old Marsh." GCI

BY H. SAMARANAYAKE, PH.D., T. J. LAWSON AND JAMES A. MURPHY, PH.D.

Stressed out

Foot and cart traffic affects putting green and fairway turf

Putting greens and fairways are subject to traffic stresses, which lead to wear and compaction. Creeping bentgrass is considered to be less tolerant of wear and stresses resulting from soil compaction than many other turfgrass species. However, genetic-based differences in traffic tolerance occur within and across species. Also, species compositions of swards can change in response to traffic.

Bentgrass cultivars' ability to maintain a dense turf cover and recover from traffic stresses can influence resistance to weed invasion. Annual bluegrass can invade cool-season species subjected to wear and become the dominant species on golf courses in mild temperate and subarctic climates.

James Beard, Ph.D., characterized annual bluegrass as an opportunistic grass that becomes established in nonaggressive bentgrass cultivar turfs. Reports demonstrate creeping bentgrass cultivars vary in turf density and the ability to resist annual bluegrass invasion under nontrafficked conditions. The relative dominance of bentgrasses in a sward mixture with annual bluegrass under traffic hasn't been reported.

Creeping bentgrass has been studied more extensively for golf course turf than velvet bentgrass, which produces a high-density turf but is reputed to be soft with a strong thatching tendency, characteristics that influence traffic tolerance. The release of the cultivar SR 7200 aroused interest in the use of velvet bentgrass for golf. Trials at Sports Turf Research Institute in Bingley, England, show improved wear tolerance of velvet bentgrass compared with many creeping or colonial bentgrass varieties. Other trials, such as in New Jersey, also indicate velvet bentgrass has broader adaptation for golf.

The objective of this research was to assess the performance of bentgrass cultivars in a sward mixed with annual bluegrass when subjected to wear and/or compaction on simulated putting green and fairway turf.

Table 1. Interaction effects of wear x cultivar in 2000 and cultivar main effect in 2001 on average turf density in a putting green trial grown on a sandy loam.

Bentgrass cultivar	2000 turf density: Wear x cultivar: No wear	2000 turf density: Wear x cultivar: Wear	2001 Turf density: Cultivar main effect
	1-to-9 scale†		
Vesper‡	8.6	7.7	7.9
7001‡	7.9	7.3	7.2
SR 7200‡	8.4	7.8	6.8
Penn A-4	8.1	7.6	7.2
Penn G-2	8.5	7.4	6.7
Century	7.7	7.0	6.3
L-93	6.9	5.9	5.5
SR 1119	6.5	5.9	5.2
Providence	6.4	4.4	4.3
Southshore	5.8	5.6	4.3
SR 1020	5.9	4.3	4.0
Putter	5.4	4.5	4.1
Penneagle	5.1	4.1	3.6
Pennlinks	4.7	3.4	3.0
Penncross	4.6	3.3	3.0
$LSD_{0.05}$	0.8		0.4

† 9 represents the best average turf density, and 5 represents the minimally acceptable rating.
‡ Denotes velvet bentgrass cultivar; all others are creeping bentgrass.

EXPERIMENTAL DESIGN, TREATMENTS

Two studies were conducted: One was managed as putting green turf, and the other as fairway turf. Trials were initiated on a sandy loam (fine-loamy, mixed, mesic Typic Hapludults) at a research facility in North Brunswick, N.J.

Both trials used split-plot designs with main plots (wear and compaction) arranged as two-by-two factorials. Wear at two levels (no wear and wear) and compaction at two levels (no compaction and compaction) were randomly assigned to main plots (5 feet by 56 feet). Fifteen cultivars of creeping bentgrass and velvet bentgrass were assigned randomly to subplots (5 feet by 3 feet). The 12 creeping bentgrass cultivars evaluated in the putting green study were: L-93, Penn A-4, Penn G-2, Century, SR 1119, Providence, Southshore, SR 1020, Penneagle, Putter, PennLinks and Penncross. Velvet bentgrass entries were: SR 7200, 7001 (an experimental selection) and MVB later released as Vesper. The fairway study evaluated the same cultivars except Vesper was substituted – because of a seed shortage – with Penn G-1 creeping bentgrass. The putting green study was replicated four times and the fairway study three times.

Before seeding the bentgrasses in each trial, the entire plot area was topdressed with soil cores taken from putting greens at Plainfield Country Club that contained seeds of annual bluegrass. The cores were stockpiled for one year to kill bentgrass vegetation, spread onto the soil surface, and hollow-tine cultivated and verticut to incorporate them into the soil. Creeping bentgrass cultivars were seeded at 3.6 g m^{-2} and velvet bentgrass at 2.1 g m^{-2} based on number of seeds per unit area. An unseeded subplot was included. Volunteer establishment of bentgrass in unseeded subplots was negligible. The initial soil pH value was 6, and available phosphorus and potassium were 22.2 and 36.5 g m^{-2}, respectively. Irrigation was applied only when wilt stress was imminent to maintain relatively dry soil conditions and to wash-in fertilizer. Fungicides were applied as

needed to avoid disease stress.

The putting green trial, which was seeded Sept. 30, 1998, was fertilized with 4.9, 2.1, 4.1 g m^{-2} of nitrogen, phosphorus and potassium on Sept. 30, 1998. Two postplant fertilizations applied 7.5, 2.4, and 5.2 g m^{-2} of nitrogen, phosphorus and potassium, respectively. Fertilizer treatments (19 times) applied a total of 26.1, 7.1 and 12.7 g m^{-2} of nitrogen, phosphorus and potassium in 1999; 6.4, 1.1, and 2.0 g m^{-2} of nitrogen, phosphorus and potassium in 2000 (four times); and 14.1, 4.5, 9.3 g m^{-2} of nitrogen, phosphorus and potassium in 2001 (nine times).

Mowing the green was initiated Nov. 7, 1998, at 0.62 inch. The height was lowered to 0.14 inch on June 12, 1999, and 0.12 inch on March 23, 2000. The green was mowed six times a week, and clippings were removed.

The study was topdressed eight times from April to December 1999 for a total of 10.9 L m^{-2} with medium-sized sand conforming to USGA guidelines. Two topdressings were applied each in 2000 and 2001, totaling 1.7 L m^{-2} and 1.9 L m^{-2}. Solid-tine cultivation was performed before topdressing on Dec. 10, 1999, and vertical mowing (0.18-inch depth) was performed before and after topdressing in July 2001. Traffic treatments were initiated on July 21, 1999.

The fairway trial was seeded Nov. 10, 1998. It was fertilized with 3.2, 0.4 and 1.3 g m^{-2} of nitrogen, phosphorus and potassium Nov. 10, 1998. Two postplant fertilizations applied 5.9, 0.8, and 3.4 g m^{-2} of nitrogen, phosphorus and potassium. Fertilization applied (14 times) a total of 34.1, 5.3, and 17.2 g m^{-2} of nitrogen, phosphorus and potassium in 1999; 2.4 g m^{-2} of nitrogen in 2000 (once) and 8.0, 2.3, 4.5 g m^{-2} of nitrogen, phosphorus and potassium in 2001(five times).

Mowing was initiated Dec. 14, 1998, at 0.62 inch and was lowered to 0.53 inch Oct. 21, 1999, and 0.41 inch March 23, 2000. Mowing was performed three to four times a week with clippings removed. Traffic treatments were initiated July 22, 1999.

Wear was applied using a 2.6-foot-wide wear simulator constructed from a modified walk-behind power broom. Compaction treatments were applied using a 2-foot-wide, 952-pound water-filled turf roller or a 2.6-foot-wide, 2,586-pound vibratory pavement roller. Wear and compaction treatment consisted of two passes of the wear simulator and/or compaction roller applied twice per week (four passes a week) from mid-May through September. Once every two weeks, the 2,586-pound vibratory pavement roller was used in replacement of the water-filled roller to apply two passes to ensure adequate compactive force was applied.

Table 2. Interaction effects of wear x compaction (comp) x cultivar in 2000 and compaction x cultivar in 2001 on average annual turf quality in a putting green trial grown on a sandy loam.

Bentgrass cultivar	2000 turf quality				2001 turf quality	
	No wear No comp	No wear Comp	Wear No comp	Wear Comp	No comp	Comp
	1-to-9 scale†					
Vesper‡	8.2	8.1	7.3	7.4	7.7	7.5
7001‡	7.5	7.0	6.9	7.0	7.2	7.0
SR 7200‡	7.5	7.5	7.3	6.4	6.5	6.0
Penn A-4	8.5	8.5	7.6	7.8	6.8	7.0
Penn G-2	8.3	8.7	7.2	7.4	6.1	6.5
Century	7.5	7.6	6.6	6.6	6.1	5.7
L-93	7.3	6.6	6.3	5.6	5.4	5.0
SR 1119	6.5	6.8	5.4	6.0	4.6	4.7
Providence	6.8	5.5	5.0	4.0	4.6	3.7
Southshore	5.8	5.3	5.6	5.0	4.1	3.7
SR 1020	5.6	6.0	4.3	4.9	3.9	4.1
Putter	5.3	4.9	3.8	3.8	4.2	3.9
Penneagle	5.1	4.5	4.3	4.0	3.4	3.3
Pennlinks	4.5	4.5	3.6	2.9	3.2	3.0
Penncross	4.2	3.9	3.1	3.4	2.8	2.8
$LSD_{0.05}$	0.7				0.8	

† 9 represents the best turf quality, and 5 represents the minimally acceptable rating. ‡ Denotes velvet bentgrass cultivar; all others are creeping bentgrass.

Figure 1. Bulk densities of 0-to-51-mm surface depth as affected by traffic on a putting green grown on a sandy loam in 2001.

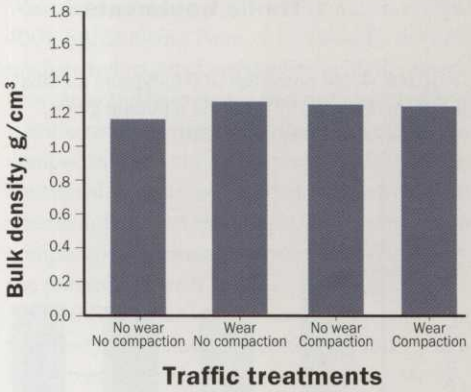
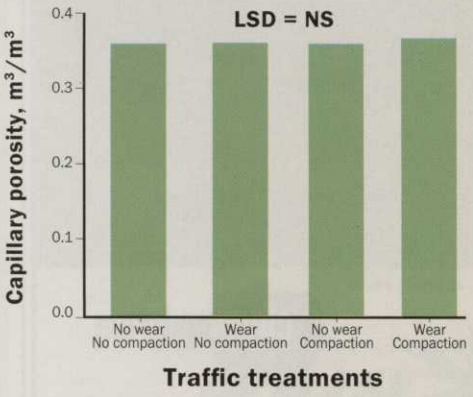


Figure 2. Capillary porosities of 0-to-51-mm surface depth as affected by traffic on a putting green grown on a sandy loam in 2001.



OBSERVATIONS, DATA COLLECTION, ANALYSIS

Plots were evaluated in early spring, late spring, summer and fall for quality during 1999, 2000 and 2001, and in spring and late summer for density using a 1-to-9 scale (1 representing poorest quality turf, 9 the best quality turf, and 5 the minimally acceptable rating). A line-intersect grid count method provided 209 observations per plot for determining the bentgrass population in spring, summer and fall of 1999, 2000 and 2001.

Four 76-mm-diameter undisturbed core samples were taken randomly from the 0-to-51-mm surface soil depth of unseeded subplots of main (traffic) plots in October 2001 for assessment of physical properties. The turf's composition was predominantly annual bluegrass. Saturated water conductivity of each core sample was determined from a 0.5-h flow period after 4-h of constant-head flow. Air-filled porosity was determined by subtracting capillary porosity measured at -10 kPa water potential from the calculated total porosity.

Data were analyzed using the analysis of variance procedures of SAS (version 9.1). Soil physical properties data were analyzed using a 2-by-2 factorial arrangement of wear and compaction

factors in a randomized complete block design for both trials. All other data were analyzed using a split-plot design with main plots arranged as a 2-by-2 factorial and 15 cultivars as subplots. Turf quality and density ratings were averaged for a given year.

RESULTS: SOIL PHYSICAL PROPERTIES

In the putting green study, bulk densities of the surface 0 to 51 mm of the plots were relatively low (Figure 1) because of the large organic matter content in the thatch-mat layer where biomass was accumulated in the form of crowns, roots and stolons. This organic matter added resiliency, which limited the damaging effects of compaction from bi-weekly and weekly treatments using 2,586-pound and 952-pound rollers. Bulk densities of all traffic plots were higher than the nontraffic plots, and traffic treatments didn't affect capillary porosity or K_{sat} (Figures 2 and 3).

Compaction increased bulk density and decreased air-filled porosity of nonwear plots without affecting wear plots (data not shown). Similarly, wear treatments didn't affect bulk density and air-filled porosity on the plots that also received compaction treatments but increased bulk density on noncompacted plots. It's possible the repeated wear thinned out the turf and the resiliency of the turf was reduced and allowed compaction of the surface from the rotating flexible paddles on the wear simulator. Bulk density changes were a result of decreased air-filled porosity, yet K_{sat} wasn't affected, which further illustrated the resiliency of this sand topdressed turf grown on sandy loam (Figures 3 and 4).

In the fairway study, the surface layer of 0 to 51 mm indicated lower bulk densities than the putting green trial (Table 3) because of the sand topdressing practice that added sand (high particle density material) to the thatch-mat layer of the putting green. Surface bulk density of fairway plots was increased by compaction and wear treatments (Table 3). Air-filled porosity and K_{sat} levels were higher than the soil green trial, especially under the no traffic and wear-only treatment plots.

Compaction decreased air-filled porosity and increased capillary porosity, while wear only decreased air-filled porosity (Table 3) compared to plots receiving no nontraffic treatments. This structural change at the surface of wear plots wasn't large enough to reduce K_{sat}, whereas compaction treatments reduced K_{sat} (Table 3). Despite lower bulk densities, other physical properties in the fairway trial indicated the fairway turf cover wasn't as resilient to traffic as turf cover in the putting green that received sand topdressing.

CULTIVAR RESPONSES TO TRAFFIC

While traffic and cultivar effects explained much of the variation in turf responses, significant

Figure 3. Saturated hydraulic conductivities of 0-to-51-mm surface depth as affected by traffic on a putting green grown on a sandy loam in 2001.

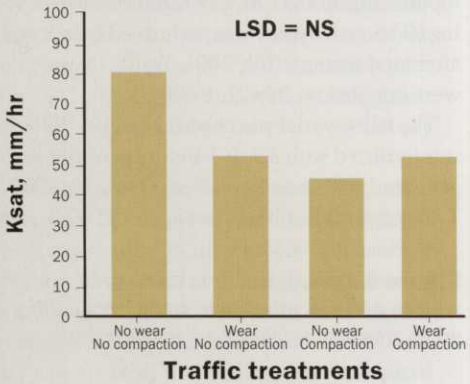
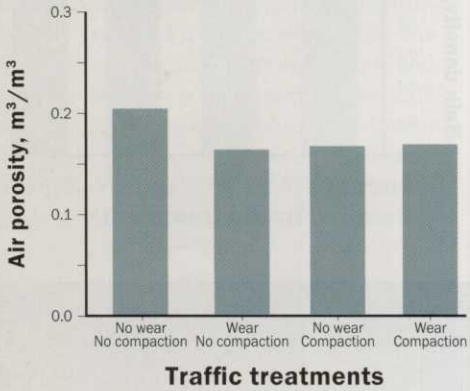


Figure 4. Air porosities of 0-to-51-mm surface depth as affected by traffic on a putting green grown on a sandy loam in 2001.



interactions were observed. Interactions involving the cultivars indicated the cultivars that were affected under wear and/or compaction levels were more noteworthy than any change in the ranking of cultivars under wear and compaction. Thus, discussion of the interactive effects involving the cultivar factor on the effect of wear and/or compaction factors within cultivars is appropriate.

In the putting green study, turf quality generally decreased because of wear treatment, but response to compaction treatment was relatively small in 2000 (Table 2). Wear decreased turf quality of almost all cultivars at one or both levels of compaction except 7001, which didn't respond to wear in 2000 (Table 2). Also, wear didn't affect turf quality of SR 7200 and Southshore in uncompacted plots and Penncross in compacted plots. Compaction didn't affect turf quality of most cultivars; however, compaction decreased turf quality of Providence in no-wear plots and SR 7200, Providence and Southshore in plots receiving wear treatments.

In 2001, compaction decreased turf quality of only Providence (Table 2). Wear decreased turf quality of compacted and uncompacted plots, whereas compaction only reduced quality in the presence of wear. Vesper, 7001 and Penn A-4 had the best turf quality during the last year of the trial (2001) while Penneagle, Pennlinks and Penncross had the poorest turf quality (Table 2). Velvet bentgrass cultivars had better turf quality than most of the creeping bentgrass cultivars studied regardless of whether they received wear or compaction treatments.

Compaction didn't affect turf density in 2000. Wear decreased turf density of all cultivars except 7001, SR 7200 and Penn A- 4 (Table 1). An immediate reduction of turf density in 2000 caused by wear would be expected because wear damage is acute, causing immediate thinning of turf while compaction is a chronic stress. In 2001, wear continued to decrease turf density regardless of whether plots received compaction or not, while compaction treatments only reduced density in the presence of wear.

In 2001, Vesper was the most dense cultivar, followed by 7001 and Penn A-4. Pennlinks and Penncross were the least dense (Table 1). S.I. Sifers et al studied 12 bentgrass cultivars and reported similar observations for shoot density. They noted Penn G-2 had the highest shoot density at 3,547 shoots dm^{-2}, and Pennlinks and Penncross had the lowest at 1,353 and 1,369 shoots dm^{-2}. Beard et al reported Penn G-2 had the second highest density among the 13 creeping bentgrass cultivars studied, while Putter, Penneagle and Penncross had the lowest. Our data indicated cultivar differences in turf density exhibited under nontraffic conditions should also be evident under trafficked conditions.

In the fairway study, turf quality response was more varied than the putting green trial. Also, more cultivars were responsive to the compac-

Table 3. Soil physical properties of the 0-to-51-mm surface depth as affected by wear and compaction in a fairway trial grown on sandy loam; sampled in October 2001.

Main effects	Bulk density	Air-filled porosity†	Capillary porosity	K_{sat}
	$Mg\ m^{-3}$	---- $m^3\ m^{-3}$ ---		$mm\ h^{-1}$
No wear	0.97	0.229	0.404	92
Wear	1.07	0.197	0.401	74
No compaction	0.99	0.239	0.386	126
Compaction	1.04	0.188	0.419	40
Source of variation				
Wear	***	*	NS	NS
Compaction	**	**	**	**
Wear x compaction	NS	NS	NS	NS
CV (%)	1.9	7.5	3.6	38.5

* Significant at the 0.05 probability level. ** Significant at the 0.01 probability level. *** Significant at the 0.001 probability level. † Air-filled porosity was determined by subtraction of capillary porosity (measured as water retention at -10 kPa water potential) from total porosity. Total porosity was calculated from bulk density assuming a particle density of 2.65 $Mg\ m^{-3}$.

tion treatment as would be expected based on the greater extent of detrimental soil physical properties responses observed in the fairway trial (Table 3). Wear reduced turf quality of 10 cultivars in no-compaction plots and 12 cultivars in compaction plots in 2000. Pennlinks and Penncross were the only cultivars not affected by wear in compacted or noncompacted plots.

Compaction didn't alter turf quality of 12 cultivars in no-wear plots and nine cultivars in wear plots during 2000. However, compaction decreased turf quality of SR 7200 in plots receiving wear treatments and those receiving no wear treatments. Wear decreased turf quality of almost all cultivars in 2001. Only SR 7200 wasn't affected at both levels of compaction. Compaction didn't alter turf quality of 12 cultivars in no-wear plots and nine cultivars in wear plots in 2001. However, compaction reduced quality of SR 7200 at both levels of wear.

Wear reduced turf density of fewer cultivars (nine cultivars in no-compaction plots and seven in compaction plots) in 2000 than observed in the putting green trial (Table 1). Wear reduced density of Penn G-2, Penn G-1, Providence and SR 1020 in plots receiving compaction or not, whereas wear didn't affect SR 7200, Pennlinks, and Penncross at both levels of compaction.

Compaction decreased turf density of six cultivars in no-wear and wear plots in 2000. Compaction reduced density of Penn G-1 and SR 1020 at both levels of wear. Wear reduced turf density of nine cultivars in no-compaction plots and eleven cultivars in compaction plots in

IMPACT ON THE BUSINESS

Redirection, aerification help prevent traffic woes

By John Walsh

Superintendents who have a mix of *Poa annua* and bentgrass on their courses know *Poa* withstands foot and cart traffic better than bentgrass. Nonetheless, redirection and aerification help Ken Flisek, CGCS, prevent turf from taking a beating from golfers at the private, 18-hole Club at Nevillewood in Pennsylvania.

Flisek maintains *Poa* and bentgrass on the fairways, greens and tees with a $1.4 million budget. He tries to control the traffic on the greens as best he can by spreading it out via hole locations, which are rotated around the green daily.

The 400-member club generates about 24,000 rounds a year, 23,000 of which are with carts. The course features continuous cart paths. There also are signs that say "please park here" to help spread the traffic wear on turf. In particular, Flisek struggles with – and nurses – six greens that lack desired air movement. They sit low and are surrounded by trees.

"On two of those greens, we extended the cart path and brought it behind the green to give golfers two or three options to park and walk on and off the greens," he says.

Flisek is resurfacing the cart paths and widened them to 12 feet with curbs near the greens. Still, it's tricky to prevent traffic from negatively affecting the health of the turf.

"Golfers are creatures of habit," he says. "Some people park in the same spot no matter where the hole is. But our $15 'please park here' signs are worth their weight in gold because they help distribute foot traffic."

Flisek's crew members move the signs when they move the hole locations but the course doesn't have a sign on every green, just the six babied greens.

Compaction is another problem caused by traffic. All greens have it, and it's one reason why Flisek aerifies. He needle-tines the greens every three weeks throughout the summer (four to six times a year) and needle-tines some greens every two weeks. He core aerifies twice a year and might aerify additionally where carts exit and enter the fairway.

Flisek doesn't have traffic problems in the fairways. Rather, they're in the areas between the cart path and fairway – the rough areas, which tend to get concentrated traffic the most.

"We converted bentgrass to *Poa* because it withstood traffic better," he says. "The stands with a larger percentage of *Poa* withstand traffic better and are healthier."

Flisek distributes traffic in the fairways with the help of one-inch-diameter PVC posts painted black with white tops. The posts are moved every day to designate where golfers should exit the fairways.

"The effect of traffic is a huge issue in the rough," he says. "The turf would be down to dirt if we didn't direct the traffic with the posts. Ninety percent of golfers exit where they're supposed to."

Golfers at Nevillewood have a 50-yard area where they're asked to scatter carts. When the weather is dry and hot, the posts are moved closer to the greens.

"If it had a rope, everyone would drive right up to the rope," Flisek says. "With the post, everyone scatters naturally."

For Flisek, it's a simple matter of being proactive.

"We're trying to move traffic around before a problem develops," he says. **GCI**

2001. Penncross and 7001 weren't affected by wear at both levels of compaction. Compaction decreased turf density of seven cultivars in no-wear plots and only three cultivars in wear plots in 2001. SR 7200 and SR 1020 were affected by compaction at both levels of wear.

BENTGRASS POPULATION

Bentgrass population data (Table 4) for mid-season were presented because this time represents a key time of the growing season for golf course turf. Data were representative of populations measured at other times of the year. Generally, bentgrass population decreased as the study progressed and annual bluegrass encroached. Decreased bentgrass population was particularly evident for lower-density cultivars, as well as plots that received wear treatment (Table 4).

In the putting green study, wear decreased bentgrass population of five cultivars in no-compaction plots and seven cultivars in compaction plots measured on July 28, 2000. Wear decreased bentgrass population of Penn G-2, SR 1020 and Pennlinks at both levels of compaction (Table 4). Compaction decreased bentgrass population of only two cultivars: Putter in no-wear plots and SR 7200 in wear plots. Unexpectedly, compaction increased bentgrass population of Putter in wear plots. However, this response was not evident in 2001 (Table 4). Bentgrass populations in Vesper, 7001, Penn A-4 and L-93 didn't change regardless of the level of wear or compaction in 2000. And Vesper, 7001 and Penn A-4 maintained bentgrass populations of 92 percent or more over all levels of wear and compaction.

Bentgrass populations ranged from 48 to 99 percent on Aug. 13, 2001 (Table 4). Wear decreased bentgrass population of nine cultivars in no-compaction plots and seven cultivars in compaction plots and wear decreased bentgrass of Penn G-2, SR 1119, Southshore and SR 1020 at both levels of compaction (Table 4). Compaction decreased bentgrass population of only four cultivars: Southshore in no-wear plots and SR 1119, SR 1020 and Penneagle in wear plots. Interestingly, compaction increased bentgrass population of Pennlinks from 53 to 64 percent in wear plots in 2001 (Table 4). However, turf quality and density data didn't provide insight to explain this response in Pennlinks plots. Moreover, the practical significance of the increased bentgrass population of Pennlinks appeared to be limited since the bentgrass population (64 percent) was low compared to the best performing creeping

Table 4. Interaction effects of wear x compaction (comp) x cultivar on bentgrass populations (% area of plot) in a putting green trial grown on a sandy loam in 2000 and 2001.

	July 28, 2000				Aug. 13, 2001			
Bentgrass	**No wear**	**No wear**	**Wear**	**Wear**	**No wear**	**No wear**	**Wear**	**Wear**
cultivar	**No comp**	**Comp**	**No comp**	**Comp**	**No comp**	**Comp**	**No comp**	**Comp**
	(% cover)†							
Vesper‡	95.7	94.1	94.3	92.6	99.0	96.9	97.7	94.7
7001‡	95.3	95.6	93.5	93.1	99.0	96.7	96.2	93.7
SR 7200‡	94.3	93.3	92.7	89.3	96.7	93.7	92.9	85.2
Penn A-4	95.3	94.6	92.3	93.5	91.5	91.6	79.4	81.2
Penn G-2	95.6	95.6	91.7	90.2	90.3	90.8	75.9	79.8
Century	91.5	93.7	92.7	89.2	86.7	84.6	84.1	73.6
L-93	91.0	90.1	87.9	87.7	81.5	73.4	64.4	69.5
SR 1119	91.9	90.0	82.8	86.5	77.6	71.5	60.4	47.8
Providence	89.2	88.9	86.8	83.3	73.0	76.1	60.9	67.5
Southshore	89.6	91.5	87.4	85.4	81.5	70.7	53.1	55.4
SR 1020	89.5	90.0	84.8	83.3	80.1	70.7	65.0	54.1
Putter	92.7	85.9	85.9	90.7	82.7	74.6	64.7	68.4
Penneagle	89.5	88.6	85.8	83.3	78.0	74.6	68.9	53.1
Pennlinks	90.4	89.6	85.4	84.9	68.3	73.6	53.1	64.4
Penncross	88.8	86.1	86.4	84.1	64.0	66.1	54.1	48.4
LSD $_{0.05}$		3.8				10.7		

† Cover measured as the percent of 209 line-intersect observations of bentgrass (remainder was annual blue grass) over 1.35 m^2 of each plot. ‡ Denotes velvet bentgrass; all others are creeping bentgrass.

bentgrass (81 percent bentgrass for Penn A-4) at that level of traffic. Bentgrass population in Vesper and 7001 plots were 93 percent or greater and weren't significantly affected by the level of wear or compaction.

Beard et al reported Penncross creeping bentgrass had low shoot density (1,369 shoots dm^{-2}) and was less competitive against annual bluegrass encroachment in established nontrafficked turf compared to Penn G-2 and Penn A-1 that had shoot densities above 2,000 shoots dm-2. R.H. Cashel et al found that denser cultivars tolerated traffic stresses on a sand-based root zone and resisted infestation by annual bluegrass overseeding better than older, less dense cultivars.

More cultivars in the fairway trial responded to wear and compaction than in the putting green study with respect to bentgrass populations.

In the fairway study, wear decreased bentgrass populations of most cultivars measured on Aug. 7, 2000. Only 7001 and SR 7200 in no-compaction plots and SR 7200, Penn G-1 and Pennlinks in compaction plots didn't respond to wear. Compaction decreased bentgrass population of eleven cultivars in no-wear plots and five cultivars in wear plots. Compaction decreased bentgrass population of Penn G-2, L-93, Providence and Penneagle at both levels of wear. While all cultivars decreased in bentgrass population because of some level of wear and/or compaction, by Aug. 7, 2000, bentgrass population didn't fall below 90 percent for 7001, 89 percent for SR 7200, 88 percent for Penn G-1 and 87 percent for Penn A-4.

Wear decreased bentgrass populations of almost all cultivars by Aug. 22, 2001, except 7001 and SR 7200 in no-compaction plots and 7001 and Pennlinks in compaction plots. Compaction decreased bentgrass populations of 10 cultivars in no-wear plots and 12 cultivars in wear plots. Compaction decreased bentgrass in eight cultivars regardless of the level of wear: Penn G-2, Century, L-93, SR 1119, Providence, SR 1020, Penneagle and Penncross. 7001 was the only cultivar that didn't lose bentgrass population because of compaction at both levels of wear and maintained a population range of 93 to 99.8 percent across all traffic treatments. Of the creeping bentgrass cultivars, Penn A-4 and Penn G-1 maintained the greatest bentgrass population (83 and 79 percent, respectively) under the most stressful traffic level of wear plus compaction. **GCI**

H. Samaranayake, Ph.D., and T. J. Lawson are research technicians and James Murphy, Ph.D., is an associate extension specialist, all in the department of plant biology and pathology at Rutgers University, New Brunswick, N.J.

Credit: USGA Turfgrass and Environmental Research Online (ISSN 1541-0277), Volume 7, Number 17. Cited literature can be found with this article online at golfcourseindustry.com.

BY MARISA PALMIERI

To the loo

A New York superintendent finds success with self-contained restrooms

Last fall, the staff at Anglebrook Golf Club in Lincondale, N.Y., surveyed its members for feedback about what improvements they sought for the 13-year-old golf course. Resoundingly, members had a common request: restrooms.

Because of the course's layout featuring returning nines, which theoretically allows golfers to use clubhouse restrooms mid-round, bathroom facilities weren't part of the course's original Robert Trent Jones design.

"But sometimes you can be out on that first nine for two hours before you make it back to the clubhouse," says Lou Quick, CGCS. "Members asked for restrooms, so last fall we started to look into options."

When it came time to procuring on-course restrooms, Quick was entering uncharted territory because he hadn't purchased bathrooms before and knew his search required research.

Though he considered it, hiring a contractor to construct a traditional restroom facility out of stone or wood would've been too expensive, Quick says, estimating it would have cost about $80,000.

"In the places where these needed to be, electricity, septic and sewage weren't readily available," he says. "And the cost to send water out there was extremely prohibitive."

Holes five and 14, where the restrooms are located, are hundreds of yards away from the nearest potable water source.

Though Quick considered a number of options, self-contained, composting restroom units were his first choice because they didn't need to be connected to utilities and they don't require extensive maintenance.

"I considered other types, but it came down to this style – the composting," he says.

A bonus was Quick and his maintenance staff were able to reduce costs by installing the units with help from the manufacturer, Clivus Multrum.

Anglebrook, which is corporate owned and not member driven in terms of decision making, didn't require member approval of the purchase.

"It was strictly a staff decision," Quick says. "The g.m. and executive director took my input, and that's how we made the decision."

The club purchased two M54 Trailhead units in April, and they were installed and operating by May in time for peak season. Anglebrook's Trailhead structures each feature a urinal, a foam-flush toilet, a built-in composting system, a waterless hand-washing station and a solar-powered ventilation system. The 3 ounces of water needed each time someone flushes the toilet comes from the course's irrigation system.

Anglebrook, a high-end private club, opted to upgrade its restrooms' facades with stonework and cedar shingles. Photos: Lou Quick/Clivus Multrum.

It was important to add amenities to the inside of the restrooms so they didn't feel like outhouses, superintendent Lou Quick says.

The two units, which were funded out of a capital expenditure budget, cost about $40,000, Quick says, adding the club didn't scrimp on upgrades.

"You can go lower – this was probably the high end," he says.

The Anglebrook staff opted for porcelain toilets instead of fiberglass and upgraded the exterior with a faux stone and cedar shank. Once installed, the restrooms also were appointed with wall art, plants, coat hooks and other extras to please the club's high-end clientele.

"For most of our male membership, it probably doesn't matter, but it's nice for our female members not to have it look like an outhouse," Quick says. "It's more homey."

DIY

Though the manufacturer offers prefabricated units with turnkey installation, Quick decided to assemble and install the units with his crew and manufacturer assistance.

"We're pretty handy around here," he says. "Most facility managers and golf course superintendents have the ability to do this type of thing. Clivus sent out two technical people to help us put together the first unit, and we assembled the second one ourselves."

Though installation required a foundation hole (6 feet wide by 12 feet long by 5 feet deep) to accommodate the waste collection tank, the units don't require a concrete foundation or digging trenches for septic or sewage line hookups. Two of Quick's crewmembers dug the hole in about six hours with a medium-size backhoe.

In all, installation took about two weeks, though the maintenance staff didn't work on

it every day. The foundation hole and basic construction, completed by Anglebrook's staff, took three days. The extra stone work and shingles took a week. The shingle roof and siding were installed by a contractor for about $5,000.

"The beauty of these units is they're self contained," Quick says. "Set up is very fast."

UPKEEP

In addition to the simplicity of installation, Quick selected the self-contained units for their low-maintenance requirements.

The units have underground containers that retain the liquid and solid waste in separate areas. The composting units require the solid waste be mixed with a bulking agent (any type of dried organic matter), such as mulch, which helps promote a colony of natural bacteria. The maintenance staff must occasionally turn over this matter with a garden fork.

"It's the same thing you'd do with any garden compost," Quick says. "Over time, the solid waste and bulking agent break down just like in nature."

The only other maintenance duty is monitoring the liquid tank. When it fills, a septic/sewage company will come and pump it out, according to the state's requirements. Though it's against New York state guidelines, some places consider liquid waste, which is essentially uric acid, to be a compost organic material and allow it to be redistributed as fertilizer, Quick says.

At this time, Quick can't cite actual upkeep costs because he hasn't had to maintain the units yet. But, based on Clivus Multrum's usage statistics, a course like Anglebrook, which generates 9,000 rounds annually, might not have to perform any maintenance for as long as two years.

"It's all based on the amount of people who use the unit," Quick says. **GCI**

A contractor installed the units' shingle roofs and siding for about $5,000.

BY MARISA PALMIERI

Weather watcher

A Web-based monitoring system serves the maintenance staff at Evanston Golf Club well

There are numerous reasons Dan Charlton swears by his weather-monitoring system, but the efficiency it creates in terms of scheduling is the No. 1 benefit to him.

It's a bright, sunny morning in Skokie, Ill., one of the first days of fall. The maintenance staff at Evanston Golf Club has plans to seed part of the facility's nursery, but before superintendent Dan Charlton gives the go-ahead, he has to check the weather.

With seed prices rising along with everything else, Charlton's not going to OK preparations for an early afternoon seeding project if there's a chance of rain showers.

Charlton logs on to his Web-based weather-monitoring system, runs the radar and, sure enough, there's a storm coming in from Milwaukee.

"We need it to be dry so all the seed doesn't wash away," he says. "So I'll monitor this storm, and if it's going to come in, we'll find other things to do today."

There are a number of reasons Charlton swears by his weather-monitoring system, but the efficiency it creates in terms of scheduling is the No. 1 benefit to him.

"It's a great scheduling tool," he says. "Not only with our daily routines, but also with the forecast throughout the week. If it's predicting rain two or three days from now, we'll mow or fertilize before that."

Ultimately, a well-scheduled maintenance crew saves money in terms of labor, Charlton says. But savings don't stop at labor costs. Like in the nursery seeding instance, accurate weather-monitoring systems can pay for themselves in terms of materials, too.

"All it takes is part of an application to get washed away because you were unaware of a weather system coming in," he says. "Preventing that could pay for the weather-monitoring system for an entire year."

Evanston Golf Club uses the online version of DTN/Meteorlogix's WeatherSentry Turf Edition, the subscription for which Charlton estimates is $95 a month. Before

upgrading to the online version, the club had a stand-alone system, which required a monitor and an on-site satellite dish. Because Charlton wasn't working at Evanston when this unit was purchased, he's unsure about the initial hardware and set-up costs.

SHOPPING AROUND

Last year, when Charlton's subscription for the Meteorlogix system ended, he shopped around to see if he could find any free or cheaper services that provide similar results. Alternatives he considered included the National Weather Service, a free site called Intellicast and a local television station's weather page.

"I checked those out for about a month to see what I liked better," he says. "But I ended up renewing my subscription because I couldn't find anything that was better or equal for less."

At the time he renewed, Charlton also added the service's Lightning Manager feature. At first he was hesitant to add the lightning-protection upgrade because the facility already has a Thor Guard lightning prediction and warning system. But now he's glad he did – the systems complement each other well.

"My system is more of a check of Thor Guard," he says, noting the real benefit to that product is its sirens, which take the human element out of warning golfers and employees a lightning strike is possible.

The WeatherSentry lightning feature tells him if lightning strikes within a set radius and has tracking capabilities that allow him to see what direction the storm is coming from.

"If we got rid of Thor Guard, it would be my duty to sit in front of the computer and then run outside with a bull horn to warn people and hope they hear me," Charlton says. "But if I can predict a storm faster than Thor Guard and can get employees to a safe area, that's invaluable. You can't put a price tag on preventing someone from getting injured or killed because a storm came in."

Charlton's 17 maintenance employees appreciate the warnings, too – they keep them safe and dry.

"I always make sure to get them off the course before the heaviest rains come," he says.

Charlton can even check the radar from out of town on his smartphone and advise his staff about the weather. He recalls one instance when he was on the road for a long weekend and checked the weather at the course.

"I called my assistants and told them a storm was coming, but they argued it was a bright, sunny day," he says. "I told them I checked the radar and they better pull it in. Twenty minutes later they got hit with a huge storm. Later, someone at the club told me they made the comment, 'Here he is halfway across the country and he still knows the weather better than we do.'" GCI

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PROVIDE THE RIGHT ATMOSPHERE

Todd Raisch, CGCS, at Ridgewood Country Club in Paramus, N.J., hosted the 2008 Barclays Championship in August. Here's what he had to say about preparing for it.

Q Todd, you learned Ridgewood would host the Barclays Championship in January this year. How did this impact your plans and maintenance schedule?

A Ridgewood officials had been talking with PGA Tour officials and felt there was a good chance we would host the event, so we had a preliminary plan about what would be required. When we were given the official notice in mid-January, the club began meeting the requirements for the golf course, which included:

- Determining the best 18-hole routing from the existing 27 holes. Criteria included a layout that would challenge the competitors and allow proper flow throughout the golf course for play and spectators.
- Placing corporate tents, parking lots, concession stands, clubhouse requirements, trailers and perimeter security.
- Working with the PGA Tour to evaluate and determine potential course design changes to test the players. The PGA Tour's John Mutch began making regular visits to discuss these options. Advance visits included a discussion about the number of trees that needed to be removed and new tees to be constructed for length, angle and location.
- Getting board approval for on-course changes that also had to be reviewed with Gil Hanse, consulting architect. Once approved, the golf course builder was scheduled for immediate work in the spring.

With new tees, I was concerned about the impact of shade from the surrounding trees on turf health. I contacted a local tree company to reschedule the original planned work.

The purpose of the new tees was to meet the PGA Tour's needs for the tournament, but Ridgewood's investment needed to satisfy our membership, too.

Q Being new to the tournament scene, what was your greatest concern, and what were the items that affected you and the club most?

A The greatest concern was hosting an event in mid-August. We were trying to keep two types of turfgrass agronomics and playing conditions for the putting greens: one to keep membership satisfied and the other to prepare for the world's best players. New Jersey experienced an unusual August – it was relatively cool and mild – which helped our plans. However, our low-handicap club members felt they should have Tour-like conditions, not understanding this level of conditioning is created for one-week stints. My goal for appeasing our membership was to attempt, without sacrificing turf, to provide a low-handicap challenge by:

- Establishing a height of cut close to what the Tour agronomists expected to see during the event, which was 0.11. Weather allowed us to maintain this level throughout the summer and into the event.
- Implementing regular fertility, sufficient topdressing depth within the canopy and limited surface grooming methods.
- Applying preventive fungicides and growth regulators properly to help battle anthracnose and help maintain the lower height of cut.
- Single-cutting greens regularly using pedestrian mowers with solid rollers.
- Rolling the greens to reduce surface stress to the plant.
- Enhancing our golf course set-up practices, focusing on hole locations. We used a more difficult but fair location to raise the competitive bar and create a fun atmosphere.

Q Your demeanor and patience never faltered the entire week. What's your secret?

A I tried to remain low-key and calm. Operational impacts that damage the fine turf outside the ropes happen. I have little control over those. We tried to minimize what occurred outside the ropes by assigning an associate superintendent to attend operation meetings to keep us informed of what was coming. We had regular vendor meetings to communicate what, where and how they could get their equipment, vehicles and staff to the appropriate locations on the course without bumping into us or other contractors. By meeting with vendors, we kept the damage to a minimum until about 10 days out where activities increase and large truck ruts can cause broken irrigation lines, power outages, broken cart paths and curbing.

One suggestion to create a relaxed and communicative atmosphere within the volunteer ranks is to appoint a volunteer chairman. I used a local turf supply vendor and good friend, Ken Kubik of Grass Roots Turf Supply. Ken:

- Organized all the volunteer forms and assigning people to their requested shifts.
- Created and organized directions to the course and parking areas for each shift.
- Provided sign-in and greeting areas where volunteers picked up the tournament packet, received their assignment and answered various routine questions.
- Provided everyone with a locker and key for personal effects, ushered people to the meetings and made sure breakfast was served on time.
- Coordinated the Jacobsen/Textron tournament support trailer that assists superintendents and their mechanics with additional workload and provides the volunteers with an area to relax and learn.
- Made sure everyone met those they didn't know.

Each morning when the volunteers checked in, they received a raffle ticket for a small prize Ken auctioned off before the morning staff and assignment meeting. This is a good idea to wake up, organize and relax people. This friendly atmosphere allowed for a meet-and-greet scene for an exchange of agronomic ideas, and it reduced my personal workload, keeping me relaxed. GCI

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.

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.

Protect the hole

John Kois, golf course superintendent at the Hanover Country Club in Ashland, Va., modified a Standard Golf Co. model number 30100 cup setter to protect the hole from damage when using the Smithco X-Press greens roller. Kois also uses the protector when the greens are rolled.

Kois removed the handle and surrounds from the cup setter, leaving just the 4.25-inch-diameter portion that fits on top of the Standard Golf model number ST 2000 plastic cup. Kois drilled 5/16-inch-diameter holes on either side of the cup and glued a 1/4-inch-diameter aluminum handle in place using J-B Weld epoxy.

The materials cost less than $100, and the labor involved took one hour.

Have fan, will travel

At the Hanover Country Club in Ashland, Va., two creeping bentgrass greens have restricted air movement. And because of budget limitations, golf course superintendent John Kois doesn't have enough fans to put one on each green. So, he devised a portable system for moving fans to wherever he needs them.

Kois welded a 2-inch-diameter mounting pipe base to the bottom plate of a dolly so it can be moved to any location around the green. The fan is operated by a portable generator. Kois places a synthetic turf mat over the top of the generator to keep it dry from rainfall and irrigation. A 10-foot-long power cord leading from the generator to the fan makes the fan easier to move.

The fans and generators were in the club's inventory, Kois bought the dolly at a local hardware store and the welding materials cost about $100. The mechanic's labor took about an hour and a half. **GCI**

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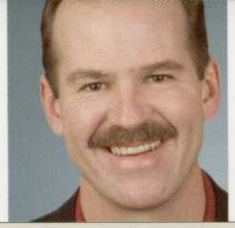

Pat Jones is president of Flagstick LLC, a consulting firm that provides sales and marketing intelligence to green industry businesses. He can be reached at psjhawk@cox.net or 440-478-4763.

BUMMED OUT?

For most of my adult life, it's been my habit to wake up early, make a pot of coffee, fire up a Marlboro and read the morning paper from front to back. But lately, it's gotten to the point where I pretty much just read the comics page and the sports section because the rest of the thing just bums me out.

As I write this in late September, we're in the midst of a global financial free fall. Major banks, investment firms and insurance companies are collapsing more dramatically than Greg Norman at the 1996 Masters. The stock market resembles the flight path of a Duncan yo-yo. Hundreds of thousands of jobs are going away, and, as Springsteen sang, they won't be comin' back.

Pump prices are still ludicrous, and who knows what natural gas will cost this winter. An unprecedented number of people face the prospect of losing their homes to foreclosure. Many more of us are discovering the equity we thought we had in our homes just went bye-bye.

We're in the midst of a presidential election that held early promise for rationality but has degenerated into yet another slimy and slanderous exercise focused more on trivial crap (remember "lipstick on a pig" and "sex ed for kindergartners"?) than on the serious, urgent issues we face.

And then, of course, there's the war. Almost 200,000 young men and women are doing their duty in the midst of a godforsaken desert hoping against hope they'll make it through the day without getting blown up by some lunatic.

Finally – at the risk of being trivial myself – there's the state of our humble little industry. Rounds are down or flat. Club memberships are dwindling. Nongolf revenue, such as food-and-beverage and events, are falling, and nobody these days is rushing to the pro shop to buy the latest, greatest $800 driver.

An unprecedented number of facilities are for sale, in receivership or simply closing up and hoping to sell off the land. Municipalities are bailing out of golf because they can't justify losing hundreds of thousands of dollars annually on an enterprise-based recreational activity. A ton of courses under management company umbrellas ultimately are owned by the aforementioned investment firms (e.g., Goldman Sachs), and who the hell knows what will happen to them.

To top things off, Tiger's making babies instead of birdies and – sans fist pumping and red shirts on Sunday – the glamour part of our game that engages and attracts many players is as bland as day-old tapioca pudding.

In short, it's easy to be bummed out about our nation and our industry right now.

> By gradually reducing the number of ill-thought-out-facilities ... the market will emerge stronger than before.

As a citizen of this nation, I have my opinions about the economy, politics, the election and the war. I won't bore you with those. But, as a citizen of the golf business, I feel compelled to share my opinions about our situation ... and why, just maybe, there are many reasons not to be too bummed out. So, here's the good news:

• Real estate will bounce back. It's a nearly immutable law that land values and housing prices might wane for a year or two, but eventually they will start to climb again. As goes real estate, so goes real-estate-driven golf.

• A shocking number of people still are playing regularly. The weather is still a far bigger factor in rounds played data than the economy or anything else. Golf is a lifestyle for a huge number of people, and they might be buying used Pro-V1s at Target instead of new ones at the shop, but they're still playing.

• Check out the October issue of Golf Digest for an article that argues there's never been a better time to join a club. It's true. People who've always wanted to join are seeing ground-floor opportunities to become private club members. Smart clubs sense this and are starting to market more aggressively.

• The overall market is slowly correcting itself. By gradually reducing the number of ill-thought-out facilities and poorly operated courses, the market will emerge stronger than before. There's no reason to believe there's a "crash-and-burn" event on the horizon (or, conversely, any huge upswing awaiting us). Even if demand is flat, supply is gradually falling, and we'll eventually get back to par, economically speaking.

• Smart operators will view this climate as an opportunity instead of a problem. As I've said before, when the going gets tough, the tough steal market share. Look for simple opportunities to add value to the golf experience. Get aggressive about direct marketing and media relations within 45 miles of your facility. Create a world-class corporate outing package. Make yourself the premier league location in your area. Emphasize service with your staff. Quit bemoaning the situation, get off your butt and take business away from the competition.

• No Tiger? No problem. Did you see the Ryder Cup? Think the dynamic duo of Anthony Kim and Boo Weekly didn't help us with a couple of important demographics? Anytime we can appeal to Generation Y and the Skoal-chewing fans of the Blue Collar Comedy Tour in one event is a big win for the industry.

We're incredibly fortunate to be in a business that combines the beauty of the outdoors with a compelling and addictive game. We're equally fortunate our business model – even if imperfect at times – is inherently solid. Those who hunker down and wait for things to turn around will survive. Those who take the bull by the horns and manage for growth will thrive. Which path will you take? GCI


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