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Jose Rocha, left,
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pictured from left to right:
Bob Farren, CGCS, Golf Course and Grounds Manager
Paul Jett, CGCS, Superintendent Pinehurst No. 2

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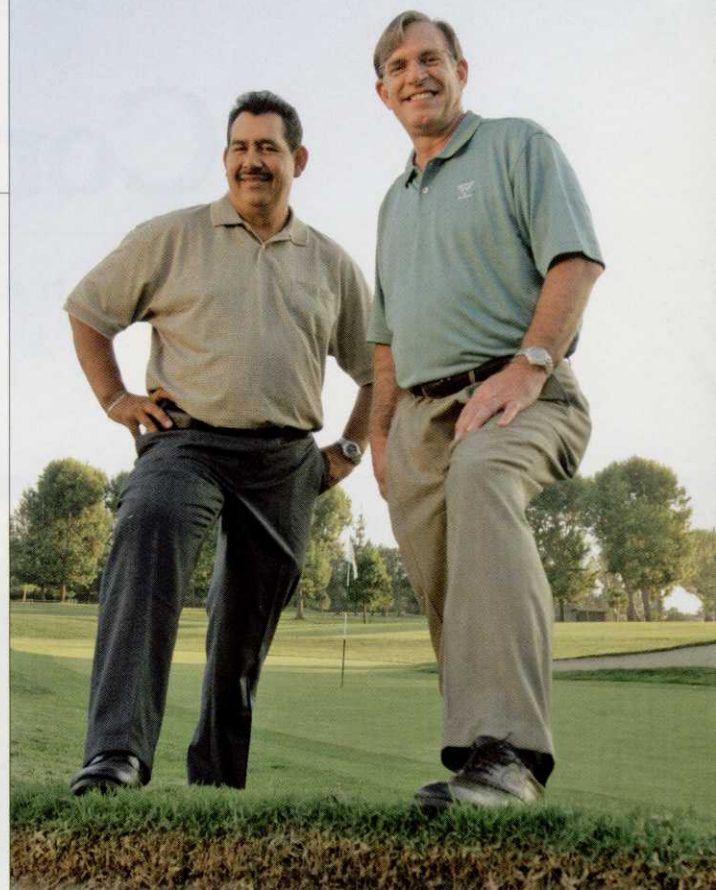
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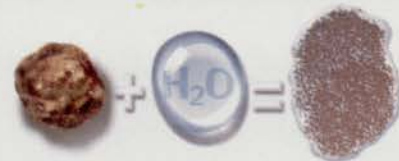


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EDITORIAL MISSION STATEMENT:

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

UNDER THE RADAR

While writing this month's cover story, I learned more about an important and invaluable group of people in the industry who are overlooked more than ball marks on a muni par-3 green – longtime assistant golf course superintendents.

There are commonalities among them. They tend to fly under the radar. Many of these hard-working guys are Hispanic, quiet, humble and not as polished or politically savvy as some of the high-profile assistant superintendents in the business. Many don't have a college degree and stay at the same facility for their entire careers. The key commonality is their loyalty and dependability.

Longtime assistants make superintendents' jobs much easier because they've earned the respect of the staff, can manage a crew and know the intricacies of a facility inside and out. They can run the show, so to speak, when needed. A superintendent can leave the course for a week-long vacation with his family without worrying about coming back to dead grass, irate club members, a pissed-off owner or some other course-related crisis. Thanks to these guys, superintendents sleep well.

So, if longtime assistants are this capable, why aren't they becoming golf course superintendents? Maybe some of them are. If you know of a longtime assistant superintendent who came out on top of a job search for a head superintendent position, let me know. It would make great fodder for an article.

Experience is the primary factor of success, but the four-year turfgrass degree takes one a lot farther in the industry. Given all the effort the GCSAA and other organization have put into promoting college degrees, who can blame owners for passing up a longtime assistant for an up-and-coming young whippersnapper with a sheepskin?

Money is a determining factor at most facilities, and young, college-educated assistants are probably less expensive than a 20-year assistant. Additionally, the market is flooded with turfgrass graduates looking to become superintendents within a five-year period. The job market is extremely competitive right now. It's taking longer for many well-qualified assistants to get to the next level.

Life experiences prepare one to deal with others more than a classroom ever will. Many longtime assistants are in charge of hiring crewmembers, and they usually can tell a good employee right off the bat because they've seen all kinds come and go throughout the years. Despite the lack of formal education, longtime assistants have their upside.

Owners and boards should think more about hiring these longtime assistants for head superintendent jobs. Granted, not all longtime assistants want to become superintendents. That's fine. There's a place for career assistants in the industry. They're valuable beyond belief. But what about the longtime assistants who want to move to the next level? Many are trying to earn their associate or bachelor's degree to become more valuable to employers and better themselves. Considering crew management and budgeting experience, it might be worth it for facilities with tight budgets to hire these type of guys. They could hire a valuable assistant as a superintendent for less. It might pay off in the long run.

Longtime assistants deserve more respect and recognition from the industry as a whole. I'll do my part by giving them that in this space. If you're an owner or manager at a facility who has a longtime assistant, make sure you give him the respect and recognition he deserves. **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.



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Clarification

In the article, "The need to justify," on page 102 in the April 2007 issue, UMaxx stabilized nitrogen was referred to as time-release fertilizer. Some questioned the accuracy of that.

Agrotain International uses stabilized nitrogen technology to describe its golf industry products. The result of slow-release, controlled-release or stabilized nitrogen is extended nitrogen availability and performance. Each has certain features and benefits, and use of each depends on which tool a turf manager chooses.

The following definitions are used by the American Association of Plant Food Control Officials to help consumers measure accurate labeling by fertilizer manufacturers. The T definitions refer to fertilizers and compound fertilizers. The N definitions are specific to nitrogen products.

T-21: A slow-release fertilizer that contains sources of water soluble nutrients, release of which in the soil is controlled by a coating applied to the fertilizer.

T-29: A slow- or controlled-release fertilizer that contains a plant nutrient in a form that delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a referenced rapidly available nutrient fertilizer such as ammonium nitrate or urea, ammonium phosphate or potassium chloride. Such delay of initial availability or extended time of continued availability may occur by a variety of mechanisms. These include controlled water solubility of the material ... by slow hydrolysis of water-soluble, low molecular weight compounds or by other unknown means.

T-32: A slow-release fertilizer consisting of particles coated with polymer resin. It's a source of slowly available plant nutrients.

T-40: A nitrogen stabilizer substance added to a fertilizer that extends the time the nitrogen component of the fertilizer remains in the soil in the urea or ammoniacal form.

T-41: A fertilizer to which a nitrogen stabilizer has been added.

T-45: A urease inhibitor substance that inhibits hydrolytic action on urea by the urease enzyme. When applied to soils, the effect of the inhibitor is less urea nitrogen lost by ammonia volatilization.

T-46: An N-(n-butyl) thiophosphoric

triamide (NBPT) compound that's a normal butyl derivative of thiophosphoric triamides and a urease inhibitor.

T-49: A nitrification inhibitor substance that inhibits the biological oxidation of ammoniacal nitrogen to nitrate nitrogen.

T-70: Enhanced efficiency fertilizer products with characteristics that minimize the potential of nutrient losses to the environment, as compared to a reference soluble product.

N-24: Ureaform fertilizer materials are reaction products of urea and formaldehyde that contain at least 35 percent nitrogen, largely in insoluble but slowly available form. The water insoluble content shall be at least 60 percent of the total nitrogen. The water insoluble nitrogen shall have an activity index of not less than 40 percent when determined by the appropriate AOAC International method.

N-25: Urea-formaldehyde products shall have the percentage of total nitrogen as part of the product name. For example, 20 percent N urea-formaldehyde. The water insoluble nitrogen shall be at least 60 percent of the total nitrogen. The activity index of the water insoluble nitrogen shall be not less than 40 percent by the AOAC International method for urea-formaldehyde products or not less than 50 percent by the AOAC International alkaline permanganate method or 80 percent by the neutral permanganate method.

N-26: Isobutylidene diurea is a condensation product of isobutyraldehyde and urea having a total nitrogen content of 30 percent. It's a source of slowly available nitrogen by virtue of particle size, solubility decreasing with increase in particle size. Material conforming to the description of a granular fertilizer will have 90 percent of its nitrogen content in the water insoluble form before grinding as tested by an AOAC International method.

N-27: A slow-release fertilizer consisting of urea particles coated with sulfur usually further coated with a sealant and conditioner. It typically contains about 30 percent to 40 percent nitrogen and about 10 percent to 30 percent sulfur.

N-28: Reaction products of urea and formaldehyde that contain at least 30 percent nitrogen, largely in the water soluble form. Some slowly available nitrogen products are present. Stable aqueous solutions might be prepared from these materials. **GCI**

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Inaugural tour



John Miller, CGCS

John Miller, CGCS, at The Golf Club at Yankee Trace in Centerville, Ohio, will walk into uncharted territory as he takes the reins as the first agronomist for the Ladies Professional Golf Association.

Officially, the Golf Course Superintendents Association of America will employ Miller, but he will work closely with the LPGA to visit the tournament's host courses and help them prepare sites. He will work with the courses' superintendents and staff to make sure the courses have all the equipment and staff necessary to run an LPGA event.

This is the first position of its kind for the GCSAA and LPGA. When the LPGA created the position, it turned to the organization with the most experience with agronomists, Miller says. While some question whether a conflict of interest would arise working for both organizations, Miller says the partnership will only make each entity stronger because they're working together.

"It's going to be a win-win situation for both associations," he says.

Miller doesn't have to move from southern Ohio for the job, but he's required to travel a lot. He anticipates visiting about 34 tournament sites per year.

"Most sites will have been on the tour already, so there will be few issues," he says. "We'll look at any inconsistencies. If it's a new site, we will look at it to see what needs to be done to get it ready."

There are certain amenities the LPGA will require, and Miller will see those requirements are met. Most likely, he'll visit the

site of a tournament 10 to 12 weeks ahead of time and make recommendations, if needed, for the grounds and other amenities, including the locker rooms, hospitality areas and other accommodations a tour host provides. Miller will return to the tour site about a week before the event to assist with final preparations. By the time the tournament starts, Miller's job is done.

When the GCSAA announced its nationwide search for the newly created position, it piqued Miller's interest.

"We need to look at what the architect was saying when the course was built. If we slow down the greens a little, we'll get some of those great hole locations back."

— JOHN MILLER

"I've wanted to do this for a long time," he says. "I had been looking for a job with the PGA Tour before this opportunity came up. There's something about the challenge of tour golf I enjoy."

With increasing emphasis on faster greens and greener fairways, Miller hopes golfers' expectations will come back to reality eventually. Some courses are being passed up because of the increasingly rigorous standards.

"We need to look at what the architect was saying when the course was built," he says. "If we slow down the greens a little, we'll get some of those great hole locations back. People don't understand that courses are

peaked for that particular event. Golfers think it's that way all the time."

Miller will prepare for the job with a month of training – two weeks with each organization. He gained experience with tournaments while at Yankee Trace, hosting the Nationwide Tour's Dayton Open, which the club hosted from 1999 to 2003. He also has taught classes for the GCSAA about hosting tournaments.

Prior to his 14 years at Yankee Trace, Miller was superintendent at Indian Springs Golf Course

in Mechanicsburg, Ohio, and London (Ohio) Golf Club. He earned his bachelor's degree in agronomy from Ohio State University.

Miller serves on the GCSAA's standards/bylaws committee and previously was the vice chairman for the education and certification committees. He also is a member of the Miami Valley GCSA and served on the education planning committee for the Ohio Turfgrass Foundation. Additionally, Miller is past president of Play Golf Ohio.

Miller's assistant, Terry Taylor, took over as superintendent at Yankee Trace when Miller started his new role Aug. 13.

— Heather Wood



Scottish project takes shape

David Southworth is getting a lesson in the purist's view of golf for his new development project. Construction began last spring on the Machrihanish Dunes golf course on Isle of Kintyre on the southwest coast of Scotland. It's next to Old Tom Morris' Machrihanish Golf Club and across the island from St. Andrews.

This is the first Scottish course project for Southworth, president of Southworth Development and a partner in Brightside Leisure Development, the group developing Machrihanish Dunes. Australian entrepreneur Brian Keating, one of the partners in the project, came upon the site.

"Keating researched management companies and golf developers and contacted us, and that started the ball rolling," Southworth says.

In addition to the course, the project also includes refurbishing the Royal Hotel in the nearby Campbeltown and the development of the Kintyre Hotel and Cottages and the Residences at Machrihanish Bay, which will overlook the course.

Machrihanish Dunes and the Royal Hotel are scheduled to open in the summer of 2008, followed by the Kintyre Hotel in the fall of 2008. The residences will be the last part of the development.

David McLay Kidd, the architect who designed Bandon Dunes in Oregon (currently ranked No. 2 in the world by Golf Digest) and the Castle Course at St. Andrews, designed Machrihanish Dunes. Kidd seemed like a natural choice for the pure, links-style course.

"It's a location we've always dreamed of going to," Southworth says. "We've built courses in the desert, the tropics and places in between. Although there are differences between those courses, there are many similarities. Building a links course is whole different process, and it's been fascinating to learn. It was described to me by David McLay Kidd as finding a fairway and building a tee and green around it."

Machrihanish Dunes has another connection to St. Andrews – Euan Grant. Grant, formerly the head greenkeeper at the Old Course, will manage the greens and construction/greenkeeping



So far, four greens and five sets of tees have been shaped at Machrihanish.

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crew at Southworth's new course. Keating approached Grant about managing the grounds at Machrihanish Dunes.

"I was sold on the project after a quick visit to the site," Grant says.

Grant is monitoring the grow-in. So far, four greens and five sets of tees have been shaped.

"The site is pure sand," Grant says. "Greens and tees are constructed by

removing the existing turf, shaping, installing irrigation and seeding. It's simplistic. The seed being used on the greens is a Barenbrug mix of slender creeping red and chewings fescues."

For the tees, a 5-percent browntop bentgrass was added, and fewer cultivars of the fescues were used.

Patching damaged areas is another task of the maintenance schedule.

"We're reusing the turf to patch rabbit damage and damaged areas from stock grazing through the winter months, including high, exposed areas," Grant says. "It's labor-intensive, fiddly work. We're planning ahead to prepare areas before cutting turf from the next construction site."

The undulating areas of the course are comparable to St. Andrews, Grant says, adding that Machrihanish is more remote, making it more of a challenge for golfers who want to visit.

The land is within an area of designated Special Site of Scientific Interest, the first of its kind. This designation has led to several restrictions on the project and the need to work closely with the Scottish Natural Heritage, Grant says.

Grant also is intrigued by the process of building the tees and greens around the existing conditions.


"No other project is working with the existing sward in such a way as to only be mowing it out – the natural undulations are fantastic and lend themselves so well to golfing links," Grant says. "It's the same land Old Tom Morris was heard to say, 'the Lord must have had golf in his eyes when he created this place.'" – HW

For more information, visit www.machdunes.com.



Construction began last spring on the Machrihanish Dunes golf course.


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Irrigation of the future in 1973

Jerry Dinelli used to tell people water would one day be more expensive than oil. In Chicago during the 1970s, it was difficult for people to grasp this concept.

"Because we're next to Lake Michigan, people thought we'd never run out of water," Dinelli says.

But Dinelli, now 67, saw the water level of the 3-acre lake at Northmoor Country Club in Highland Park, Ill., where he was keeper of the greens, drop. One reason for this was because the course used water from the lake for its irrigation system.

Wanting to make the most of the resource and fearing it wouldn't be around forever, Dinelli proposed a system that would help him and his crew keep better tabs on the water that was used on the course so there would be less waste. He went before the green committee and proposed a computerized system – something that hadn't been done up to that point, according to Dinelli. The country club's board of directors wasn't sold.

"I attended a big dinner meeting where I gave a speech of what was going to happen," he says. "All the members voted against it. The president of club, who is a big, worldwide attorney, said, 'I believe in what Jerry's doing, and I'm going ahead with that.'"

About three years passed while Dinelli got everyone on board and had the computer

Jerry Dinelli, former keeper of the greens at Northmoor Country Club in Highland Park, Ill., works on plans for a computerized irrigation system in the 1970s.



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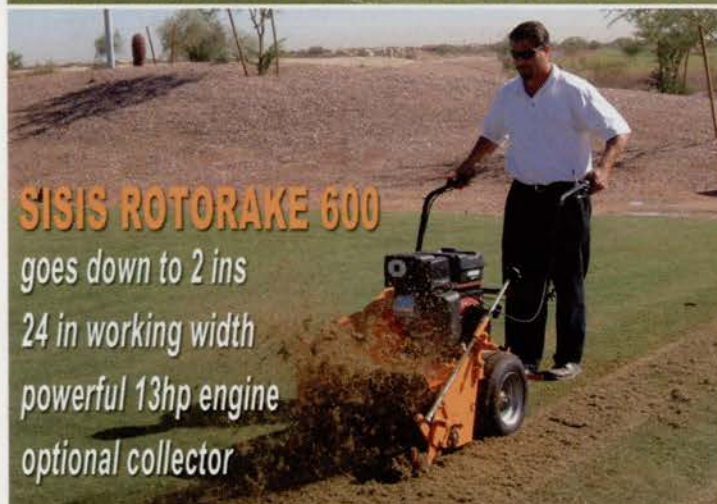
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made - a project that cost about \$278,000.

"It wasn't that simple," he says. "It took time to do research because nobody had anything like this. I had to convince the architect that we could do it."

It paid off. It worked the first time he fired it up. The system, which took up most of the space in a 10-foot-by-12-foot room, computerized all the irrigation heads on the 27-hole course, which was almost a mile long. The computer would spot diseases through an infrared camera, and activate the sprinkler close to the diseased turf. Dinelli also ran fertilizer through the sprinkler heads this way.

The computer controlled an existing pump house that was remodeled when the computer was installed. There was a bank of three different-sized pumps to control the three zones of the irrigation system, which consisted of 725 new sprinkler heads, some in pairs down the fairway. The sprinkler heads were controlled one-by-one if needed - a new idea at the time. It saved the course from using more water than necessary to maintain the plants' health.

"Why pump an extra 100,000 gallons when you don't need it?" Dinelli asks.

Dinelli had other ideas dubbed "crazy" by colleagues as well. They included putting radios inside his crew's helmets, spraying fungicides from a helicopter and placing video cameras inside birdhouses to monitor the conditions of the ground and check for golfers before turning on spray heads.

But with the price of water outpacing gasoline at \$4 per gallon and computerized irrigation systems the norm, nobody's calling Dinelli crazy anymore - at least when it comes to irrigation. - HW

Sweet emotion

When the amateur golfer can envision his or her name on the leader board at the Masters, the golfer will be more likely to pick up the clubs and head to the local course. This is the premise the recently formed Drive Marketing company is using to help golf courses sell more rounds.

The Atlanta-based company sells a marketing service to courses based on the idea that emotion sells.

"What golfer wouldn't want to see his name on a leader board or on a trophy hoisted above his head?" says Tom Meyers, co-founder and chief strategy officer of Drive Marketing. "We want to tap into those aspirational drivers that motivate golfers to purchase."

Meyers, along with co-founder David Neis, have promoted several large, well-known brands including Life Savers, Mizuno, Maxfli and Russell Athletic. Playing to the golfer's emotional side is something that works for all sports and is a strategy Meyers used at Russell. He uses a similar tactic with almost 50 golf course clients at his new company.

Targeted golfers receive an oversized postcard in the mail. The image on the card includes the golfer's name in a spot where Tiger Woods' name would usually appear - on a leader board, a Masters trophy, a caddie's bib or another object that would be found at a



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Drive Marketing is using emotions to help golf courses sell more rounds of golf.

"When prospective customers receive the piece in the mail, it's something they see and connect with easily," Meyers says.

The company uses a database to secure a list of avid golfers that are within a chosen radius of a course.

"We're not wasting advertising dollars by sending them to everyone in the area," Meyers says.

Response rates and times; overall revenue; and profits with a targeted, personalized marketing piece can be as much as 30-plus percentage points more effective than direct mail pieces, Meyers says.

Once a golfer is attracted to a course, it's up to the course's staff to continue providing those aspirational drivers for the golfers so they're compelled to return, Meyers says. — HW

For more information about the company, visit www.drive-marketing.com. GCI

professional tournament. This puts the potential customer inside the ropes, as Meyer says. It makes them visualize themselves in that situation.

"It can tap into an emotional dimension," he says.

Drive's service involves a turnkey process. Clients are charged per card, with everything

included in that price. Drive develops a professional design, which is tailored to each recipient with his or her name. It can include the course's logo, image and a promotional offer. The postcards are printed on oversized, high-gloss material and sent to as many prospective customers in the target area as a course specifies.



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Scott White, former assistant golf course superintendent at The Links at Carillon Golf Club in Plainfield, Ill., is the new superintendent at Mauh-Nah-Tee See Country Club in Rockford, Ill. He can be reached at purdueturf@comcast.net or 815-302-4834.

THE FORK IN THE CART PATH

Assistant superintendents face many hurdles while gaining experience and working toward the ultimate goal of becoming a golf course superintendent. One can fill a resume with the best education money can buy, combine it with internships and work experience at the finest country clubs, and still have trouble breaking through into a superintendent position. With 10 years under my belt as an assistant superintendent, I know the frustration and the obstacles facing today's assistants waiting to get their big break.

The industry is overloaded with talented assistants with no place to go. Eventually, many assistants come to a fork in the road – or, I guess, a fork in the cart path – and have to decide which direction to go. When facing such a big decision, assistants have to weigh and calculate many factors such as buying a house, starting a family and the cost of living. It's not easy, and too many of the best assistant superintendents just give up and leave the golf industry. A question many ask is: "When is it time to get out before it's too late?"

In the summer of 2006, I faced the same question. With a wife, two-year-old son and large mortgage payment, I needed to decide to tough it out or get out. There are many careers with a larger paycheck and better hours, but was it time for me to make a new start? I began to evaluate my situation. I was in the upper pay bracket for Chicago assistants and had finished second for the fourth time in a superintendent job search. Frustration was setting in, and I felt the window of opportunity for moving into a superintendent position was closing quickly. I repeatedly asked myself, "Will it ever happen?"

After talking to my family and Mark Thibault, the superintendent I worked for,

I started to pursue other options. I decided to sit my dear old dad down and discuss becoming a journeyman lineman. For 37 years, my father has worked as a lineman in Illinois mainly, but he also helped to restore power after events such as ice storms and Hurricane Katrina. The life of a journeyman lineman is rewarding and can provide a good life for a family. Sounds good, right?

In September, I passed all the tests and interviews to make it into climbing school with a job offer at the end of a weeklong climbing audition. I believed it was time to leave the golf industry, and with an un-



derstanding superintendent, I was able to pursue the opportunity. I spent the first few days climbing and learning difficult skills atop a variety of power poles – it made growing grass look easy. On day four, after climbing up and down for what seemed to be the one hundredth time, I took a moment to rest before my descent. While sitting atop a 35-foot pole, I viewed the surrounding landscape and began to think about the early mornings touring the golf course and taking my son Jackson for cart rides in the evenings. Maybe I was delirious from exhaustion, or maybe I have chloro-thalonil in my veins, but I decided to leave climbing poles to my father.

After returning to my post as assistant superintendent at The Links at Carillon in Plainfield, Ill., I refocused my goals to networking and staying involved with my local association, the Midwestern Association of Golf Course Superintendents. By researching my options to leave, I found where I belong and discovered a newfound respect for what my father did to provide for his family. I also became more relaxed at work and home, focusing on watching my son grow up on the golf course.

It's almost a year later, and with a little luck and a lot of preparation, I made it to the next level. I was starting to think I had a better chance of finding Bigfoot, but on July 2, I started my first day as a golf course superintendent at Mauh-Nah-Tee-See Country Club in Rockford, Ill. It feels great to have my feet on the ground and not on a power pole.

Everyone's path is different and there's no mathematical formula to obtain a superintendent job, but I have a few items to offer assistants in their pursuit of one:

Network. Get to know your area superintendents, assistants and salesmen. It was a fellow assistant who led me to my position. The Mauh-Nah-Tee-See Country Club position was never advertised, and without networking, I would've never known of this great

opportunity.

Communication. Tell your superintendent, golf professional, green chairman or owner about your intentions to move to a superintendent position. You never know who has a connection that gets you the interview and ultimately the position.

Preparation. Actively update your resume and be ready to interview. Jobs open and fill in a matter of days. There's no time to hesitate.

Luck. A little luck never hurts either.

It's not easy out there, but if you're ready to take the correct fork in the cart path when you reach it, you'll eventually make it to the top. **GCI**

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Jeffrey D. Brauer is a licensed golf course architect and president of GolfScapes, a golf course design firm in Arlington, Texas. Brauer, a past president of the American Society of Golf Course Architects, can be reached at jeff@jeffreymbrauer.com.

SUPPLEMENTING YOUR ROLE

In the past few issues, I've written about the contractual responsibilities of an owner's construction evaluation team, including a golf course superintendent's role. In what's perhaps a classic case of putting the cart before the horse, these articles assume the superintendent will be the construction manager. The question each course's management team must ask is: Does the superintendent have enough knowledge and time to protect the club's interests completely? Every club should assess whether it has the ability to manage a project in-house. If there are doubts, consider the option of a professional construction manager or additional services from a golf course architect.

It's common for green committees and owners to turn to their resident expert, the superintendent, for this task. Often, a superintendent is management's first and most logical choice to oversee a course construction project. A superintendent knows the most about a course, course construction and what a final product should look like. Many can produce quality results with in-house crews to aid or supplant the contractor in some cases. Also, most renovations need to remain within a budget, limiting options for additional consultants.

Perhaps because it's not sticks and bricks, many owners and the golf course construction industry don't use construction administration tools as diligently as other building professions. Although just as much can go wrong with golf course construction, one well-known turf management textbook perpetuates and compounds this idea by describing construction contracts as simple agreements. Architects, owners and contractors who have been through litigation would beg to differ.

The bottom line is that when you're spending millions of dollars, it pays to watch over the investment closely. So, although eminently qualified in his field, a superintendent might be at a disadvantage when attempting to represent his owner and might not feel comfortable doing so with so much on the line. Renovations that fail to meet expectations have cost superintendents their jobs.

Superintendents still will play a crucial role in any renovation, but if the stakes are high enough, supplementing their role with professional project management might make sense. The case can be made that it's a separate discipline from turf management, and, when done correctly,

Many owners and the golf course construction industry don't use construction administration tools as diligently as other building professions.

is a full-time job. Also, the consequences of saving money are significant. The contractor will have more experience than most superintendents preparing contracts and negotiating change orders, which most will use to their financial advantage.

The real potential for cost overruns lies in missing the schedule, where revenue losses become a considerable factor. During construction, a wasted week at the beginning of a project equals a month's delay at the end, and a wasted month might turn into a lost year of revenue just as quickly. Without proper oversight, expensive surprises and costly delays are

more likely to occur.

If a professional construction manager saves the owner one big mistake or manages the schedule to an on-time completion, their fee is paid for over and over again, says Sam Sakocius, principal of Sakocius Management Group based in Cascade, Colo.

If you assess the situation and believe using your superintendent is the best option, you must schedule accordingly to have him trained. There are classes at the Golf Industry Show where the GCSAA, GCBA and ASGCA put on classroom clinics. Some turf maintenance programs at universities offer minimal training in construction management, so it's possible your superintendent or assistant has some training, and perhaps has kept his project management textbooks, which contain useful tactics. One text oriented to golf is Charles White's "The Turf Managers Handbook for Golf Course Construction, Renovation and Grow In," which has information about construction administration matters.

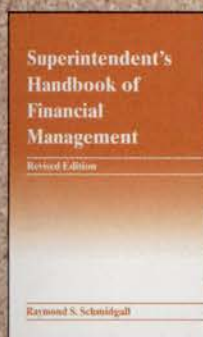
Given the importance of construction, clubs are advised to provide the superintendent with rudimentary training before construction and extra professional training about project management. The assistance could come from a golf course architect or construction management consultant on a full- or part-time basis. The aforementioned textbook recommends this as the ideal situation.

A renovation project is a disruptive and stressful time, and sometimes a club's viability depends on a renovation. It goes without saying that any work done should be done right. While having an experienced professional project manager might seem like overkill and doesn't guarantee a problem-free project, it ensures the best possible outcome under the circumstances you might encounter during renovation. **GCI**

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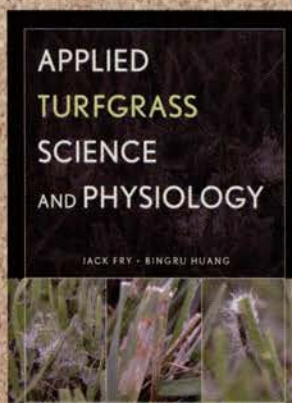
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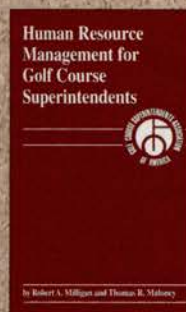
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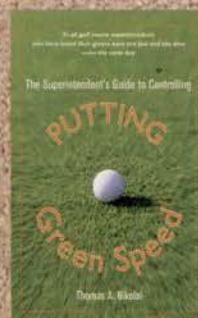
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Jim McLoughlin is the founder of TMG Golf (www.TMGgolfcounsel.com), a golf course development and consulting firm, and is a former executive director of the GCSAA. He can be reached at golfguide@adelphia.net or 760-804-7339. His previous columns can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

JOB SECURITY VIA THE RULES

Golf course superintendents have been cautioned consistently through their careers to be familiar with the Rules of Golf so they would understand how the Rules applied specifically to their golf courses. The worry always has been, for example, that hazard lines might be laid down in a manner that created unfair dropping areas, or tee markers might be placed so close to the back edge of tees, they don't allow for the two-club-length-deep teeing ground the Rules require.

While this caution is justified, it doesn't come close to identifying what the true value of the Rules can mean to a superintendent. In support of this premise, I recommend a nine-step, Rules-based program intended to provide participating superintendents access to the national golf fraternity (those players and representatives of golf who are recognized specially by their peers for their respect for and service to the game). Accordingly, it's recommended that superintendents should:

Step 1: Take the time to ensure they'll be able to play the game comfortably at their natural playing level. A wide range of final scoring is acceptable provided superintendents play at a good pace and accept bad shot-making gracefully.

Step 2: Take playing lessons every year at their home course from the host golf professional staff and be seen doing this. Lessons will stabilize playing ability, and being seen taking lessons will send the message to all who notice that the superintendent wants to become an integral part of the playing fraternity of golf.

Step 3: Play at least 20 rounds a season with course members/players and officials – briefly discussing course issues during each round – giving priority to playing with each board/council and green committee member once a season.

Step 4: Visibly participate in the club's/course's handicap computation service. This will show respect for the game and earn greater acceptance within the golf fraternity.

Step 5: Initially, commit to acquiring a complete understanding of the Rules of Golf, which will require becoming knowledgeable about the current Rules book, as well as purchasing and becoming familiar with the organizational structure of the 515-page Decisions of Golf book.

Step 6: Register for a USGA/PGA Rules of Golf multiday workshop once a year for the few years it takes to become accomplished with the Rules – a situation that's measured at the end of each Rules workshop via testing. Fifty percent of questions are open book, and 50 percent are closed book based on a working knowledge of the Rules book (not the Decisions book).

Step 7: The natural follow-up to scoring credibly on the Rules workshop test would be for a superintendent to be invited to serve on the Rules Committee at the club/course where he or she works.

Step 8: The next natural follow-up would be for a superintendent to apply to become a member of the Junior Rules Committee (start slowly by working junior qualifying rounds) for the regional/state golf association, later graduating to work at the more visible local association events as time away from work and accomplishment with the Rules allow.

Step 9: The final follow-up (for those willing to make the extra commitment) would be for a superintendent to aspire to receive an invitation to serve on the USGA Rules Committee (thereby qualifying to officiate at USGA events) through multiple years of accomplished officiating service at the regional/state golf association level. Because relatively few are chosen for this assignment, this final goal should be looked at as a lifetime pursuit worth the commitment because of the pride and sense of accomplishment to be realized.

Once superintendents complete steps six through eight (and possibly nine) above, they should make sure each of these unique

accomplishments is reported in their home course newsletters and Web sites. This commentary should focus on the quality and duration of commitment required to move through these levels of Rules accomplishments and how this brings honor and recognition to their clubs and courses.

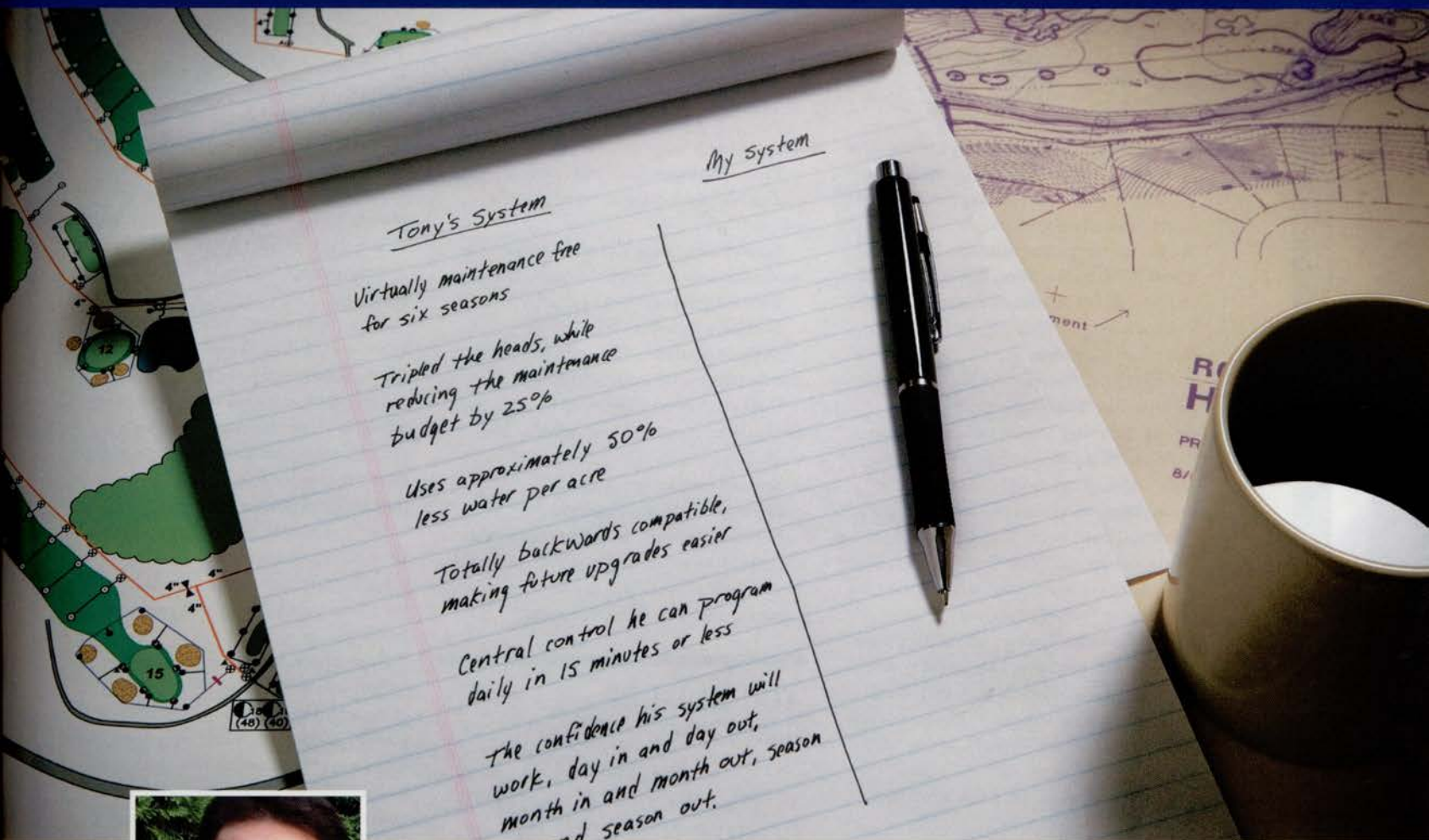
Working through this nine-step Rules program will benefit superintendents in ways never anticipated previously. For example, superintendents will: (i) earn unprecedented professional respect; (ii) convert their present back-of-the-house image to a newly respected front-of-the-house image; (iii) acquire virtual guaranteed job security and fair compensation because employers will always be supportive of fellow peer members of the national golf fraternity servicing golf effectively; (iv) gain a decided edge when seeking new jobs because their job applications will command immediate attention and respect; and (v) enjoy more rewarding careers because of the enduring pride they'll have in themselves and bring to their profession.

Clearly, this won't be an easy road to travel, but it's one in which the benefits gained are valued and true. Who would've thought the Rules of Golf could deliver treasures forever sought but never previously perceived as being deliverable to superintendents? **GCI**

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Robert A. Milligan, Ph.D., is professor emeritus from Cornell University and senior consultant with Madison, Wis.-based Dairy Strategies. He can be reached at 651-647-0495 or rmilligan@trsmith.com.

ASSERTIVE, NOT AGGRESSIVE

An effective communicator is assertive and sensitive without being aggressive. You must be assertive, especially when interacting with employees, to ensure the goal of the communication is attained. You need to be sensitive, but not aggressive, so the person you're communicating with – employee, golfer, family, friend – isn't placed on the defensive.

Assertive means presenting your feelings, positions or requests clearly and calmly. Sensitive means taking the time to understand another person's ideas, positions and feelings clearly. Sensitive also means respecting those ideas and positions when you don't agree with them. Sensitivity means having empathy. Empathy is walking in another's shoes or mentally entering into the spirit or feeling of another person.

Let's look at a work problem: Two maintenance staff employees argue every week when the work schedule is posted. Each week, something like the following occurs:

Superintendent: "What's wrong with you guys?"

First employee: "He has a more favorable schedule."

Second employee: "No. You always favor him when scheduling."

Superintendent: There's no reason to argue. We're a team, so don't disagree. I don't want any arguing next week."

There's nothing incorrect about the superintendent's response, except that it's not solving the problem. In fact, the employee conflict is infecting the staff, who are complaining about work schedules, morale and declining productivity. A more empathic approach, in addition to asking questions, is:

Superintendent: "What's the problem here?"

First employee: "He has a more favorable schedule."

Second employee: "No. You always favor him when scheduling."

Superintendent: "Is the schedule really

the problem?"

First employee (sheepishly): "No, not really. We had a disagreement about a woman."

Superintendent: "Is fighting about the work schedule accomplishing anything?"

First employee: "Not really."

Second employee: "No."

Superintendent: "What do you think should happen with the schedule?"

First employee: "We need to solve our personal problem and keep it away from work."

Second employee: "I agree."

Superintendent: "Excellent."

Supervisors often think the second dialogue is an example of getting too involved in employees' lives. This is a legitimate concern, and it's a fine-line issue.

You must be assertive, especially when interacting with employees, to ensure the goal of communication is attained.

To investigate this fine line further, remember your responsibility is to ensure those you supervise succeed. In the example above, showing empathy and revealing the real issue, even though it was personal, resolved a conflict that had become a barrier to employee and course success. The focus was employee performance. That it brought out personal issues was secondary.

Let's look at another situation in which a superintendent's involvement did little to resolve an issue. The dialogue below is with an employee who normally has excellent work habits but has been late three times in the last two weeks.

Superintendent: "Jim, how are you?"

Employee: "I'm so-so."

Superintendent: "I'm here because you've been late three times during the past two weeks. You've always had an excellent attendance record."

Employee: "Oh. I was hoping you wouldn't notice. I'm having car problems."

Superintendent: "Cars can be irritating."

Employee: "I'm really trying. I know it'll get better."

Superintendent: "I'm sure it will. "I know it's the little things that can drag you down, but I know you can do better."

The problem is that the superintendent, trying to show empathy, was sensitive, actually overly sympathetic, but wasn't assertive. No progress was made in solving the tardiness problem.

In the dialogue below the superintendent is empathic, sensitive and assertive to resolve the tardiness problem without becoming overly sympathetic to the employee's problem.

Superintendent: "Jim, How are you?"

Employee: "I'm so-so."

Superintendent: "I'm here because you've been late for work three times during the past two weeks. You've always had an excellent attendance record."

Employee: "Oh. I was hoping you wouldn't notice. I'm having car problems."

Superintendent: "Jim, you know the course policy on such issues. We will do what we can to help, but it's your responsibility to be at work and maintain outstanding work performance. I know cars can be frustrating. We feel like we have little control. Do you remember the company has an employee loan program? I also recall that a couple employees live in your direction."

Employee: "Those are good ideas. I guess I'm not thinking clearly. Thank you for the ideas. They'll help."

Superintendent: "I'm pleased I could help. I'll check with you in a week and expect you'll have been on time every day."

Employee: "That will work."

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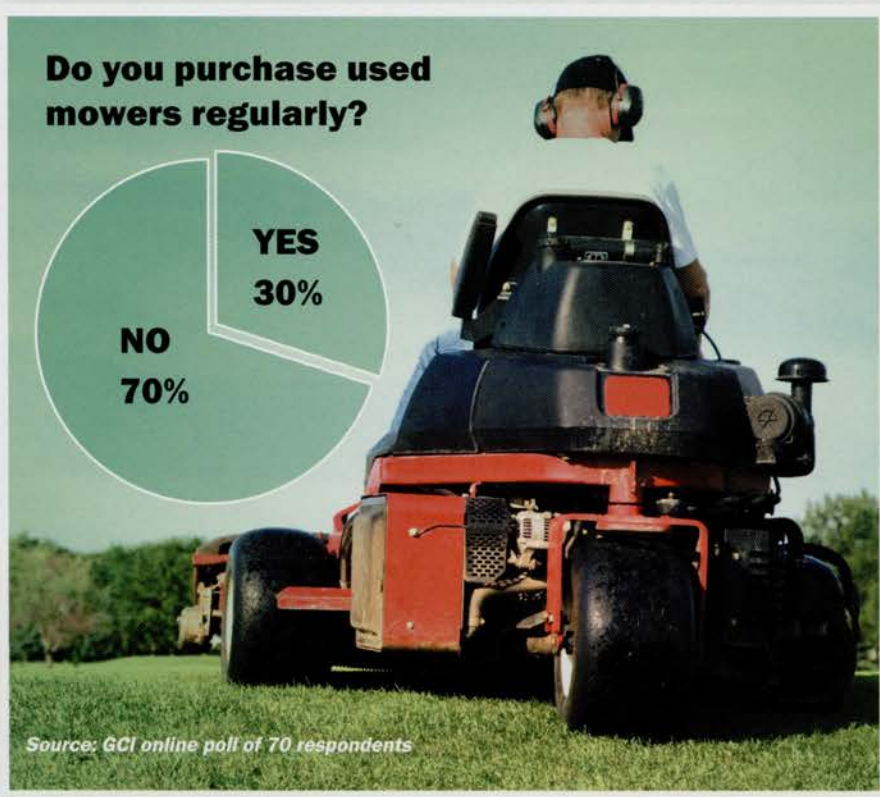
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Slow play – myth or reality?

In a recent nationwide survey, adult golfers were asked how long it takes to play an 18-hole round of golf on average. Respondents included golfers at public and private courses. The most common answer was four hours. Significantly, 90 percent indicated they play in four and a half hours or less.

Regardless of how long it takes to play a round of golf, more than three-quarters (78 percent) said their pace is about right; 20 percent said it's slow; and 2 percent said it's fast. Of the 20 percent of golfers who said their pace was too slow:

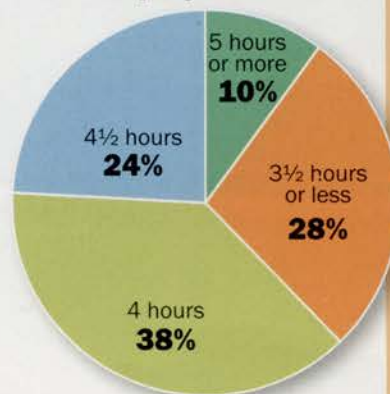
- 20 percent said it bothers them, and they play less as a result;
- 56 percent said it bothers them, but it doesn't cause them to play less; and
- 24 percent said it doesn't really bother them.

The first group represents about one million players or 4 percent of all adult golfers. Six in 10 of these players are occasional golfers (one to seven rounds annually), so they have a minimal impact on rounds volume.

While three out of four golfers feel their pace is about right, it doesn't necessarily eliminate the need for slow-play solutions. In fact, it might be because of combating slow play the problem isn't perceived to be as bad as it might.

Source: National Golf Foundation

How long it takes to play a round



Quotables

"In today's climate, it's more about economics than agronomics. I spend more time examining Excel spreadsheets than I do turf. The time I used to spend calibrating spreaders and sprayers have been replaced by calculating labor hours and line-item expenditures."

– **Kerry Satterwhite**, CGCS, superintendent of golf course maintenance for the city of Bloomington, Ill.

"I wish every college kid could go through the construction process to see how much work is involved. It's not easy."

– **Richard Hurd**, assistant golf course superintendent at Saddle Rock Golf Course in Aurora, Colo.

"Massachusetts has no regulations on wash water, or rinsate, so, in essence, we were polluting. To coin a phrase I'm fond of, 'the past belongs to the future.' What we're doing now will influence future generations." – **Paul Miller**, CGCS, Nashawtuc Country Club in Concord, Mass.

"If you don't learn, it's because you don't want to." – **Rafael Barajas**, CGCS, at Hacienda Golf Club of La Habra Heights, Calif., about the opportunities to learn new skills or enhance existing ones because of the availability of so many resources accessible to superintendents, regardless geographic location or work schedule

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Harmony in Growth

Making a splash

in the turf business

Jerry Pate is swimming in just about every pond in golf

BY PAT JONES

He's the unlikeliest of renaissance men. He doesn't necessarily have the flair of most Tour players – despite being responsible for memorable moments during the U.S. Open and The Players Championship. People forget he was a color commentator on TV long before Johnny Miller started talking grain. He isn't the first name that pops to mind when you think of successful golf course architects, but his courses are lauded for their beauty and playability. He doesn't act like a business mogul, yet he operates one of the largest turf equipment companies in the Southeast. He sure as heck doesn't come off as a farmer, but he owns a sod farm that provides turf for the courses he builds and others in the region.

Jerry Pate has an iron in the fire of just about every aspect of golf but, like Rodney Dangerfield, he doesn't seem to get the respect that more flamboyant figures might command.

Pate broke into prominence three decades ago with a win at the U.S. Amateur in 1975 and a spot on the winning team at the Walker Cup that same year. But, a year later, he defined "rookie sensation" by winning the U.S. Open and the Canadian Open during his first year as a pro. He went on to win six more times on the regular Tour, including the inaugural Players Championship at the nasty TPC Sawgrass Stadium Course. Though already an Open champion, he gained immortality and expressed the opinion of many of his colleagues by tossing designer Pete Dye and then-commissioner Deane Beman into the pond on the 18th hole before joining them for a celebratory swim.

Like many pros, he got older (and had a succession of injuries) and his playing skills couldn't quite keep up with the young guns. Thus, he began to diversify into broadcasting, turf sales, design and even sod production. Still, when he turned 50 two years ago, he joined the Champions Tour and played regularly. Last year, before shoulder surgery cut his season short, he won his first tournament in 23 years (and claimed his largest-ever paycheck) at the Outback Steakhouse Pro-Am in Tampa, Fla. Yes,



Photo: Courtesy of the PGA Tour.

“My biggest concern about design right now is that architects are trying to outdo each other ... they keep forgetting the game is about recreation.”
- JERRY PATE

the 2007 Outback was a bigger payday than the '76 U.S. Open. That should tell you a lot about how the game has changed during three decades.

Despite the day job that keeps him busy selling Toro, Echo and Lawn-Boy products (among many others), Pate and his recently rebuilt shoulder are doing well on the Champions Tour this year. Earlier this month, he returned from the Senior British Open after shooting 5 under par in the first round of the 3M Championship in Minneapolis. He eventually finished in a tie for 16th place and, at press time, was ranked 46th on the money list. Not bad for something he does in his spare time when he's not pushing red iron.

But, when we talked, the game was secondary, and Pate was all business – focused on what he's learned from working with superintendents, his different kind of design philosophy and the joy of building a business that now serves courses in seven different states.

HOW WAS THE SENIOR BRITISH OPEN?

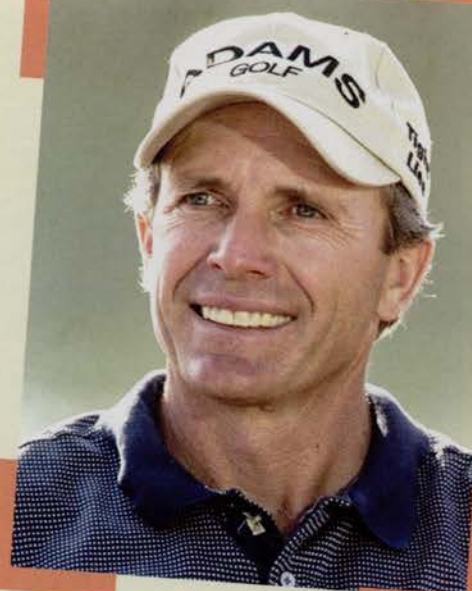
It was terrific. I was striking the ball purely and putting with confidence. That's something I hadn't done since my last shoulder surgery and all the rehab. I hit the ball spectacularly well and had a great time over there.

AS AN ARCHITECT, WHAT WAS YOUR TAKE ON MUIRFIELD?

It's one of the great golf courses in world. There's so much history and tradition there. The club started in 1744. I played that Wednesday with Ben Crenshaw, and we talked about greens and bunkers throughout the round. The conclusion we came up with is you can't build golf courses like Muirfield in America is because golfers want them green. The superintendent would get fired. But I love that sandy turf in combination of a little bit of rye. When they get firm, they're just great to play.

WHAT COURSES DO YOU KEEP IN THE BACK OF YOUR MIND WHEN DESIGNING A COURSE?

I try not to emulate other courses. The biggest strategic elements of any golf course are hazards. In sandy soils, you want to try to use cape bunkers like George Thomas did at Riviera or the



Other than playing golf professionally, Jerry Pate designs golf courses, owns a sod farm and operates a turf equipment company. Photo: courtesy of the PGA Tour

L.A. Country Club or MacKenzie at Cypress and Augusta. The sand stays up on the face and makes it much more interesting. We did a course called Kiva Dunes (in the Alabama Gulf Shores area) where we were able to use that look.

WHAT DO YOU THINK ABOUT THE CURRENT STATE OF THE DESIGN BUSINESS?

My biggest concern about design right now is that architects are trying to outdo each other – too many bunkers, too much undulation, too long and too penal. They keep forgetting the game is about recreation. Unfortunately, the golf magazines have touted those kind of courses for years instead of those that were well-constructed and playable.

I don't see many renovations designed to make a course more playable. Pebble Beach took the fourth green and others and flattened them out. It gave them more putting surface. Jack Nicklaus did a really good job of redoing them. I'm getting to be more of a minimalist. We're losing golfers because the game is too difficult and it takes too long. We have to focus more on playability instead of designing for Tiger and Vijay.

WHO INFLUENCES YOU AS A DESIGNER?

I like the simplicity of Tom Doak and Crenshaw/Coore. Their courses are "on the ground." They're not trying to move a world of dirt. On the other hand, they're getting some nice sites. I've also always been a big fan of Tom Fazio. He gets the cream of the clients. It would be hard to not build a great-looking course with a great piece of land or great clients.

I love the look of Pete Dye's courses. He has an imagination like no one else. Some of his better-known courses that challenge me are Casa de Campo, TPC Sawgrass, Oak Tree and Whistling Straights. On Pete's courses, there are always a few holes where you can barely miss a pin and take a six or a seven. It looks great, but I don't know if it's good for the average player. Kiva Dunes has a Pete Dye look with sort of George Thomas bunkering. Pete's courses are tough, but he was my mentor, and I love him.

HOW DID YOU GET INVOLVED IN THE TURF BUSINESS?

In 1997, I was a customer of a small Toro distributor. I owned a few courses, and I liked Toro and what they represent – quality and innovation. I went and met with the owner who wanted to sell the business and bought it. We've grown a lot, and we're now in seven states. We sell Toro, Echo, Standard Golf, Dakota, Tycrop and a bunch of other strong lines. It's not a business in which you're going to become wealthy, but it's a nice business. People outside the industry laugh when they find out I play golf on weekends and work the rest of the week selling turf equipment.

WHAT HAPPENS WHEN YOUR WEEKEND JOB OVERLAPS WITH YOUR WEEKDAY JOB?

Well, Mike Hoffman (the c.e.o. of Toro) followed me around at the 3M Championship wearing a "Pate's Posse" golf shirt. That was funny and kind of neat to have the big boss following me around and rooting for me.

WHAT'S YOUR PRIMARY ROLE WITH THE TURF COMPANY?

I meet with customers and try to understand their needs. Superintendents need support. They want the best they can get and always have to negotiate with their owners or boards. We try to partner with them and make sure they can get the best they can and still afford it. Most courses now are leasing – three-year leases, just

like cars. It's a great option for them.

WHAT HAVE YOU LEARNED DURING A DECADE IN THE TURF BUSINESS?

The biggest lesson? It's just dealing with people. The toughest thing is that people just think I'm a "face." Hey, I'm the owner. I have to be on top of things every day. You have to hire quality people with a good conscience and a good heart. The message always has to be that we're there for superintendents when they need us.

WHAT CHALLENGES DO DEALERS AND DISTRIBUTORS FACE THAT SUPERINTENDENTS NEED TO UNDERSTAND?

You have to make sure you make a profit. You're always working on the margins and everything constantly goes up in cost. Everything is related to the cost of oil: steel, coal, rubber and plastics ... it's an ongoing struggle to remain profitable. But you still have to back it up with customer service and care. You can make mistakes, but you can't hit the ball out of bounds on every shot. You just have to keep moving the ball forward and keep a good attitude. We have to go above and beyond the call of duty every day. Toro is keenly on top of all those issues. It has a great presence in the market.

YOU EVEN OWN A SOD FARM. HOW'S THAT GOING?

I kept revisiting the courses we'd built and finding mutations and problems with the Bermuda-grass we'd put in and I said, "What the heck, I'll just plant my own." That way I know what I have. We grow 419 and Tifdwarf as well as MiniVerde. Putting green grasses are always in an evolutionary and revolutionary state. Particularly Bermuda in the Southeast.

ARE YOU DESIGNING ANY NEW COURSES?

We just finished The Preserve in VanCleave, Miss., and we have a project in the works, Jubilee in Pace, Fla. To be honest, I haven't worked hard on trying to build a lot of courses. I'd love to do more, but it's not an everyday thing. We don't build superexpensive golf courses. The greatest compliment I get is that we design fair golf courses that a high-handicapper can play but the best player in the world can play if we move the pins. When Doak said, "I hope Tiger does as well as Pate did on his first course," that

was a nice compliment.

If we're not careful, architects – with their high and mighty opinions of themselves – are going to ruin this market. My sole interest is preserving the integrity of the game. People should have fun, not throw clubs.

WHAT WOULD YOU CHANGE AT MOST COURSES YOU SEE?

Raise the height of cut, put the pins in the middle of the green and quit taking backhoes to the bunkers, and the members will love it.

HOW DO YOU RATE THE IMPORTANCE OF SUPERINTENDENTS IN THE INDUSTRY?

In terms of golf course superintendents, it's hard to be objective because they're my customers, and I have tremendous respect for what they do. I compare golf courses to an aircraft carrier that simply can't run without the guys in the engine room. The pros are sort of like the fighter pilots who get all the credit. The superintendents are the ones who make the ships run.

The reality is they make the industry work. The thing that's so important is they understand what they want and, when they understand what the designer has laid out on the ground, it's a recipe for greatness.

HOW DO YOU WANT TO BE REMEMBERED 100 YEARS FROM NOW?

I want to be remembered as a person with many interests. I try to learn from my mistakes and pass on what I've learned. I've had an unbelievable life. I wouldn't trade it with anybody. Faith is a big part of my life. I was the U.S. Amateur champ at 20 and the Open champ at 22. I took that fast start and realized that I had to put faith first, family second and my job third. That made the landings a lot softer when I crashed.

Golf's such a great game. I have a drive to try to make the world better and make the game better. Everybody wants a sense of self-worth. That comes in a lot of different packages. But, it's easy to figure out when you ask, "What would my God want me to do." You boil it down to the Ten Commandments. If you can live by those rules, you'll be just fine.

In the end, I just keep trying to chase the rainbow and see where it takes me. **GCI**

Jerry Pate can be reached at 800-700-7001 or through www.jerrypate.com.



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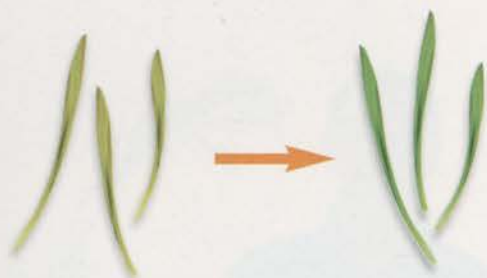
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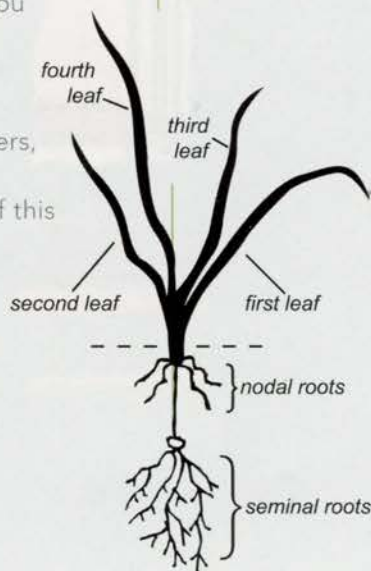


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The Right-hand Man



Superintendents value their longtime assistants

BY JOHN WALSH

The typical assistant golf course superintendent is a young buck with a turfgrass degree in hand. He's excited and eager to become a golf course superintendent as quickly as possible. The goal is to move up to the next level in about five years, but these days, it's not as much of a lock as it used to be.


But there's another type of assistant superintendent who doesn't receive as much attention – one who's just as valuable as the young buck, although in a different way. He's the longtime – or career – assistant superintendent. He knows the intimate details of the course and crew because he's been there for a while, as long as 20 years or more in some cases. His job is simple in theory, which is to make life easier for the superintendent.

FOLLOW THE LEADER

Doug Martin, golf course superintendent at the Wilshire Country Club in Los Angeles, has been working with his assistant, Jose Rocha, for 22 years. Martin, who has been a superintendent for 12 years and in the industry for 23, worked for Bruce Williams at the Los Angeles Country Club for 10 years before Wilshire. He came to the L.A. Country Club two years after Rocha arrived there.

"We were both hired on the grounds crew," Martin says. "I was a foreman working on the South Course, and Jose worked on the North Course. As I got promoted, he followed in my footsteps. As we went along, he kept the same attitude and took personal responsibility for doing a job right."

Rocha, who is originally from Mexico, worked at the 36-hole LACC for 23 years, starting at the age of 18 in 1982. His father worked on the landscaping



Jose Rocha, left, has worked with Doug Martin for 22 years.
Photo: Kelsey Edwards

crew that took care of the nongolf course areas such as the clubhouse.

"I first started on the landscaping crew, working with flowers, around tennis courts and on lawns," he says. "I did that for one year. Then, the golf course maintenance crew was short of people. I was interested in spraying pesticides and operating different machines. The landscaping side became boring."

When Rocha first started on the golf course maintenance crew, he changed cups, operated string trimmers and raked bunkers. Then he progressed to mowing greens and tees. Soon after that, the golf course superintendent at the time, Mike Hathaway, said he saw something in Rocha after seeing him work.

"You're responsible," he told me," Rocha says. "He pulled me aside and said, 'I need someone to man the crew, to be a foreman.' I was paired with Doug to work together. Then Doug became superintendent on the North Course."

Rocha became the foreman on the North Course and then worked for Martin in the capacity of an assistant without the formal title. Under Martin, Rocha eventually earned more responsibilities involving more paperwork and scheduling. He also learned more about irriga-

tion, ultimately seeing the bigger picture of golf course maintenance.

tion, ultimately seeing the bigger picture of golf course maintenance.

After about 10 years as a superintendent at the LACC, Martin was ready to progress and thought he went as far as he could at the club.

"I wanted more responsibility, and Wilshire was a good fit," he says. "I had talked to Bruce about the next step. I wasn't in any rush, so it had to be the perfect job. Bruce kept me informed as opportunities arose. I received a lot of support from Bruce to make the move."

The transition was smooth for Martin because the LACC and Wilshire are similar: Both are private, are on the West side of L.A., have similar climate and grass, have similar budgets per 18 holes, and even have members who belong to

both clubs. However, Wilshire has fewer members (475) than the LACC (1,500).

Martin talked to Rocha about wanting to move on.

"When I heard Doug was moving on, I was happy because I knew he was ready to take that job," Rocha says. "I felt kind of bad, though, because we had worked closely together for so many years."

Martin has more responsibilities now compared to when he was at the LACC, including dealing with members more closely. At the LACC, Williams handled the relationships with members and worked closely with the membership and green committee, Martin says. At Wilshire, Martin has the final say with the budget, unlike when he was at the LACC.

But it wasn't until Martin had the job at Wilshire that he talked to Rocha about coming to work with him after one of the former assistants left.

"Jose stopped by to visit, and I mentioned I was looking for an assistant," Martin says. "I conducted a nationwide search and interviewed other people, but he was the right fit. He had the right communication skills. He was good at motivating the crew. I talked to Bruce extensively to

such as the intricacies of the irrigation system – programming the computer, learning about heads and nozzles – and which pesticides to apply and when.

"He's improving on organizing the staff to be as productive as possible, but sometimes I intervene," Martin says about Rocha. "Jose is also improving on technical aspects of the job. I help him in this area, too. He's improving on these aspects but isn't ready to go solo yet."

Rocha says he has learned a lot from Martin, such as being responsible, understanding pesticide labels, being involved in projects and being more organized.

"Doug also gives me freedom to get ideas together," he says.

Rocha says he also feels comfortable with the crew, 90 percent of whom are Hispanic, even though he's only been there a year and a half.

Martin says he feels lucky to have an assistant like Rocha.

"We know how each other thinks and know each other's strengths and weaknesses," Martin says. "I can relax when I'm not there."

That relaxation is tied to Rocha's confidence.

"When Doug leaves to attend meetings or go on vacation, I run the place without problems," Rocha says. "I know what he likes. I have a lot of respect for Doug as a person and employer. I have a lot of trust in him. I'm at where I'm at because of Doug."

Rocha also helps Martin with one of his weaknesses – Spanish.

"Jose speaks better Spanish and has more patience with the staff," Martin says. "Some communication is better coming from him."

Martin values Rocha and says it's ideal to have two types of assistants – the stability of Rocha and the excitement of a young guy.

"The trend in the industry is to hire an educated graduate because of his technical experience," Martin says. "That creates a different kind of environment. I have another assistant, Mike Prouty, who's going along the superintendent path. He keeps me on my toes. When a young fellow joins the crew, he's excited about the job and constantly is learning and asking questions. It's good to be questioned about what you do and to receive an influx of new ideas. But if these assistants move on, you lose consistency."

"On the other hand, Jose has intimate knowledge of the course and crew," he adds. "He knows what's going to happen."

"We know how each other thinks and know each other's strengths and weaknesses. I can relax when I'm not there."

- DOUG MARTIN

see if it was OK for Jose to move over here."

Rocha, who doesn't have a college degree, says he wasn't planning to go anywhere before Martin mentioned the Wilshire job.

"I was happy at the L.A. Country Club," he says. "I knew the guys well. I was with them for 20 years. One day, I went to see how Doug was doing. I was convinced I wasn't going to get another chance at an assistant's job. I knew if I was going to stay at the L.A. Country Club, I was going to be a foreman for a long time. I wasn't moving up anytime soon."

Like Martin, Rocha has more responsibilities now compared to when he was at the LACC. These involve personnel and planning, as well as learning more technical aspects of the job,

ON THE SAME PAGE

Like Martin and Rocha, Joe McCleary, CGCS, at Saddle Rock Golf Course in Aurora, Colo., and his assistant Richard Hurd, have been working closely together for a while – 11 years to be exact. They've been at Saddle Rock together since the course was under construction, which started in 1995. It opened in 1997.

McCleary, who has a four-year horticultural degree from Kansas State University and an MBA from the University of Colorado at Denver, has worked for the city of Aurora for 17 years. Before Saddle Rock, he worked at Meadow Hills Golf Course in Aurora as an irrigation technician. Meadow Hills is where McCleary and Hurd first met 20 years ago as seasonal laborers while McCleary was attending KSU.

Hurd, who's in his sixth year as assistant superintendent at Saddle Rock, left Meadow Hills after 10 years and went to Saddle Rock for a change of pace.

"I wanted to pursue a different path and experience new construction," he says.

During the construction of Saddle Rock, when Hurd was reintroduced to McCleary, Hurd's responsibilities included checking the irrigation system installation and helping with the grow-in. He also worked on projects tying in new grades throughout the property. For example, when the new clubhouse was built, Hurd tied in road crossings.

"When they rough grade, it's pretty rough," he says. "Construction is a challenge, especially when tying everything in. Irrigation was also a challenge. When we established new turf, it remained weak for a while. There was little housing at the time, and the wind sucked the irrigation right out of here. But once we established a good stand of turf, it was nice.

"I wish every college kid could go through the construction process to see how much work is involved," he adds. "It's not easy."

McCleary's trust of Hurd and Hurd's responsibilities have grown throughout time.

"During the past seven or eight years, I've felt more confident leaving the course," McCleary says. "Part of that is my maturing."

After the course was built, a lot of home-building was happening next to the course, and McCleary needed to communicate with the developer often. Since the homes have been completed, McCleary feels more comfortable leaving the course.



"It would have been too much to put Dick in charge of both the course and the relationship with the developer," he says. "It wasn't something you could just put on someone's desk to take care of."

Hurd's responsibilities include the daily scheduling of the crew, with whom he has a close relationship, and hiring.

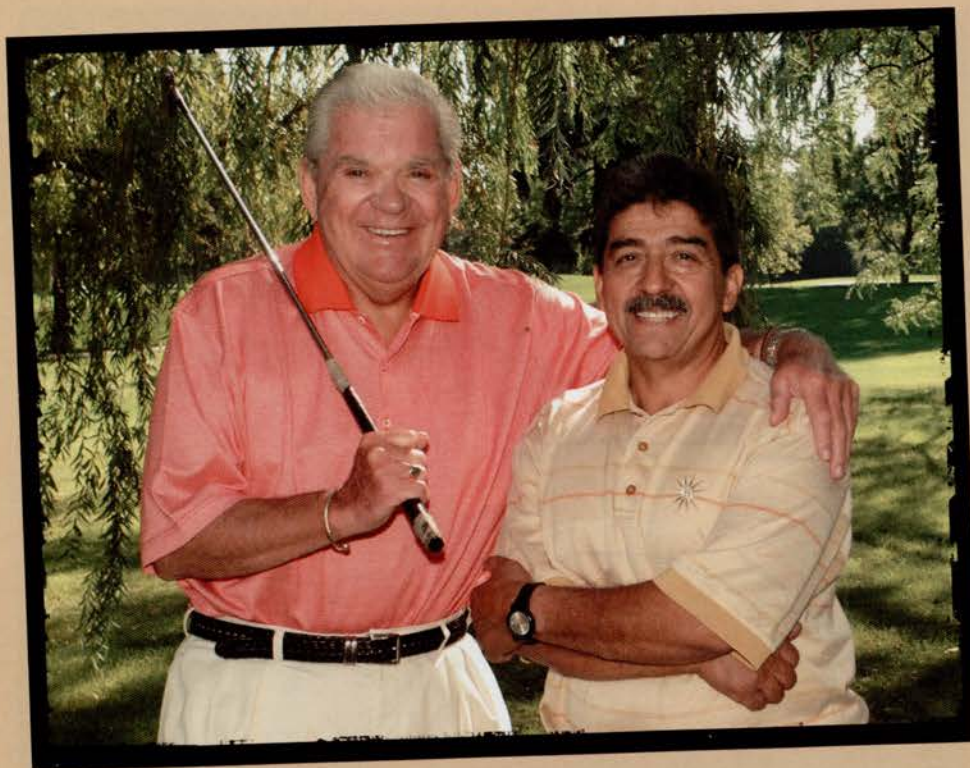
"When I became an assistant, I became in charge of hiring, scheduling and managing the staff," he says. "I'm a good judge of character. We have good rapport with the seasonal workers. They're the backbone of the industry. Without them, it would be hard to get stuff done."

One of the aspects of course maintenance that Hurd isn't responsible for is the development of the budget.

"I work with Dennis (Lyon, CGCS, manager of golf for the city) on that," McCleary says. "But I talk about budgeting for labor and equipment with Dick. He and other full-time staff are aware of budget performance."

McCleary also is responsible for the fertilizer program. There isn't much disease pressure in Aurora, so that isn't much of an issue, although McCleary says his eye is trained for

Richard Hurd, left, first met Joe McCleary 20 years ago while working at Meadow Hills Golf Course in Aurora, Colo. They went separate ways but joined up again and have been working closely together for 11 years. Photo: Don Cudney



Paul Voykin, left, and Moe Sanchez have been working together for 43 years. Photo: Jim Summaria Photography

"I've never had a better friend, and nobody has a better assistant. He thinks like I do when it comes to the golf course. Moe is right there by my side."

- PAUL VOYKIN

spotting disease and treating it, unlike Hurd who would have difficulty with that because he's colorblind.

The biggest benefit of McCleary working with Hurd for 11 years is Hurd's experience and knowledge of how important relationships are within the city of Aurora.

"I feel confident that when I leave the course he can run the operation," McCleary says. "When I'm on vacation, the details are taken care of. The pro shop staff and golfers wouldn't know the difference if I'm gone. I was off for two weeks in July. I haven't had a long vacation in 12 years. That shows my confidence in Richard and the staff. And being part of the city's seven courses, Richard can call on other courses for management help if needed."

Having a longtime assistant such as Hurd has allowed McCleary to take time away from the course to serve on the board of the local superintendent's chapter, of which he was past president, national committees for the GCSAA and the Colorado Golf Association.

"I might be gone a couple of days, so having a strong, experienced assistant has allowed me to devote more time to the industry at the volunteer level," McCleary says. "I'd be hard

pressed to find a disadvantage of having a guy like Richard. It's a huge benefit to have a guy with that much experience. "If I moved on, he could take care of things. He could move up in the future."

Hurd says he has learned a lot from McCleary. They work well together and complement each other.

"Joe is an avid golfer – I'm not, but I don't mind playing," Hurd says. "Joe is a professional and very smart. He's one of the smartest people I've met in life. I might have the attitude like, 'What does it matter, it'll be here tomorrow,' as opposed to Joe's attitude, which is more like 'Get it done today.' I'm more laid back than Joe. I have the seasonal mentality at times."

Working together with McCleary so long, Hurd knows what McCleary expects, such as smooth, rolling greens and straight, clean edges.

"We expect the same results," Hurd says. "We know how to address the staff when we see something that isn't right. We talk to individuals and explain the steps they take to better the project and prevent that mistake again. Joe and I are great communicators. We ask the staff for ideas, such as changing the fairway lines. Our whole attitude is to let them have ownership. We're not always banging heads and have a great working relationship. The staff self-manages, making my job easier. We're a tight-knit group and expectations are very high."

Even though Hurd says he's happy and isn't looking for another job, McCleary doesn't want to get too comfortable assuming he'll be there forever. He knows Hurd has been working to finish his associate degree amid raising two children.

"Education is important to me, and I encourage it," McCleary says.

"I'm mostly working on experience," Hurd says. "I don't know if I'd go to another course. If there's an opportunity to better myself, I'd con-

"If we're together for another 20 years, great, another five years, great. But as for right now, we have a good thing going."

- RICHARD HURD

sider it. Joe and I will look to better ourselves. If we're together for another 20 years, great, another five years, great. But as for right now, we have a good thing going. This is one of the best jobs you can ask for, and few people have this opportunity."

A GOOD TEACHER

Perhaps the superintendent and assistant who have worked together the longest are Paul Voykin, golf course superintendent at Briarwood Country Club in Deerfield, Ill., and his assistant Moe Sanchez. Voykin has been working at Briarwood for 46 years, Sanchez for 43 years. One of the reasons for staying so long at one club is how members treat them.

"I like the people here very much, and they have been very good to me," Voykin says. "They have taken pride in what I do. I'm a purist. I don't look after the pool or the tennis courts - just the 18-hole golf course. I've always worked with a green chairman. I've made good relationships and formed an 'ecology' here for years. I have an excellent friendship with the village."

Sanchez was a teenager when he started at Briarwood, following his father, who worked for Voykin for 44 years.

"My dad started with Paul in 1962," Sanchez says. "Then I came up from Mexico and started in 1964 at the age of 15. 'Paul raised me like his own son. I started reading books when I was younger. I never went to school in the states. Paul taught me English. I owe everything I know to Paul. The most important things Paul taught me was that everything has to be neat, to be observant, organized and retain a 'spring fever' attitude throughout the season. He taught me to be persistent and not let a job go to the next day and stay on top of things."

Sanchez started out raking bunkers and mowing greens for three or four years. Then he became a mechanic.

"I was given the opportunity because the old one died," he says. "I was a mechanic for

a while then Paul asked me to help him on the golf course. He started teaching me everything about it."

"I've never had a better friend, and nobody has a better assistant," Voykin says about Sanchez. "He thinks like I do when it comes to the golf course. Moe is right there by my side. I don't have to tell him to be there when there's a crisis."

Voykin, who will retire in a year and a half, will recommend Sanchez for the superintendent job when he retires, even though Sanchez has no college degree and only some high school education. Yet Sanchez passes a tough Illinois pesticide test every year to receive a state applicators license, Voykin says.

"Members love Moe," he says. "The problem is the demand for communication and appearing in front of committees. That's difficult for those who aren't used to it."

Voykin says the club has assured him he will have a generous retirement package when he retires. In the meantime, Voykin doesn't worry about Sanchez leaving Briarwood, as he would with a younger, college-educated assistant.

"Some superintendents have gotten awards for having 100 assistants move on to become superintendents in the field," he says. "That's admirable, but you have to start over every time they leave. Then you might get a better assistant or a worse one."

Even though Voykin works seven days a week, he doesn't come in first thing in the morning anymore because Sanchez takes care of the crew.

"For 44 years, I got up at 4:30 and went to work," he says. "It's such a relief to have Moe start the men off. When I get here, everything is humming and buzzing. When you have a guy like Moe, you can take real advantage of him and go on vacations or have him working seven days a week, but I never do. I have a great crew. My men do all the work, and I get all the credit." GCI

Moe Sanchez was a teenager when he started working at Briarwood Country Club in Illinois. He followed his father, who worked for Paul Voykin at Briarwood for 44 years.

Jose Rocha followed his father and went to work at the Los Angeles Country Club at the age of 18 in 1982.

Joe McCleary, CGCS, has worked for the city of Aurora, Colo., for 17 years, and his assistant, Richard Hurd, has worked for the city for at least 16 years.



out in FRONT

The fundamental problem with localized dry spot is an organic coating that forms from the natural breakdown of organic substances. The coating prevents soil particles from absorbing water. Photo: Aquatrols

A proactive, multipractice approach to treating localized dry spots can make the battle easier

BY T.R. MASSEY

Golf courses can be frustrating places to work. Just when one turfgrass problem is contained, another breaks out. And when the weather patterns are like the ones that occurred during the spring and summer of 2007, there can be more problems than normal.

Consider the problem of localized dry spots. It's a condition that appears as an irregular patch of grass that shows drought stress for seemingly no particular reason. Research shows one of the main factors contributing to localized dry spot is hydrophobic soil, or soil that rejects water.

Keith Karnok, a professor of turfgrass science at the University of Georgia, is one of the leading localized dry spot researchers who says the fundamental problem is a coating that forms from the natural breakdown of organic substances. When plant matter, such as roots, peat and other soil amendments, breaks down in normal microbiological processes, they form an organic compound that coats sandy soil particles and prevents them from absorbing water. Some believe the coating consists of fulvic acid.

Karnok's research shows that when decomposing plant matter is extremely dry, fulvic acid forms and coats individual sand grains, making it repel water. This hydrophobicity is more severe at shallower depths, so it occurs in the top 1 to 2 inches of the soil profile. Coarse soil textures and sandy soils are most likely to be water repellent, Karnok says.

"It's a natural phenomenon," he says. "You can't stop it, but you can treat it. In high-sand-content soil, it's common. Nine to 18 months after construction, dry spots begin to appear."

Once localized dry spots appear, superintendents should use a variety of approaches to treat them. Most people use wetting agents, Karnok says. Wetting agents are a chemical compound known as surfactants. The name is borrowed from three words – surface, active, agents – because it works to cause a physical change on the surface of liquids, Karnok says. A surfactant bonds with water and the organic coating on sand particles, allowing the soil to become wet.

MIX IT UP

Jason Regan, golf course superintendent at the Selma (Ala.) County Club, says he's had success battling localized dry spots because of the program he's developed.

"If I wasn't on this program I'd have a problem," Regan says. "I've built the program during my 10 years here. When I arrived here, I was treating it after it happened. Now I'm in front of

Localized dry spots are a constant battle for superintendents, who often use wetting agents to combat the problem. Photo: Aquatrols



it. It just took a while to learn. I haven't had any problems this year in spite of a drought."

Regan's plan begins with spraying Revolution, a wetting agent, in mid- to late March each year, then applying it all summer long. He applies it on fairways and uses four ounces per 1,000 square feet on the greens once a month. He's also applies another wetting agent, Dispatch, which he injects into the irrigation system, using 48 ounces per acre in the fairways.

"It's been so dry this year, I've had some spots where the irrigation system doesn't cover," he says. "The wetting agent has done a tremendous job. We haven't had any rain at all – the driest year on record – and it's worked out great for me."

Regan also applies another surfactant, Aquaduct, at a high rate then drenches it in with water for 15 minutes.

"We're doing drench applications once a month on the greens," he says.

A CONSTANT PROBLEM

In Columbus, Ohio, Don Sutton, CGCS, at Kinsale Golf and Fitness Club, has more of a problem with localized dry spots on fairways than greens. Kinsale is a 4-year-old private facility designed

by Arthur Hills.

"I use wetting agents on my greens, and it takes care of the problem," he says.

Sutton treats entire greens, not just the areas affected by localized dry spots.

"I treat the fairways as needed and spot spray areas that have been a problem historically, such as some of the knobs on fairways," he says.

In June, when Ohio was in a drought, Sutton made spot treatments often and a complete course application in the third week of the month. Other practices are included, too.

"I do quite a bit of aerification on tees, greens, fairways and roughs," he says. "It's a cultural practice to help eliminate a lot of dry spots. Proper aerification will help it. I core aerify at least once a year, deep-tine greens at least once a year, and use my AerWay with solid tines for fairways about three times a year. That allows water a channel to get down in the soil."

Though common sense would dictate hand-watering in the worst localized dry spot areas, Sutton says it doesn't work sometimes.

"The soil doesn't accept water," he says. "You have to use a wetting agent or surfactant to get it to accept water."

Localized dry spots are a constant problem in the summer months for Sutton.

"From my experience here, we haven't reduced them," he says. "It almost becomes a thing in which you're going to have a certain number of them, and you're dealing with the same spots every year."

While it takes a good bit of man-power to fight localized dry spots, Sutton says it's not one of his biggest problems.

"It's something you expect to happen, and you go out and deal with it," he says.

LABOR AND WATER

Like many other superintendents, Paul Cushing, director of golf construction and maintenance operations at Vellano Golf Club in Chino Hills, Calif., likes to get out in front of the localized dry spot problem instead of reacting to it.

"Instead of putting a Band-Aid on the problem, which is by hand-watering time and again, I find the source of the irrigation problem," Cushing says. "We just installed the new Toro 835 heads, which I can adjust to customize the spray to fix the dry spot in the area. That's made fighting dry spots a little bit easier."

Cushing prefers to aerify dry spots with three-fourths-inch solid tines, then topdress the area with compost.

"It gets organic matter in the holes, which allows you to hold a little more water," he says.

Once Cushing has aerified the spot, he sets up sprinklers on mounted skids that attach to quick couplers.

"Then I go for a slow, meticulous watering on a dry spot for seven or eight hours and get a lot of water on the ground with a low precipitation head," he says. "I put out about 15 to 20 heads on dry spots in the day. That's the last thing I do, once I have the holes open, after I've aerified. That breaks up the surface tension that's not allowing water into the soil. Once you've broken the surface tension, you can get water into the ground."

Cushing also applies surfactants, which are used regularly by 87 percent of superintendents in America, according to Karnok's research. Cushing sprays fertilizers every couple of weeks and mixes Surfside in with it.

"I use Surfside on the greens," he says. "Anytime I spray anything on the greens, tees and fairways, I have a little of it in the tank. It makes the water wetter. It makes it stick to the plant better and works in the soil better. It's a great wetting agent."

In a dry year like 2007, localized dry spots take more of Cushing's resources.

"It takes people away from their second job and puts them with a hose in their hands," he says. "It's all labor and water, but 10 to 15 percent of your budget goes to fight it."

"We're below normal precipitation – we've had three inches of rain so far, and we're used to 15 of 16, so localized dry spots have become more of an issue than in other years," he adds. "It's a top-five problem for me this year."

A HIGH PRIORITY

At the Denver Country Club, golf course superintendent Doug Brooks doesn't have a drought situation, but he says it doesn't matter when localized dry spots appears, it's a high priority. His program includes various practices, too, such as consistent aerification, the use of wetting agents, hand-watering and the use Surfside in drenches.

"I usually do three or four drenches a year, and every spraying I do, I put it in," he says. "There's some chemistry that I'm not qualified to discuss, but it makes everything a little more efficient."

Brooks uses a relatively small percentage of his overall budget to fight localized dry spots.

"It's all your practices you do regardless, so you have to do it anyway," he says. **GCI**

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Eighty-seven percent of superintendents in the U.S. use surfactants according to research by Keith Karnok, Ph.D.

Ten to 15 percent of superintendent Paul Cushing's budget goes to fight localized dry spots. That money is spent on water and labor.

To help treat localized dry spots, superintendent Jason Regan injects a wetting agent into his irrigation system, using 48 ounces per acre in the fairways.



Aerifying, topdressing and adjusting irrigation heads also can help in the fight against localized dry spots by breaking up surface tension. Photo: Aquatrols

INTERSEEDING GAINS POPULARITY:

Superintendents Acknowledge Impressive Results

Since the introduction of Penncross in 1955, the Penn bents from Tee-2-Green have been synonymous with quality. The varieties are universally respected and proven reliable due to pre-introduction trials by Dr. Joe Duich and a half-century of turf trials completed with widespread use by superintendents. In fact, more golf courses use Penn bents on greens, tees and fairways than any other variety.

Today, thanks to the superiority of the Penn bents, these varieties are proving themselves over and over. The new generation of Penn varieties are bred to perform better and provide more beautiful turf with additional qualities such as disease resistance, salt tolerance and the ability to provide better turf under low mowing conditions demanded on fairways and greens.

But for all the ingenuity and advances, superintendents are still faced with the looming question: How do I efficiently and

economically convert my greens to one of the new and more advanced, disease-resistant Penn varieties?

■ Not-So-Costly Conversions

The most effective means of conversion is a complete renovation. However, starting from scratch is rarely an option for most superintendents. Renovations are costly and lead to a significant loss of play while the new turf takes time to establish and properly grow-in. For this reason, many superintendents have looked to interseeding for the answer.

Interseeding is a process that seeds the improved Penn bentgrass varieties into an existing stand and, due to their competitive nature, the stronger, more advanced variety gradually takes over. The process is gaining popularity among superintendents as a way to convert older bentgrass and *Poa annua* stands to one of the more advanced Penn

bents.

Although the conversion process achieved through interseeding is slower than renovation – perseverance really works; sometimes it may take several seasons to convert to the new variety – the process does not disrupt play and can be achieved with minimal extra cost and very little time.

■ Expand Your Routine

Superintendents who have successfully used interseeding as a way to introduce a new variety, are quick to point out the process usually only requires an extra step to the already established aerification routine.

Mark Kuhns, director of grounds at Baltusrol Golf Club in Springfield, New Jersey, has had great success interseeding Penn A-4 on the greens.

"When we started here in '99, we had a general thinning from the severe conditions of that year where the turf was anywhere from 20-80 percent loss on some of the greens," explains Kuhns.

Kuhns looked to an aggressive, but effective method of interseeding to get his greens converted to Penn A-4. The most intense part of the process begins in August with aerification. Kuhns uses quarter-inch hollow core quad tines approximately three inches deep and takes most of the top material off. Next, seed is broadcast on the greens followed by a spiking machine with brushes on the back to get seed and sand in all the holes. The end result is a wonderful seed bed that the crew syringes until germination.

"The *Poa annua* that we've been competing with cannot compete with the Penn A-4's. We're up to approximately 60-80 percent bentgrass on our greens now because of this interseeding process."

But the interseeding process still continues for Kuhns.

"This is one of three times that we'll do it. And every time that we aerify, we do the interseeding. Anytime in the spring when we want to lightly spike the greens with the triad and put some sand on, we will also



Country Club at Castle Pines, Castle Rock, CO

"I've been doing it now for two years and I've seen an overall appearance, vigor and turf quality and texture in all my greens. I've been really excited about it."

Dave Phipps, superintendent, Stone Creek Golf Club, Oregon City, Oregon

seed during that time."

"It's all part of the process and if we can seed into that process with success, we're going to do that. It's just one more step on the rung, on the ladder here."

■ **Keys to Success:** **Soil to Seed Contact**

Now that the process of interseeding has been around several years, critical keys to success are starting to evolve. Soil to seed contact is the most crucial aspect for germination, therefore interseeding typically occurs during the aerification process.

When Bob Maibusch, golf course superintendent at Hinsdale Golf Club in Clarendon Hills, Illinois, was in a position to restore the club's 100-year old fairway turf, he turned to a combination of Velocity and interseeding. He used Velocity to eliminate the Poa annua, while the interseeding process was used to establish new turf.

"We used a 50/50 combination of Penn-Links II and Penneagle II, but found that the depth of the spiker-seeder was tearing some turf up. So we wrapped the drum in the same material we use for lining our bunkers and that reduced the depth that the spiker went into the soil, but it was still deep enough for the seed to take hold," explains Maibusch.

The combination of Velocity and interseeding worked well and Maibusch had germination in five to seven days of seeding. And now, two years after the interseeding process occurred, the fairways are more than 90 percent bentgrass.

■ **Keys to Success:** **Turf Surface Grooming**

Whether it's a result of spiking, verticutting or topdressing, superintendents regularly groom the turf surface throughout the growing season. This presents great opportunities to introduce an improved seed into the stand, enabling additional opportunities to build up the Penn bentgrass seed bank and providing further competition to the Poa an-



nua seed in the soil.

"Every time I open up the greens, whether it's deep verticutting or aerification, I like to reintroduce seed into the green," says Dave Phipps, superintendent at Stone Creek Golf Club in Oregon City, Oregon. "I'll throw about a half pound of Penn A-1 in there and I'm seeing some tremendous results."

Phipps looks at it as one additional, but small, step in the overall topdressing program, requiring just one extra guy to put seed down.

"I've been doing it now for two years and I've seen an overall appearance, vigor and turf quality and texture in all my greens. I've been really excited about it!"

■ **Low Cost, High Results**

The minimal time requirement coupled with zero loss of play makes the interseeding process appealing to superintendents all across the country.

"It's real simple," details Phipps. "Just 25 pounds across the whole golf course, which is about 140,000 square feet, at roughly a half pound per thousand. It's not that big of an outlet, so maybe \$200 per application."

For superintendents looking for an efficient and economical way to incorporate the most advanced Penn bentgrasses onto greens, tees and fairways, interseeding may



Right: Topdressing greens at Baltusrol Golf Club after aerification. Top: Preparing to broadcast Penn A-4 seed on greens at Baltusrol Golf Club.

be the perfect answer. It may take a few seasons for the new stand to dominate, but the end result is a much improved playing surface that is easier to manage – all at a cost that won't break the budget.

■ **Learn from the Best**

As a way to collectively offer interseeding techniques, Tee-2-Green Corp. created a video featuring interviews and advice from the following superintendents: Mark Kuhns, Baltusrol Golf Club; Sean McCue, Country Club at Castle Pines; Bob Maibusch, Hinsdale Golf Club; Dave Phipps, Stone Creek Golf Club; and Kevin Ross, Country Club of the Rockies.

These superintendents represent a variety of courses including both private and municipal, as well as a wide range of geographic locations.

The video is free upon request and can be ordered by visiting the Tee-2-Green Web site, www.tee-2-green.com.

TEE 2 GREEN

By John Torsiello

PROMOTE GROWTH

DONE AT THE RIGHT TIME, VERTICUTTING IMPROVES TURFGRASS HEALTH

Golf course superintendents have no magic bullet at their disposal for their ongoing battle to maintain the best turfgrass conditions possible. But one of the best weapons superintendents have in their arsenal is verticutting, a process that has gained popularity and now is common throughout the country for all types of turfgrass.

Verticutting is the thinning of turfgrass by blades or wire tines that cut perpendicularly to the soil in a shallow swath or a deep cut. Both methods can promote lateral and vertical grass growth. Yet, a deeper cut removes more material to allow moisture and oxygen to reach the root zone more easily.

"In this area, verticutting is fairly common," says Tom Johnson, golf course superintendent of New Richmond (Wis.) Golf Club. "I've been doing it regularly for about 15 years, and I've seen good results in the overall health and quality of our greens. People on the green committee comment if we miss verticutting for one reason or the other."

Verticutting is an important turf management tool to reduce thatch, says Tim Haines, golf course superintendent at Binks Forest Golf Club

in Wellington, Fla., a KemperSports-managed facility. Thatch ties up chemicals and reduces efficacy, making it difficult to move water into the soil profile. Verticutting helps alleviate those problems, Haines says.

Verticutting can be used to control graining, remove thatch, prepare for seeding, cultivate the soil or disperse core materials following aerification, says Anthony Williams, CGCS, at Stone Mountain (Ga.) Golf Club.

Also, verticutting is useful on courses that have newer turfgrass varieties that might tend to form thatch quicker than traditional varieties.

"Today's ultradwarf Bermudas and new varieties of bents seem to produce more thatch," Haines says. "Thus, the frequency of verticutting should be increased. With fairways that have bentgrass and Bermudagrass, thatch is also an issue. I will verticut a couple of times a season on both types of grasses."

David Phipps, golf course superintendent at Stone Creek Golf Club in Oregon City, Ore., says many of the new bentgrasses, like the As and Gs and Ts, are extremely aggressive and require a lot of cultivation. Heavy verticutting can be used in conjunction with light topdressing to help

incorporate sand into the surface.

"I verticut my greens to enhance a more vertical growth habit," he says. "Regular verticutting stimulates branching and tightens the turf."

LOCATION

Most superintendents will topdress greens and water heavily following verticutting. One of the benefits of verticutting, unlike aeration, is that the process has little impact on the playing surface, which is crucial to maintain to keep customers happy.

"We might verticut greens on a slow day, such as a Monday," says Steve Lane, CGCS, at Twisted Dune Golf Club in Egg Harbor, N.J., an Empire Golf Club Max facility. "You might see a slight difference in the roll on the greens the day it's done, but the grass bounces back quickly, and in a few days, you have optimum playing conditions."

The long-term benefits of verticutting are considerable.

"My goal, in terms of turfgrass health and playability, is customer satisfaction," Phipps says. "If the greens are healthy and smooth, then my job becomes much easier."

Haines believes verticutting improves mowing quality, which, in turn, improves ball roll and speed.

The practice also is becoming common on fairways and tees boxes.

"Verticutting is beneficial to the entire course because the blades grow higher on fairway and tee-box grass and might lay over," says Bryan Barrington, superintendent at Golf Club at Oxford Greens in Oxford, Conn. "With verticutting, you're permitting the blades to stand up so you can cut off runners, and, in effect, groom the plant to be healthier. It also improves air flow and water penetration so you can get a better cut. We're fortunate because we have large tee boxes that are square or rectangular. I can send a guy out to verticut the tee boxes, and he can make two passes and be done. With odd shaped tee boxes, it might take more time to verticut."

Fairways and tees are important but not as important as the greens, Phipps says.

"If you can verticut your fairways and tees, then your budget is probably a lot bigger than mine," he says.

DEPTH

The depth of the cut varies according to what part of the course is being verticut – a shallower cut on the greens and deeper elsewhere.

"We'll cut the greens about an eighth of an inch, and a quarter of an inch to a half an inch on the fairways," Barrington says. "If you go deeper than that, you're really pushing the machine."

TIMING

The frequency of verticutting and the time of year the practice is done can vary according to weather conditions and grass type. Superinten-

At Binks Forest Golf Club, superintendent Tim Haines verticuts to reduce thatch, which makes it easier for water to move into the soil. Photo: Binks Forest Golf Club



At the Golf Club at Oxford Greens, verticutting is common on fairways and tee boxes, as well as greens. Photo: Golf Club at Oxford Greens



dents should consider the turf type they have carefully and avoid stress periods or being too aggressive with depths of cuts at times when recovery would be slow, Haines says. Superintendents should avoid any practice that will stress turf in severe weather, such as prolonged periods of heat or dry conditions. This will avoid making turf more susceptible to disease.

"Ideally, I would like to lightly verticut once a week during the growing season and as needed during the off-season," Phipps says. "I've learned you have to be patient and not too aggressive. I use the Thatch-Away units, and they can pick up quite a bit of material in one pass. If I set them at barley cutting height, they become an effective grooming tool."

Gus Nelson, CGCS, at San Clemente (Calif.) Municipal Golf Course, verticuts several times a year depending on the growth of the turfgrass, but mainly it's during the growth cycles of spring and fall.

Johnson verticuts every 10 days to two weeks and follows that with regular mowing and rolling. It depends on how fast the grass is growing.

"When the temperatures in the Midwest are in the 90s during the summer, we have to be careful and might step back on verticutting," he says.

Verticutting should be done when turfgrass is growing and not under stress, Williams says.

"The general rule of thumb is to verticut as often as recovery and improved turf health are noted," he says. "I do it every 10 days in some areas of the course, but it might be wise to limit verticutting to two or three times a year in other areas."

METHODS

Verticutting methods vary. Technological ad-

vancements have increased the efficiency of verticutting machines and reduced the man power needed for the process.

"Some of the newer verticutting systems have made it much easier to clean up debris because the machine picks up more of it," Lane says.

"Technology makes it a lot easier than it was 10 years ago because the machines are more powerful and can handle more work," Barrington says. "I prefer not to have the person verticutting keep emptying the debris catch baskets because of the time involved. I'll send a couple of guys out behind the cutter and blow the debris off the greens."

Turf species and time of year must be considered before verticutting, says Patrick O'Brien, the USGA's Green Section southeast director.

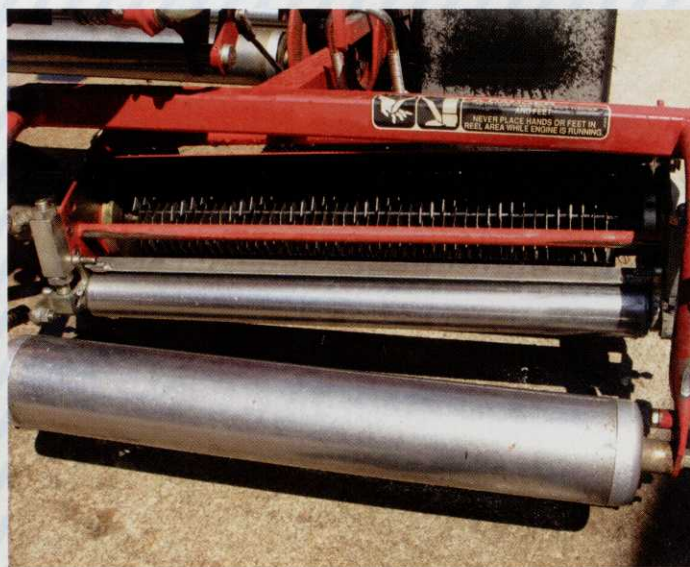
"For example, ultradwarf Bermudagrass varieties don't respond well to heavy verticutting, especially in the presence of other stress factors such as shade, drought and low fertility," O'Brien says.

COST

Cost factors, such as the need for additional equipment and man-hours to undertake the process, are other aspects of verticutting superintendents should consider.

"On putting greens, labor and time aren't a consideration because of only having two to three total acres per course to do," O'Brien says. "On fairways, because of more acreage, it can be a significant cost, about \$100 per acre or higher."

Many of the new bentgrass varieties are extremely aggressive and require a lot of cultivation. Photos: Stone Creek Golf Club



Phipps' major cost is the equipment needed to perform the task effectively and efficiently.

"Cost hasn't been a challenge to this point because we're making enough money to cover an additional expenditure needed to care for the greens," he says. "The one thing we do battle is labor and time. As a public course, Stone Creek generates about 60,000 rounds annually, so finding the time to cultivate the greens can be a challenge. We have to be creative when working our cultural practices without affecting tee times."

Labor and time are verticutting issues, but when it comes down to it, superintendents must view the process as an investment in the quality of the course, Williams says.

"We spend about \$5,500 a year in parts and labor associated with our verticutting programs," he says. "That doesn't include the initial cost of the mower and verticut reels. If it costs \$10,000 a year to do your verticut program, you must decide whether this is a plus or minus."

Superintendents also should consider factors such as the total grounds budget, golfer expectations, turf type and local stresses when they weigh the value of their program.

"Our program is worth the investment we make," Williams says.

To verticut greens, a superintendent will need a set of verticut heads for a triplex mower (between \$3,000 and \$4,000) and a fairway unit that can range in cost between \$5,000 and \$25,000, depending on the size and type of machine.

PROGRAMS

There are a few ways superintendents can implement a verticutting program, Haines says.

"One option is not owning fairway equipment and having contractors come in with their own machines," he says. "It's quick, and you don't pay for a machine that you use minimally. It costs about \$250 to \$300 an acre to have a contractor come in, and they'll vacuum the debris as well. You have to balance owning your own equipment versus having someone do it for you."

At Stone Mountain Golf Club, Anthony Williams, CGCS, verticuts some parts of the course every 10 days and other parts two or three times a year. Photo: Stone Mountain Golf Club

Verticutting benefits

- It improves turfgrass quality through thatch removal.
- When combined with topdressing, it improves water penetration and air flow into the soil.
- It has little impact on daily playing conditions because turfgrass recovers quickly from the process.
- It produces more upright grass growth for better mowing conditions.
- Turf that's verticut might withstand the threat of disease and harsh weather conditions to a greater degree because of growth stimulation.

And being creative with the staff can help lower the cost of verticutting.

"I don't see the extra man-hours as prohibitive," Barrington says. "Instead of doing fairways one day, grab those guys and have them verticut, especially on days when you don't have a ton of play."

There seems to be little research to suggest a direct correlation between verticutting and disease prevention. But maintaining healthier turf can never hurt.

"Any time a cultural practice can be performed to encourage plant health, your benefit will automatically be disease prevention," Phipps says. "A successful verticutting program

will coincide with a proven fertility program. One can't work independently of the other."

Superintendents should avoid turf damage when verticutting, especially on crowned areas of greens that can be damaged easily by blades or dry out quickly after the process.

"Verticutting can cause mechanical injury to the turfgrass plant, and that can stimulate disease if done at the wrong time of the year," O'Brien says. GCI

John Torsiello is a freelance writer based in Torrington, Conn. He can be reached at jtorsiello@sbcglobal.net.



WRITTEN PROOF



Quality maintenance is a function of a superintendent's experience, knowledge and available funds. Photo: Bill Bushman

by WILLIAM BUSHMAN

Here are five steps to manage your environmental stewardship

Mention the phrase “golf and the environment” to so-called environmentalists, and their expression immediately changes as they prepare to deliver a well-rehearsed and passionate diatribe about how golf uses phenomenal quantities of “methyl-ethyl-death” pesticides, groundwater-polluting fertilizers, and valuable drinking water to maintain exotic turfgrasses for the entertainment of the rich and famous. Mentioning the same phrase to a golf course superintendent elicits a variety of responses ranging from “we don’t have any environmental issues” to “we’re pursuing certification,” as they smile and slowly ease away.

More often, I run into an educated and sincerely interested member of the golf course industry who realizes golf and the environment are one and the same – and they want to make a difference.

In reality, I believe a large majority of superintendents are compliant environmentally day in and day out. Also, I believe many of them are conscientious environmental stewards who, unfortunately, spend little to no time documenting their management practices. In short, they’re good stewards who fail to provide written proof of their stewardship. It’s understandable, to a degree. I mean, who relishes the idea of volun-

tarily adding another major task to their regular daily responsibilities and duties?

So far, in most places, an environmental management plan isn’t required of most golf courses. But there appears to be an increasing consensus among members of the golf course industry who believe the topic of golf and the environment – and dealing with environmental management planning regularly – is here to stay. Accordingly, managers of the game of golf must respond aggressively to critics who don’t believe golf and the environment are compatible or golf courses aren’t a positive contribution to their communities.

Well-informed golf course superintendents and managers are the key to this aggressive approach. Documented environmental stewardship is the only way to convince the opponents of the game to understand good golf course management is inherently compliant and environmentally sound. The key is in the proof, or in this case, the written, implemented and regularly updated golf course environmental management plan.

Because the average day of a golf course superintendent already involves time and effort spent dealing with labor, management, weather, tournaments, membership, vendors, budget, equipment, licensing, irrigation, training, language barriers and community concerns, how do the environmentally-conscious document their compliance while managing the significant issues at their course? One way to accomplish this is following the GEM planning process.

GEM PLANNING PROCESS

The five-step comprehensive golf course

environmental management or GEM planning process is based on ISO (International Organization for Standardization) 14001, an international standard for environmental management systems based on sound planning, demonstrated stewardship, and continual improvement. Properly employed, the GEM process will yield measurable, continual improvement that focuses on the significant issues faced by the superintendent or manager at their golf course.

STEP 1: ANALYSIS

Experienced golf course architects know data collection, site analysis and keen observation are the keys to a good design. The same is true for environmental managers. Collecting and analyzing pertinent data; determining inherent opportunities and constraints of the land, its setting, its environmental challenges, and its management; as well as examining the course firsthand are all key tasks that need to be performed. All aspects of the golf course facility should be part of the analysis step. Those areas include the:

- Maintenance complex;
- Golf car storage building;
- Pesticide mixing and storage area;
- Equipment fueling and wash area;
- Clubhouse;
- Restaurant or snack bar; and
- Pro shop.

Another important component of the analysis step of the GEM process is the five-category, 100-question environmental compatibility index checklist. The ECI checklist categories include planning and compliance, operations and maintenance, water resource

management, conservation, and pesticides and pollution prevention. The ECI checklists are used to determine the current compatibility of a course's management practices with general environmental stewardship goals and objectives and will provide the manager with two measures. The first is the actual ECI – the tally of the “yes” answers provided in the checklist. This score represents where the course's stewardship level is today. The second measure, or the potential ECI, tallies the “yes” and the “partial” answers and shows where the course's stewardship level could be with a little more effort.

Additionally, any available environmental studies, maps, future development plans, and state/local regulations and requirements are collected to determine the potential environmental challenges, if any.

STEP 2: DOCUMENTATION

Having completed the detailed analysis, collected all the important data and established the baseline, the next step is to complete the assessment by identifying a course's environmental challenges and to finish the GEM plan document. Environmental challenges can be defined as concerns or issues of local, state, regional or national significance that might be impacted by

a golf course's management practices. A simpler definition for a challenge is any environmental issue that is bigger than the golf course. This is where the rubber meets the road. Determining a course's potential environmental challenges might or might not be a complex task. It depends on how well you know your community, state and federal regulations. A consultant might be valuable at this stage to ensure your list of challenges.

The list of potential environmental challenges parallels the gamut of environmental laws and regulations and includes:

- Wetlands;
- Landfills;
- Water conservation requirements;
- Threatened or endangered species habitat;
- Groundwater, wellhead, and injection well protection;
- Pesticide usage restrictions;
- Permitting;
- Storm water quality;
- Environmental restoration sites;
- Water supply;
- Archaeological and cultural resources;
- Floodplains;
- Air quality; and
- Coastal zone management.

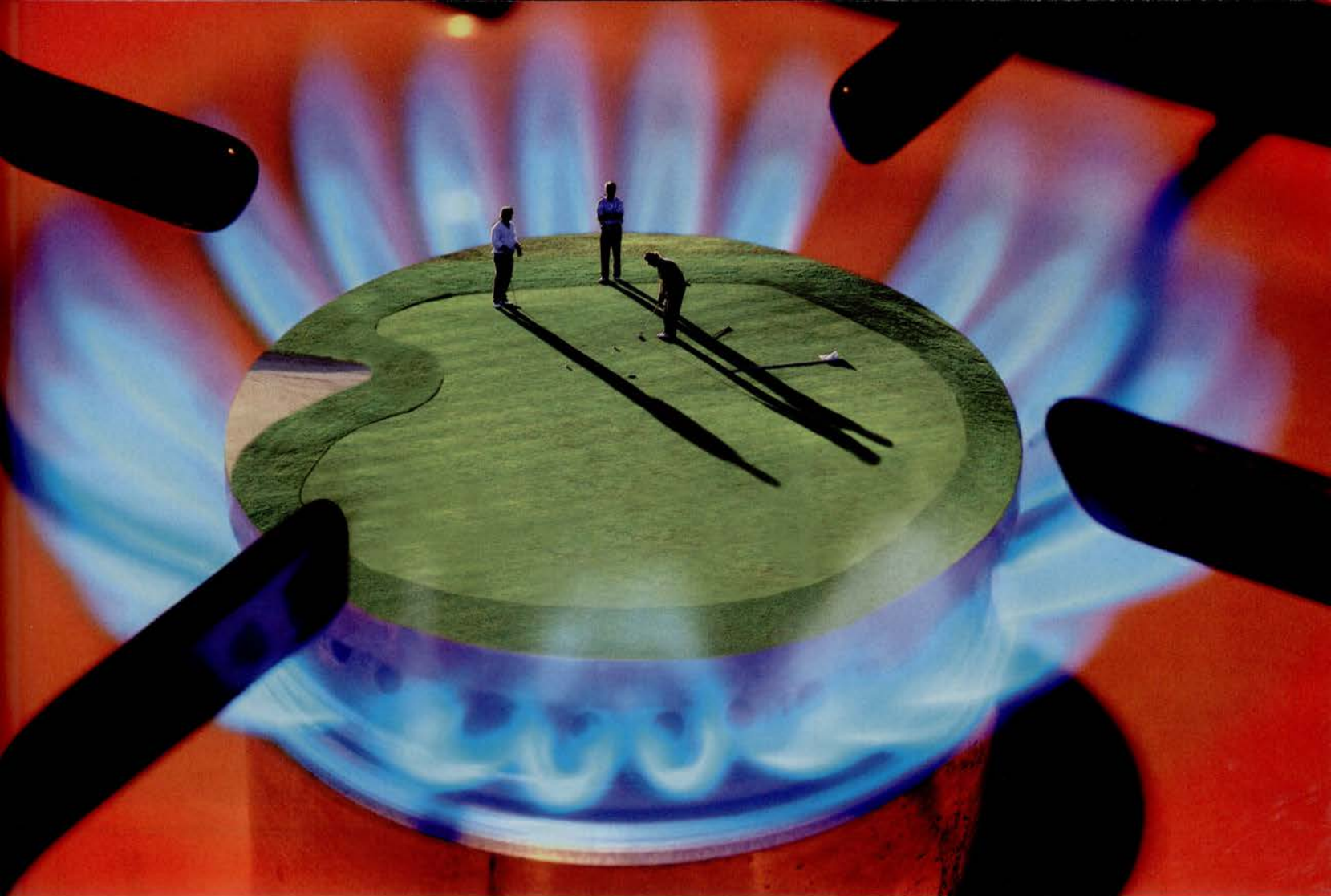
Armed with the final list of environmental challenges, the golf course superintendent can begin the important task of determining the management practices for each to ensure short- and long-term compliance with appropriate regulations or concerns. Accordingly, when this information is overlaid with the course's maintenance activities, sensitive environmental challenges can be protected by the management staff more readily. This is accomplished by examining all of the course's management practices that possibly could impact an identified environmental challenge negatively. By identifying practices that can have a profound or significant effect on management's perceived ability to be stewards of the environment, more emphasis can be placed on employees to take special care during these tasks.

Additionally, for each environmental challenge, a superintendent must determine an appropriate management practice that complies with all regulatory requirements while ensuring the golf course is still attractive and playable for customers.

Courses implementing a GEM plan must have a written environmental policy that includes statements such as minimizing the potential for negative impacts, always staying compliant

Pond maintenance can be a complex task when you're unsure of applicable environmental regulations. Photo: Bill Bushman






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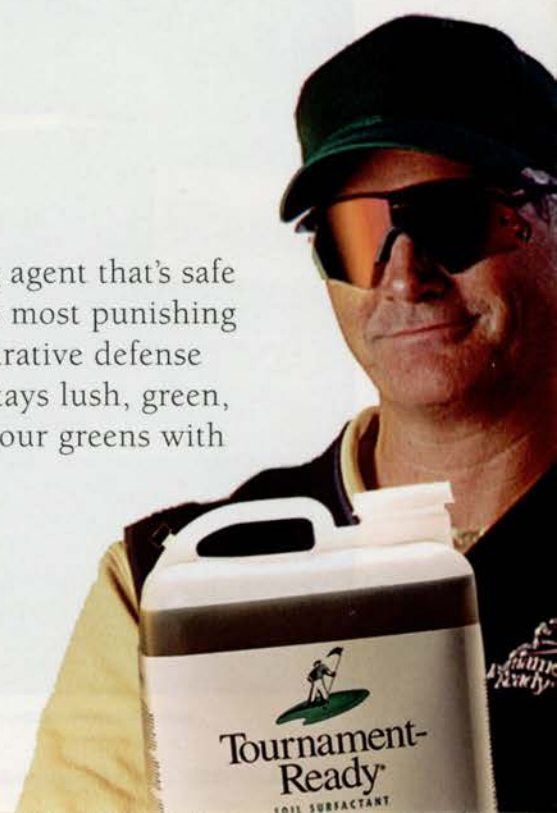


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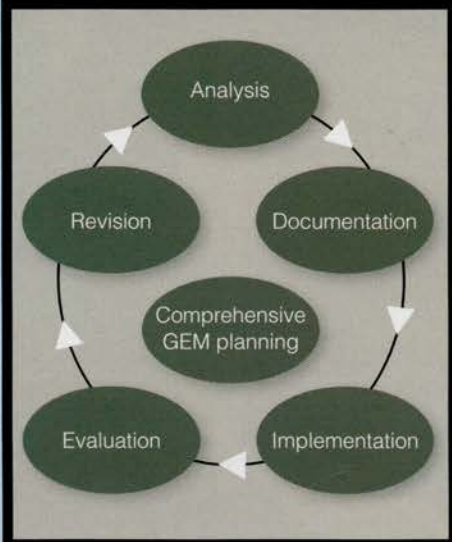
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GEM process



and committing to regular reevaluation to satisfy the policy requirements. Because all employees should be aware of the policy, a mention in a newcomer's brief and a regular mention of the policy and its implications during weekly staff meetings or safety briefings are good ways to get the word out to employees. And because you've come this far, why not post it for employees and customers? Take credit when you can. A professional-looking policy statement can be created and posted easily in highly visible locations throughout the facility.

STEP 3: IMPLEMENTATION

Positive, decisive action is the only true measure of a GEM plan's success. By implementing new practices, whether to knowingly improve the course's environmental compatibility or to just try new ideas to determine their value, you and your customers should benefit. Consider providing summaries of the GEM plan and posting

a map of the property depicting its particular environmental challenges for customers and employees and immediately begin finding ways to minimize or eliminate any and all potentially negative environmental impacts.

STEP 4: EVALUATION

Continual improvement requires regular evaluation. Ongoing measurement of the reduction or elimination of environmental impacts the newly implemented practices have on the course is one way to evaluate a course's management practices. For example, documenting the reduced use of inputs such as fertilizers, pesticides and irrigation can be used to demonstrate the increased environmental stewardship of the golf course management practices, as well as the overall value of the GEM plan. It's important all golf courses show improvement in their environmental compatibility throughout time. One way this can be accomplished easily is to evaluate golf course

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management practices regularly and change, refine or adjust them where appropriate.

STEP 5: REVISION

A high-quality GEM plan must reflect the most current situation to be valid. Acting on lessons learned is right behind initial implementation as the most important aspect of a successful golf course operation. Accordingly, a GEM plan should be kept as current as possible at all times, with major revisions regularly scheduled at appropriate intervals. And once completed, a GEM plan is easy to update because most of the work has been done already.

A GEM planning process can guide the comprehensive management of all aspects of the golf course facility while establishing a measurable baseline to track improvement. The GEM planning process also ensures management efforts are focused on the significant concerns by environmental challenges. Additionally, a GEM

plan assists with attaining and maintaining daily compliance with all appropriate rules and regulations while ensuring constant examination of all aspects of golf course management to achieve the highest standards of environmental excellence. Done correctly, it will be worth the effort and will provide you with proof of your stewardship to all those environmental activists who know so much about your business.

So, the next time an environmental activist – or a customer – asks you about golf and the environment, you can be ready with a well-researched, field-tested, regularly updated written answer that stops them in their well-worn tracks ... with the truth. **GCI**

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Sedimentation of ponds connected to a running stream is a common golf course environmental challenge. Photo: Bill Bushman

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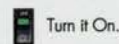
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Building a facility to contain chemical and fertilizer products completely makes sense to Paul Miller, CGCS. He says he needs to be able to handle, load and mix products and wash equipment in a controlled environment. Photo: David Wolff

Stepping UP

NASHAWTUC COUNTRY CLUB TAKES PROTECTING

THE ENVIRONMENT TO THE NEXT LEVEL By David Wolff

There's been a lot of talk lately about reducing the nation's impact on the environment. And while some people make decisions to reduce their "carbon footprint" and use less energy, among other environmental practices, golf courses are improving their own environmental stewardship. Nashawtuc Country Club in Concord, Mass., is an example.

First, the club was honored by Audubon International as a Certified Audubon Cooperative Sanctuary, and secondly, it opened an environment management center.

The course is the 10th in Massachusetts and 638th worldwide to earn recognition through the Audubon Cooperative Sanctuary Program for golf courses, a program recognized and supported by the USGA, the PGA of America and other golf organizations that help protect the environment and preserve the natural heritage of the game of golf.

The 220-acre Nashawtuc Country Club, which is adjacent to the country's oldest Audubon Society chapter, and Paul Miller, CGCS, have taken a systematic approach to address environmental issues, says Kevin A. Fletcher, Ph.D., executive director of Audubon International.

"They've gone above and beyond what's required by law to protect the environment," Fletcher says. "The new facility is part of a culture at the club to work toward a positive impact on the environment."

The impetus for the environment management center, which is adjacent to the maintenance facility, came when Miller took a close look at the 100-year-old maintenance building, which was an open-air, wooden structure located directly above a wetland. He proposed

an improvement project to the club's board of directors in February 2006. Additionally, club management decided it wanted to complete its Audubon International certification.

"Many clubs wash equipment in a place where water will drain into a low area," Miller says. "There are clippings treated with chemicals and fertilizer that are draining into areas that should be regulated. Massachusetts has no regulations on wash water, or rinsate, so, in essence, we were polluting. To coin a phrase I'm fond of, 'the past belongs to the future.' What we're doing now will influence future generations. Building a facility with full containment of chemical and fertilizer products makes sense. We have to be able to handle, load and mix products and wash equipment in a controlled environment."

EMC FEATURES

Miller chose an ESD closed-loop wash system for the environment management center. Because the system is self contained, there are no leaching or rinsate issues. The system controls everything that comes off equipment – grease, oil, grass, pesticides and fertilizer. The liquid is broken down by enzymes, while the clippings are filtered out and hauled to a mulch pile. Bioremediation is used to reclaim, treat and recycle the water.

The center includes a chemical storage room with a pitched floor and sump to recover anything that's spilled. Adjacent to the chemical storage room is a mix-and-load bay – also with a pitched floor and sump – for sprayers. There are a series of valves in the mix-and-load bay, so if there's a major rupture in a tank or line, all the chemicals can be recovered and stored in a

300-gallon tank. When checking nozzles and pressures, the valves ensure any rinsate flows into the ESD system in the next room.

The environmental management center, which is located in a high-and-dry area, is contoured away from the building so nothing can drain inside. A series of catch basins ties into a vortex chamber that ties into a headwall that disperses into the wetlands. The basins filter sediment to prevent material from draining into the wetlands. The basins and vortex are cleaned several times a year.

"We were on the front end of any environmental issues, and the town of Concord embraced the project," Miller says. "For Audubon certification, the assistant natural resources commissioner was part of the club's support group."

The building permit for the project needed 12 stamps of approval from various government agencies before construction could begin. The club selected Golf Structure Alternatives from Rye, N.H., to coordinate government agency approval and design the 115-foot-by-33-foot facility.

"The goal was to address environmental issues involved with the handling of chemicals and washing equipment," says Roger Mulloy president of Golf Structure Alternatives. "Golf needs to be at the forefront of environmental sensitivity. In the past, the industry hasn't been as proactive as it needed to be. Our company works with clubs to help them accomplish these goals."

While a project like this isn't inexpensive, there are cost savings for the club.

"For us to get a good price on quality products, we have to take advantage of preseason buying to

maximize discounts; and to accomplish that, we need appropriate storage," Miller says.

Choosing an accomplished architect such as Mulloy reaped other benefits.

"The tighter the specifications on the building, the more competitive the bidding," Miller says. "The building is fireproof and has cinder-block construction, contoured floors and a metal

roof. The cost was \$150 a square foot, or about \$600,000. That might seem expensive, but in relationship to the cost of an environmental cleanup, it's not a lot of money."

ENVIRONMENTALLY SENSITIVE PROGRAMS

The new facility hasn't changed Miller's cultural practices because he's always tried to do what's

best for the environment.

"Some of the products we use are expensive, but they pay off in other ways," Miller says. "For example, we're going to use a new product, Trinity, from BASF to control anthracnose. By research standards, it will give us 28-day control. As a result, we will be using two-thirds less product to control this disease.

"Almost all golf courses use plant protectants, and we want to be in line with organizations like Audubon and use the latest technology and a minimum amount of product to get acceptable results," he adds. "If I'm chasing a fungus rather than being proactive, I'm using 66 percent more product. I'm exposing more people and turf to more chemicals. As long as Audubon keeps that big-picture perspective and knows we're responsible users, we can work together. That's incredibly exciting."

Miller says many clubs don't pursue Audubon certification because of the requirements for storage, mixing and loading of products, as well as taking care of rinsate. However, Audubon doesn't require a facility like the one at Nashawtuc.

"We're all responsible enough to try to keep up with technology, but if my chemical budget is X,



Nashawtuc's environment management center features an ESD closed-loop wash system. Because the system is self contained, there are no leaching or rinsate issues. Photos: David Wolff



and in order to meet Audubon's environmental goals, we decide it should go to 1.5 X, I can use this in my favor when I negotiate the budget with the club," he says. "I remind them we're a sensitive property and there's technology that's better, but it will cost more money. In this case, Audubon is our support group."

"Plant health is so incredibly important to the success of our jobs and to protect the environment," Miller adds. "If we don't have to spray, we won't. If the plant is healthier, it will require fewer chemicals. If we can apply at a reduced rate, everyone wins."

Miller has soil and plant tissue tests conducted regularly, and he monitors the condition of the turf constantly. His biggest environmental challenge is soluble fertilizer use.

"Environmental activists believe it will relocate into low areas," he says. "We use foliar fertilizer and spoon-feed. We try to put down only what the plant will pick up. Our property is prone to flooding, and if I were to put down any type of organic or granular product at a time when I anticipate a flood, those nitrates and phosphates would go right into the Sudbury River. I make sure I use products that won't relocate, and that's in line with the Audubon approach to fertility levels."

The club has partnered with Grigg Bros. Foliar Fertilizers and its technical representative, Gordon Kauffman, Ph.D., to develop the fertility program.

"Paul makes sure his fertility program takes an integrated approach to protect the environment," Kauffman says. "Our highly efficient foliar fertilizers maximize the use of nutrients. This method gets fertilizer into the plant more efficiently. Soil and tissue tests are used as guidelines. Paul then looks at how the plants are responding to fine-tune the program further. The goal is to stimulate plant health, which will reduce pesticide applications."

ART AND SCIENCE

Miller admits to stretching the limits of the integrated pest management approach.

"We have to be able to anticipate disease and infection," he says. "This is where the art of our profession takes over from the science, and this takes experience and ability. We have to be able to see symptoms before there's injury to the plant. Some systemic fungicides have preventive and curative rates. The curative rate can be two,

three and four times the preventive rate. The IPM approach is to scout, look for the pressure and apply. However, if there's a tournament or rain event that prevents application the next day, that first incidence of pressure could be three days from the time you can spray and make a difference in three times the rate of application.

"Let's say the humidity is 70 percent, nighttime temperatures are 80 degrees, and we're in a dicey situation looking at thunderstorms," he adds. "When the combined number is 150,

we can expect some issues. We want to spray preventively and use less chemical. So, do we synergistically tank mix two products at low rates to get the strength from both chemicals, or do we wait a little longer and find out we have to go into the curative rate three days later? Is that anticipation outside the IPM approach? That's the art and science." GCI

David Wolff is a freelance writer based in Watertown, Wis. He can be reached at dgwolff@charter.net.

TOURNAMENT TESTED

Paul Miller, CGCS, is in his 20th year at Nashawtuc Country Club in Concord, Mass., and has hosted his 20th PGA Tour event, the Champions Tour Bank of America Championship.

"It's exciting to be able to push a golf course to its limits knowing how far you can go and peaking for a major event," Miller says. "That gets the juices going, and it still does after 20 years. Some tour officials told me I've hosted more PGA Tour events than anyone else in the country."

Course conditions have changed throughout the years, primarily because new players on the Champions Tour are coming off the regular PGA Tour.

"The players on the old senior tour were appreciative of quality conditions," Miller says. "The new players expect them. As a result, there's a lot of pressure on tour officials. The agronomists are sensitive to irrigation. They prefer no irrigation on fairways for the entire week of the event. They want firmness and consistency. But we spend more time on bunkers than any other area."

The height of cut for the tournament isn't different than when there's member play, with the exception of the rough, which is higher during the tournament. To achieve tournament conditions, the frequency of cut on the fairways is increased.

"We double cut fairways for the event," Miller says. "I also take advantage of high rates of growth regulators, and combined with increased frequency of cut there are few clippings. The fairways are extremely tight and dry. This, plus new golf club equipment technology gives players their distance."

The club's members take pride in hosting the event. As new members come in, almost all are supporters of the tournament despite any disruptions.

"It's a televised event, and they like to show off the club to their friends," Miller says. "But most importantly, our members are excited about the money that goes to charity. This year the tournament raised more than \$400,000." GCI



IT'S THE CONDITIONS, STUPID!

At Rocky Gap Lodge & Golf Resort, Mark Jewell is fixing agronomic problems by returning to basic cultural practices.
Photo: Rocky Gap & Golf Resort

By John Walsh

ENHANCING COURSE CONDITIONS CAN IMPROVE A FACILITY'S POSITION IN THE MARKETPLACE

To stay a leg up on competition in markets throughout the country, most facilities are focusing on three things: course conditions, service and amenities. Many, if not all, agree the success of a golf facility depends on the playing conditions of the course. And many are spending money to improve those conditions to bolster or hold their position in the marketplace.

WHERE IT SHOULD BE

Rocky Gap Lodge & Golf Resort in Cumberland, Md., features an 18-hole Jack Nicklaus signature design, driving range and practice facility. It opened in 2000, but despite its age, the course wasn't in good shape a year ago and needed improvement.

"There was a severe lack of fertility on the tees, fairways and rough," says Mark Jewell, director of golf maintenance operations since September 2006. "There was a lot of disease pressure and dollar spot. Preemergent weed control hadn't been done in two years. There was a lot of crabgrass, clover and thistle. There were propertywide problems with weeds. A lot of cultural practices weren't being done."

Jewell, who helped with the grow-in of the course as an assistant, says he was hired specifically to improve course conditions.

"Fixing the problem is all about getting back to basic cultural practices, such as large aerification (five-eighths cores), along with preemergent and postemergent herbicide programs," he says. "We started a new program when I arrived Sept. 18. The first thing we did was aerify. My assistant has been here eight years, and he said it was the first time in eight years the greens were aerified twice in one year."

Currently, Jewell is focused on controlling thatch.

The staff had a lot of time to work on the newly implemented turfgrass management program after aerification was done last year because of the warm winter, Jewell says. The staff, including an assistant, irrigation tech and full-time mechanic, consists of 16 workers. Jewell kept the existing staff and added a spray technician and two equipment operators when he arrived.

"I'm a 'keep it simple, stupid' type manager," he says. "It's a team effort. I want the crew to buy into the program. I teach them about the program because the more knowledge they have, the better they'll be."

Jewell has had help financially, too. Since his arrival, the maintenance budget increased \$200,000.

"When I came on board, Billy Casper Golf

recommended that increase to turn the golf course around," he says.

BCG is under contract with Crestline Hotels & Resorts for five years to perform agronomic maintenance on the golf course. Crestline manages the property, and the Maryland Environmental Development Association owns the property.

Rounds and revenue at Rocky Gap have declined for several years, Jewell says, admitting he doesn't have exact numbers. But he started to see things coming around last fall. Last December, thanks to a warm winter, the course generated 785 rounds versus a budget of 50.

Jewell says feedback from golfers and golf writers from the Baltimore and Pittsburgh areas has been positive. And last fall, the resort added sales representatives in Northern Virginia and Pittsburgh.



The \$2-million renovation of Cottonwood Valley Golf Course made the product acceptable again, says superintendent Rusty Wilson.



The golf courses at the Shawnee Inn and Golf Resort were reconfigured to attract beginner golfers. Photo: Shawnee Inn and Golf Resort

"We're marketing aggressively, drawing on the tri-state area in key markets," he says. "We'd like to be around 20,000 rounds Dec. 31. We're open every day of the year weather permitting.



Jewell

"We're out to provide the best product we can," Jewell adds. "Customer service in our No. 1 goal. We're making sure we're sound, culturally, and have a well-trained staff. We're getting the word out that we're back in the shape that a Jack Nicklaus course should be."

REFOCUS

Bill Troyanoski, general manager of Saddle Creek Resort in Copperopolis, Calif., which features one 18-hole golf course that's 11 years old, is in a position like Jewell's. Troyanoski, who has been there two years, was hired to improve golf course conditions, which weren't flattering, he says.

"No one understood the status of the golf course," Troyanoski says. "We are a real-estate driven entity. When I arrived, we were going through two and a half years of growth, and our weaknesses were masked. Once things slowed down, we asked, 'Where are the guest and package rounds? The way to do that is through quality, culture, service, amenities and golf course conditions.'"

So Troyanoski made changes working with the current structure and hired Paul R. Latshaw, who brought clarity and vision, as a consultant. Latshaw helped Troyanoski before at Roycebrook Golf Club in Hillsborough, N.J. But some things didn't change, such as golf course superintendent Scott Dickson and the maintenance budget (\$1.3 million) because there was no need to change those, Troyanoski says.

"It was a perfect example of good superintendent with less than spectacular leadership (from management)," he says.

Troyanoski, Dickson and Latshaw are working to get a healthy stand of ryegrass in the fairways, eliminating the bentgrass that contaminates it and relieving compaction.

"We needed to change the soils," Troyanoski says. "We've added gypsum and more organics. We have some work to do on greens to get them where they need to be. We also purchased equipment such as an AerWay vertiquake and eradicated the *Poa* with chemicals. There's no secret to this. It's a timing and persistence issue, not a labor or budget issue. Killing turf is tough. It's hard to sell the future."

Sometimes the wrong equipment is being used to maintain golf courses and is actually damaging a golf course, Troyanoski says.

"A triplex is used on slopes and hills, and when it turns, it will rip up the turf," he says. "People use a triplex attempting to save man hours, but they're actually tearing up the turf. Green surrounds are more

busy than fairways, and if green surrounds are ripped up, that's what golfers will see."

Troyanoski also looked at the history of outside guest play and only to find rounds had been declining for three years. However, guest rounds have increased this year and are expected to eclipse 12,000 after declining to 9,000.

"The golf course is our engine," he says. "Without the golf course, Saddle Creek is a beautiful place with something missing."

Amid improvements, competition in the area is expected to heat up.

"There will be two to three golf courses added in the next five years," Troyanoski says. "We're aware of the competition, but we're not letting the competition dictate what we do. You need to be prepared to be a leader. You want to set the pace, not somebody else."

ACCEPTABLE AGAIN

To improve its status in the market, Four Seasons is improving the conditions of the two courses at the Four Seasons Resort and Club Dallas at Las Colinas in Irving, Texas. Four Seasons renovated the 27-year-old, 18-hole Cottonwood Valley Golf Course, and currently is reconstructing the Tournament Players Course, which is estimated to cost \$8 million. Everything is being renovated on the TPC course, but it won't be rerouted, says golf course superintendent Rusty Wilson.

Wilson says the family-oriented club is considered a value in the area. Wilson, who has been there a little longer than three years, says the initiation fee is \$50,000, which includes use of two golf courses, spas, pro shop and tennis courts. Higher-end clubs in the area cost \$125,000 to



Troyanoski

\$150,000 just for golf, he says.

The club, which has 700 golfing members and hosts the EDS Byron Nelson Championship every year, had been struggling with membership, and course condition was one of the reasons, Wilson says. So members wanted the renovation. Last year, Cottonwood's green complexes were renovated, the tees were leveled and the bunkers were renovated. The old greens were built on calcarious sand, and the turf had short roots. The *Poa annua* greens were contaminated with Bermudagrass, which is in the fairways and approaches.

"The product, including the putting green quality, was unacceptable," Wilson says.

The renovation of Cottonwood – the course closed from July 15 to January 15 – cost about \$2 million. Four Seasons paid for the renovation; members weren't assessed. An LS 44/962 blend of bentgrass is now on the greens and sand was added to the clay-based tees. The fairways are still 419 Bermudagrass. Landscapes Unlimited renovated the greens and tees, and C.R. Sanders renovated the bunkers. Jay Morrish was the architect.

"When we did bunker renovation, we added excessive drainage in a box formation nine feet apart like greens construction," Wilson says.

Originally, the renovation project was going to be a three-year plan, renovating six holes at a time, but Four Seasons decided to take the

hit right away and do the whole thing at once, Wilson says.

Associated with the renovation, there's been a marketing strategy from the beginning, Wilson says.

"The selling point now is to get in at a lower price because when the TPC course is finished, fees will increase because we'll have two new golf courses. Because of this strategy, membership has increased."

GOLF AND THE ENVIRONMENT

Shawnee Inn and Golf Resort in Shawnee on Delaware, Pa., recently renovated its golf facility, turning one 18-hole course (originally designed by A.W. Tillinghast), one nine-hole course and a driving range into a 27-hole championship golf course and a par-3 course.

Being right next to the Delaware River can cause problems. The river recently flooded the golf course, which has been closed at various times for six weeks during the past three years. As a result of the flood, electrical service was lost on the lower level, and DensGlass (gypsum sheathing) was installed next to the river. The flood hurt the resort financially because golf is normally 30 percent of its revenue.

"There's a lot of talk about water management, but there's not much to be done," says general manager Rob Howell. "It's life on the Delaware. We tout our location on the Delaware River,

even though Mother Nature has taught us she's the boss."

There are two courses within 10 minutes of the resort – one is a Jack Nicklaus design and the other is a Donald Ross design. The facility's competition is other resorts.

"We're trying to market Shawnee as a golf destination," Howell says. "We're targeting the East Coast. We're only 75 miles outside New York City."

As part of that mission, management built a golf academy and the three-hole short game area designed by Tom Doak, who ended up designing a nine-hole course. Part of the Approach Course doubles as a driving range. Tee times for the Approach Course, which is lighted, are from 5:30 p.m. to 11 p.m. The lighting decision wasn't made with marketing research, it was more an intuitive decision by the owner, Charles Kirkwood, Howell says.

"Night golf is steadily improving," Howell says.

The new course layout was designed to give those who are intimidated by 18 holes, and those who work all day and would like to play at night, an opportunity to play nine holes.

"However, we do get golfers who play 27 holes in one day," Howell says. "There's a historical significance to it because architect A.W. Tillinghast's first design was here."

Staffing has been increased to support the recent renovation at Shawnee, which opened in 1911 and hosted the 1938 PGA championship. The golf course maintenance staff was beefed up for the Approach Course and instructors were hired for the golf academy.

The resort, which added outdoor dining for golfers, is focusing on an Audubon program for the 27-hole championship course, not the Approach Course. They should be certified in five or six years, Howell says.

"We're going through a renaissance of focusing on our history, golf and the environment," Howell says. **GCI**

Eliminating bentgrass that was contaminating ryegrass in the fairways and reducing thatch were top priorities to improve course conditions at Saddle Creek. Photo: Saddle Creek Resort



At Hamilton Farm Golf Club, superintendent Ray Viera faces challenges such as growing bentgrass in humid conditions and water management. Photo: Hamilton Farm



Exclusive ranks

Newly assembled managers
at **HAMILTON FARM** aim
to raise the profile of the
New Jersey facility

By Mark Leslie

Dream teams. Think of them, and you envision Michael Jordan, Larry Bird and Magic Johnson. Or, perhaps, Johnnie Cochran, F. Lee Bailey, Alan Dershowitz and Robert Shapiro.

Hamilton Farm Golf Club in Gladstone, N.J., has assembled its own version of a dream team: the trio of “swing doctor” and author Mike Adams, longtime Oakmont (Pa.) Golf Club assistant pro Steve Archer, and notable bentgrass superintendent Ray Viera.

In one fell swoop, general manager Tim Bakels, newly on board with the mandate to put together one of the best management teams in the country, brought in these three industry professionals this past spring. Archer joined Hamilton Farm as director of golf in early April, Viera as superintendent in late April and Adams as director of instruction in early May. There was only one thing in mind.

“Our goal is to establish Hamilton Farm as the most exclusive, highly sought-after membership in America,” says Bakels, who joined the club last August after eight years at Desert Highlands in Scottsdale, Ariz. “And we’ve brought in three of the strongest names in the business to accomplish this goal.”



Hamilton Farm's management team:
From left, Ray Viera, Steve Archer,
Tim Bakels and Mike Adams.



The management team is focusing on providing the finest service and amenities in terms of overall experience. Photo: Hamilton Farm

From service to teaching to course conditioning, Viera's goal is to reach "Top 100 Modern Course" status quickly. It's a concerted effort to recruit the top pros and put Hamilton Farm in the bracket it belongs, he says.

"Basically, we're here to put Hamilton Farm on the map," says Adams, a former PGA Tour pro who's director of the PGA's National Academy of Golf at Palm Beach, Fla. "My job is to make everybody play better, and the rest of the staff's is to make their time here as enjoyable as possible. Ray's job is to make the golf course as beautiful as possible so people will enjoy playing it. Steve is a great player, merchandiser and teacher – the total package."

Archer, 36, deflects the praise of the club professional to his former mentor, Bob Ford of Oakmont Golf Club. But he believes he has learned how to attract members to private clubs of this stature.

"There are no secrets," Archer says. "It's a

warm greeting and a fond farewell, the traditional ladies and gentlemen serving ladies and gentlemen. We want the finest service and amenities available in terms of the overall experience. Every need is taken care of as soon as you come on the property until you leave, whether it's with your golf game, fine dining or all the things that we offer. It's an atmosphere of service. We try to attend to every detail and need and to think ahead so members and their guests are overwhelmed with a 'wow' factor when they come through the gates."

THE LURE

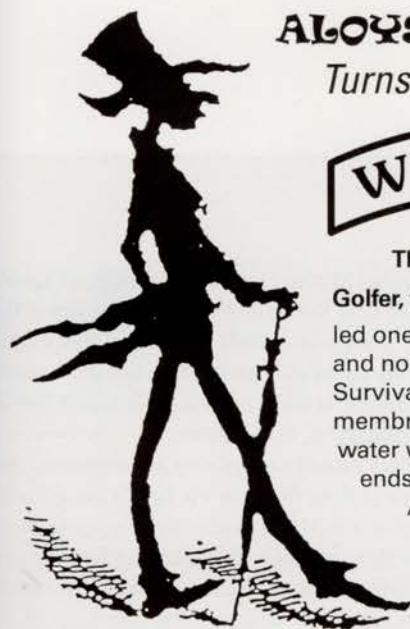
The cornerstone of the club is the championship-length, 18-hole Highlands Course and its companion Hickory Course, the only USGA-rated par-3 track in the country. Both were designed by Michael Hurdzan, Ph.D., and Dana Fry. Sculpted bunkers with high sand flashing, a hardwood forest setting along highlands and vistas stretching toward the Hudson River dramatize golf at Hamilton Farm.

The golf course, Georgian mansion, lodge and clubhouse were enough to pull Adams and Archer away from other facilities.

"It's the total package, from the physical plant to the golf course," says the 53-year-old Adams. "Every golf hole offers a different challenge and plays differently every day, depending on the wind conditions. There are many changes in elevation, lots of trees and water, and it's in immaculate shape. After my visit and speaking with Steve, I realized this is the right place to be."

Adams' relationship with longtime friend Archer played a considerable role in his decision to teach at Hamilton Farm during the summer and return to Florida during the winter. Archer, who co-founded AMF Golf Management, a professional recruiting firm that hires professionals for top private clubs, was glad he made the move to Hamilton Farm.

"We have the facilities, and now we have the team to take Hamilton Farm to the next level and hit every facet of our operation," he says. "On the instruction side, we have Mike and Karen Noble, one of our assistant teaching professionals who played the LPGA Tour for 10 years. On the turf side, we have Ray and his assistant, Patrick Husby. From the professional side, we have me and Matt Freitag, our head golf professional who's here year round."



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1983 "...We use city water - we're on a meter. Based on comparable figures for 1980, **we reduced water use by 20% in 1983...**"

1985 "...This year we would water Friday night, and then wouldn't water again until Sunday night. We **used 30% less water...** didn't syringe once this year...just didn't need it! When we first went on water restrictions, **SURFSIDE 37 kept our fairways alive** during that long July/August stretch. **You can use it anytime...it doesn't matter how hot it is.** We held our worst fairway with a total of 5 gals. per acre..."

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1993 "...**I saved more than 90% of my syringe labor budget.** Afternoon watering was basically eliminated. During the summer of 1993 we syringed less than ten times in the afternoons. During the summer of 1994 we only had to syringe two afternoons. SURFSIDE 37 has **helped eliminate hard to wet areas;** by treating the entire green complex, water movement through the soil has been improved. This has **decreased the need for daily irrigation,** and **nearly eliminates the need to syringe during the day.** **We have saved our operation over \$7,000 per year in labor costs** during the summers of 1993 and 1994..."



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The Highlands Course is set amid a hardwood forest and offers vistas stretching toward the Hudson River. Photo: Hamilton Farm

THE RIGHT CHOICE

To find the right superintendent, Bakels called Phil Shoemaker Jr., the superintendent at his former club, Desert Highlands, and asked for a recommendation. The answer: Ray Viera. Shoemaker suggested Bakels call Rutgers University for a reference. So Bakels asked a professor who he would recommend for the job. The answer: Ray Viera.

"At that point, it seemed pretty obvious who our choice should be," Bakels says.

When Bakels gave Viera the call, Viera was working at The Members Club at Four Streams in Beallsville, Md. The club's members have

included Michael Jordan, Washington Capitals goalie Olaf Kolzig and various members of the U.S. Congress. Bakels convinced Viera, who cut his agronomic teeth as an assistant superintendent at Shinnecock Hills Golf Club in Southampton, N.Y., to visit.

Viera earned a reputation for conquering *Poa annua* at Four Streams – a significant achievement in the Mid-Atlantic. By July, using plant growth regulators, changing the fertility and reducing water use to create firm and fast conditions, he rid the course of *Poa annua*.

Viera's reputation also included dealing with members ably and, as he says, understanding the mechanisms by which memberships work and what they desire at the higher level – a level that includes senators, professional athletes and others who guard their privacy. At Hamilton Farm, where the membership fee is \$300,000, that trait is a plus.

"Ray is equally talented with a balance sheet

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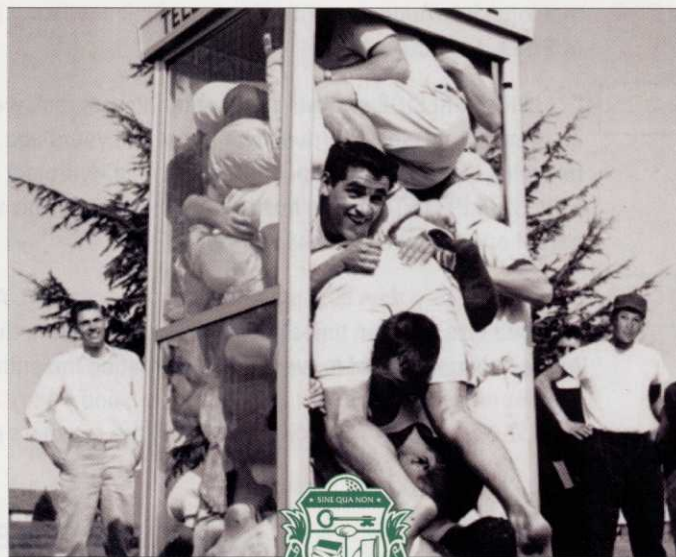
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as with bentgrass," Bakels says.

But Viera sees others issues as his greatest challenges. Viera, who's replacing Paul Ramina, a lifelong friend who has taken the position as director of grounds at Winged Foot Golf Club in Mamaroneck, N.Y., is stepping into big shoes. Besides that, there are water-management, agronomic and environmental challenges with which he has to deal.

"Going a couple hours north to New Jersey, you'd think you would have less pressure in the summer," Viera says. "But that's probably not true. I'm still going to experience some of the challenges such as growing bentgrass in humid conditions.

"Water management is probably going to be the No. 1 test," he adds. "My mantra has always been being able to understand the plant's needs in water use simply because I didn't have enough water to use at Four Streams. It forced me to learn how to do it. So I've brought that experience

along with me, as well as learning how to produce good grass on poor soils, how to get low mowing height on poor soils, issues of that nature."

Environmentally, Viera has dealt with tough laws in Maryland, so it shouldn't be a problem for him to deal with the stiff regulations in New Jersey.

In the human-resource area of the job, Viera has gone 10 years without having a single employee fired or quit. The list of his assistants who have gone on to superintendent positions include Jim Lynagh at Meadowlands Golf Club in Philadelphia; Dan Bastille at Spring Valley Golf Club in Sharon, Mass.; Brian Bupp at Bretton Woods Country Club in Potomac, Md.; and Tom Harshberger who will take over Viera's duties at Four Streams.

GETTING BETTER

With his team assembled and working tightly together, Bakels launched an effort to increase

membership and fill the club. Besides visits from PGA and LPGA Tour pros for their lessons from Adams, word-of-mouth about the service headed up by Archer and course conditions maintained by Viera could do the trick quickly.

"We're all like a family serving a family," Bakels says. "There's not one department that won't help another."

"We're definitely working toward the fine-tuned machine we want," says Archer, who is actually leaving Hamilton Farms in October to go to Frederica Golf Club in Saint Simons Island, Ga. "If you're standing still, you're getting passed. It's a fluid situation where we're striving to get better on a daily basis. By no means have we got everything figured out. That is a constant goal for each of us: How do we get better on a daily basis?" GCI

Mark Leslie is a freelance writer based in Monmouth, Maine. He can be reached at gripfast@adelphia.net.

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CONTINUAL IMPROVEMENT



Superintendents become
more well rounded Through
soft skills educational programs.

BY STEVE & SUZ TRUSTY

Face it. Working in the real world presents multiple challenges in areas many golf course superintendents didn't learn about in school. The soft skills part of the job, such as communication and leadership, seldom has been addressed in-depth within the curriculum of an agronomic or earth sciences major, including four-year and two-year turfgrass management programs.

As more superintendents' time is devoted toward managing the golf facility beyond turfgrass conditions, additional emphasis on soft skills is being incorporated into some of the college-level education programs. But they still have a long way to go to match on-the-job realities.

"About 38 percent of a superintendent's time is spent on the nonagronomic segments of golf course management," says Sandy Queen, CGCS, a member of the GCSAA board of directors and manager of golf operations for the city of Overland Park, Kan. "For today's superintendent, the business skills are just as critical as the agronomic skills."

That telling data was included in the results of the member profile survey (the results of which hadn't been released at press time), which the GCSAA board spent time reviewing during a board meeting in late June.

PINPOINTING SKILL AREAS

Soft skills don't necessarily fit into neat little packages. What elements are involved in areas such as communications or leadership? One approach to defining a skill is identifying its impact on the big picture of job performance. That's the basis the GCSAA uses to identify job needs and then put together its educational offerings to address them. (See sidebar on page 74.)

Because GCSAA conference-related seminars vary every year, with different presenters for similar courses, the number of attendees for each session also varies. Though superintendents recognize the need for continuing education in non-agronomic areas, the soft skill type of seminars aren't as well attended as the turf-related ones.

The general "how to advance in your career" sessions have been among the most successful,

says Lyne Tumlinson, GCSAA director of career services. They're targeted to those looking for a position – those in a position seeking to do their current job better and those geared toward advancing. Education about improving one's soft skills is part of these sessions.

The hands-on computer training sessions also are well received at the conference, although the hands-on component limits the number of attendees. These are taught by GCSAA staff and cover different skills such as how to use computer programs like Excel and PowerPoint for presentations, as well as Internet skills.

BEYOND THE CLASSROOM

At the university level, whatever the degree, the focus is on the major. At the management level in the real world, the technical issues continually are integrated with the personnel issues, financial issues and communication issues, says Bruce Burger, CGCS, at the Quarry Golf Club in San Antonio. Burger earned a bachelor of science degree in geology at Steven F. Austin State University in Nacogdoches, Texas. He started working at a golf course in Austin during high school and continued working there during college. The hands-on training along with the classroom work helped him put the big picture in perspective.

Mark Murphy, golf course superintendent for Virginia Oaks Golf Course in Gainesville, Va., says growing grass is the easy part of the job.

"But turf programs just touch on the business-related aspects you face," says Murphy, who earned his bachelor of science degree in agronomy at Auburn University.

Golf course management was always Murphy's goal, so he started his career with the determination to develop long-term goals and the realization that updating his skills and knowledge continually would be needed.

Queen and Rafael Barajas, CGCS, at Hacienda Golf Club of La Habra Heights, Calif., started full-time work on golf courses immediately after high school and didn't attend college.

"Whatever your position, you need to assess the priorities and see what's needed for you to get



them," Barajas says. "I was routing my success from the point I started as a golf course crew-member, though not specifically step by step at the beginning. I set goals and knew achieving them would be more of a challenge not having a formal education. I wanted to become a certified golf course superintendent."

As the complexity of a superintendent's role has increased throughout the years, so have the opportunities for continuing education. The Internet has expanded the options. Along with GCSAA sessions (see sidebar at right), chapters offer a broad range of educational and networking opportunities. The GCSAA also provides additional self-study courses that are textbook based along with online courses, virtual classroom courses and webcasts.

Universities provide online educational sessions ranging from a single course to Penn State's advanced turfgrass management certificate and bachelor of science degree in turfgrass science. Opportunities to take or audit classroom courses are offered by many universities and community colleges. Adult computer skills and financial and communication classes are offered in many communities with sessions held in public libraries or local high schools.

Golf management companies often provide targeted seminars for the golf course superintendents they employ. Sometimes municipalities also provide general management sessions about safety and other personnel issues. Turfgrass and other green industry associations offer educational sessions about many management aspects at their conferences.

"My employer and immediate boss recognize the importance of investing in continuing education," Queen says. "They've been supportive as I've worked toward my career goals. They've also supported and encouraged my involvement in the Heart of America GCSA chapter and the national association."

One of the strongest aspects of ongoing education comes through mentoring. Repeatedly, superintendents credit their experiences working with successful superintendents as a primary factor in helping advance their careers.

With so many resources, opportunities to learn new skills or enhance existing ones are accessible despite a superintendent's geographic location or work schedule.

"If you don't learn, it's because you don't want to," Barajas says.

Educational outreach

The GCSAA's body of knowledge curriculum encompasses five categories: communication, leadership, operations management, personal skills and resource utilization, followed by 48 competencies and a plethora of performance statements that address each competency.

"It's obvious from the categories, the soft skills are very much a part of our curriculum," says Shari Koehler, GCSAA director of education. "The GCSAA places a great deal of importance on the development of these skills, as well as keeping up with the technical skills needed to be successful."

Instead of focusing on specific individual topics, the education is aimed at building skills and competencies.

"We receive good feedback on all of our educational offerings and monitor that to adjust the curriculum as needed each year," Koehler says. "The soft skills tend to be about one-third of the content, though we don't design it based on specific percentages within the curriculum. We map the curriculum as it relates to the body of knowledge and plan to have seminars that address all those things. The goal is an overall curriculum that's relevant and well rounded."

Some of those offerings are in the form of sessions in conjunction with the annual Golf Industry Show. Conference sessions vary every year as the association offers a revised curriculum and the body of knowledge changes.

"The soft-skill areas always are included among the topics, but we realize we tend to gravitate toward our strengths," says Lyne Tumlinson, GCSAA director of career services. "The agronomic area is where superintendents excel. It's necessary to keep up with the technology and research that directly applies to their agronomic work at the course, so superintendents do gravitate toward the agronomic offerings."

There also are those interested in leadership opportunities within the association and its chapters. It offers networking and educational opportunities to assist with those goals. The leadership skills apply at golf courses and within local communities.

"Apart from the conference and regional seminars, we have a Superintendent Leadership Series that offers communication- and leadership-focused educational programs in half-day and one-day formats," Koehler says. "A faculty member goes to the chapter site to conduct these sessions, which fit in well with chapter meetings."

The GCSAA tries to incorporate soft skills in all seminars.

"It's more subtle than a focused class, but it's there, and the attendees benefit from it," Koehler says. "It comes through the action plan contained within the seminar that asks the superintendents to evaluate what they learned, how it applies to their course, who they should relay this information to and what they're going to say to communicate that. This helps them point to the return on investment and the benefit."

The GCSAA sees a distinction between the needs of those just out of turf school and the more seasoned assistant superintendents who've had more education in these areas through course work and experience on the course. The association doesn't have a specific separate curriculum or set of competencies for assistants. They're apprentices to superintendents, so the same categories and competencies apply.

"The GCSAA has an assistant superintendent committee that we gain much information from that helps guide our program," Koehler says. "We offer an assistant superintendent webcast that's focused to them. The assistant superintendent track at our conference directs them to some of the content that might maximize their time there."

"In 2008 in Orlando, we'll debut a new event for assistants, a networking session, so they can learn from the experience of other superintendents and other assistants," she adds. "That's a direct result of discussion and outcomes from the assistant superintendent committee. We realize the importance of understanding from the superintendents what they need from their assistants so that information can help the assistants to supply that and work on developing their career paths." GCI

PERSONNEL MANAGEMENT

One of the most common areas of learning during the early to middle stages of a superintendent's career is personnel management. Personnel issues might be the biggest challenge and range from finding potential employees, to evaluating applicants and hiring effectively, to managing the human resource work after they're hired.

"Dealing with the employees and different personalities you face, and bringing all those people together to work as a team and achieve a common goal, is essential to successful course management," Murphy says.

On-the-job experience plays a big role. The fundamental principles must be learned, but the management style evolves with the individual.

"Much has to be learned on your own, interacting with different personalities and people, and getting your own experience to develop your own style," says Burger, adding that the best guideline is the golden rule.

Working for a municipality, Queen has access to the city's HR and legal departments for employment issues. Their guidance in multiple areas, including how to hire effectively and work with government regulations, has been extremely beneficial, he says.

For Barajas, the initial formal training about personnel issues came through a three-day, in-depth training session put on by the golf management company he was working for.

"I was 21 years old, and that training session really opened my eyes," he says.

Murphy recommends superintendents take a class about how to hire for their needs. The GCSAA offers these types of classes.

"The one I attended was a regional seminar conducted by the golf management company I was working for at the time," he says. "One aspect covered to maximize payroll dollars was using part-time employees assigned to certain tasks to augment your full-time crew. Your crew is on and off the course faster with less time wasted in travel between tasks."

FINANCIAL SKILLS

Financial skills is another area lacking in college programs. More often, superintendents are being asked to have a better handle on the financial aspect of the golf course, managing a multimillion-dollar asset for owners, Burger says. Superintendents have to understand the balance sheet. Burger has taken GCSAA classes about financial management and personnel management.

"The classes helped a lot because they were so targeted, providing a great deal of usable information in a concise format," he says. "I prepare and submit a budget, but I also keep my own records and track expenses monthly."

Golf course management is a business and superintendents have to treat it as such, Barajas says.

"You must have a budget, do your due diligence and stick to it," he says. "You have to be prudent with the finances."

Superintendents need the ability to understand financial spread sheets, projection cost analysis and agronomic depreciation schedules, Queen says.

"We need to understand acronyms such as ROI (return on investment) to participate in budget and financial sessions and strategic planning meetings," he says. "Invest in whatever training it takes to become competent in these areas. You can't effectively manage the golf course without them."


COMPUTER SKILLS

Community college courses are the route many superintendents use to learn or improve their computer skills. Many superintendents suggest taking a class that combines financial skills with the use of the Excel program to manage spreadsheets. Two other areas of expertise are word processing – everything from memos to formal correspondence – and PowerPoint for effective presentations.

"About 38% of a superintendent's time is spent on the nonagronomic segments of golf course management."

SANDY QUEEN, CGCS





Most recent college graduates will be competent in these computer skills already. Lack of gaining them can become a stigma for older superintendents. Resistance to adapting new technology in one area might cause superiors to question one's ability to adapt in other areas.

COMMUNICATIONS

Superintendents have to be proactive when opening the lines of communication and responsible for ensuring everyone who needs to be kept in the loop is well informed.

"I heard that during a lecture session, and it's one of the most important things I learned in any classroom," Burger says. "I'm responsible for every communication aspect that impacts, or has the potential to impact, every part of my job. That concept is something I take to work with me and put into practice every day."

Superintendents need to be better communicators, improving written and verbal skills.

"As we get more involved in the financial and other business aspects of the course, we need those skills to take part in strategic meetings and support our initiatives through technical writing and computerized presentations," Queen says.

Classroom training in these skills at universities and community colleges provide some immediate feedback many superintendents find beneficial. Others prefer working with their networking resources to hone these skills.

GET INVOLVED

In addition to gaining skills through educational opportunities, superintendents are focusing on community and chapter and national association involvement to become more well rounded and valuable. Serving on committees and in leadership roles within the associations helps hone their skills as they give back to the industry. Teaching others through guest sessions at high schools, community colleges and community associations helps deliver important messages while establishing a more professional image for the superintendent.

"If you put what you've learned to work, you'll learn even more," Barajas says.

THE IDEAL PACKAGE

Superintendents suggest those entering a university program for golf course management major in agronomy and minor in business administration. They also suggest combining that with as much hands-on experience as possible while attending school.

When it comes to personnel management, it helps to have done all the jobs your crew will be doing. That combination is the ideal package for the business of golf course management. **GCI**

Steve and Suz Trusty are freelance writers based in Council Bluffs, Iowa. They can be reached at suz@trusty.bz.





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OUT OF THE MUCK

Renovation project in Florida addresses poor soil

By Mark Leslie

Talk golf in Orlando, Fla., and discussion eventually involves Interlachen Country Club, a 760-acre private facility nestled in Winter Park, known for its amenities and personalized service. The club has been dedicated to members, most recently by enhancing its tennis and fitness center, providing complimentary beverages on the golf course and adding massage services. This commitment and exemplary staff led to the club's recognition as one of only 200 Platinum Clubs of America by Club Leader's Forum.

More astonishing is that Interlachen achieved these honors while overcoming the pitfall of crummy soil. Muck, that is. Muck that was 20-, sometimes 30-feet deep. Since Interlachen was built in 1985, the Joe Lee-designed golf course has attracted such well-known golfers as PGA Tour pro Larry Rinker and amateur players Dave Bozelle, Randy Elliott and Michael Wilson.

But it's also been plagued with agronomic and playability woes. And that's what Lakeland, Fla.-based Steve Smyers Golf Course Architects, course builder Country Club Services and superintendent Stuart Leventhal, CGCS, tackled this spring and summer during a considerable \$3.4-million renovation project.

"When that soil dries, it's as hard as concrete, and when it's wet, it's like quicksand," Smyers says.

Leventhal, who was on site when Lee first designed the course, says Lee had to build elevated greens because no one knew how much they were going to settle.

"One hole fell 12 feet," says Leventhal, who has helped transform Interlachen into an Audubon Cooperative Sanctuary. "There was 40 feet of peat there... we had to pump water out of the fairways. It was horrible land to work on. It wasn't a wetland but a nasty piece of property. Muck would catch fire during the hot season. A fire truck is still here. Firefighters came out to put out a fire, and the truck sank down into it – never to leave."

So when the golf course was built, the construction company dug down below the muck to find enough sand to spread a layer on top of the muck around the entire property. Crews dug out 50 acres of lakes, some as deep as 40 feet, to mine enough fill for the job.

Nevertheless, the club had to close down the course at certain times of the year since then.

"It was a mess," Leventhal says. "We couldn't even get a cart through the fourth



A \$3.4-million renovation at Interlachen Country Club included replacing 1,100 feet of bulkhead. Photo: Interlachen Country Club



AT A GLANCE

Interlachen Country Club

Location: Winter Park, Fla.

Type of project: Renovation

Cost: \$3.4 million

Start date: April 2, 2007

Finish date: Sprigging, July 30, 2007

Open date: November 1, 2007

Architecture firm: Steve Smyers Golf Course

Architects

Original architect: Joe Lee

Builder: Country Club Services

Superintendent: Stuart Leventhal, CGCS

hole. We had to lay plywood from tee to green on some holes because members didn't want cart paths tee to green."

The goal of the renovation was to make the course playable for golfers of all levels, while accentuating the natural beauty of the property's vegetation and wildlife on each hole, says general manager Donald P. Emery, CCM.

"Throughout the project, Steve's experience and vision have been an invaluable resource, driving us to think outside the box and tempting us to expand our scope every step of the way," Emery says.

"We feel the end product will place us among the top golf courses for years to come," says club president Leonard Habas.

"The club's unique, natural setting and routing was a wonderful canvas to create a course we can all be proud of," says club vice president and

golf course renovation chairman Joseph Meier.

"Interlachen's membership wants to sustain its high standards and has fully embraced a rather healthy dose of changes I've recommended," Smyers says.

SOIL PRESENTS DIFFICULTIES

The project, however, wasn't without challenges. Although 180 soil borings were drilled around the golf course to identify trouble spots and minimize surprises during construction, numerous on-site plan changes were necessary.

Smyers' lead architect, Patrick Andrews, wanted to place a bunker in one spot, but muck and tree stumps prevented that.

"On the 11th island hole, we wanted to go out two feet past the old wall and keep the soil from eroding, but it was too deep," Leventhal says. "We had to replace 1,100 feet of bulkheads.

The golf course had been plagued with agronomic and playability woes because it was built on poor soil. Photo: Interlachen Country Club



It was difficult to marry the old and new. We have cut-and-fill plans, but we had to rework them on the fly."

Country Club Services had to be careful building the golf course features without getting down into the bad soil because the good soil was just on top.

"We had to cap the bad soil with two feet or more of good soil for enough separation," says Robby Farina, vice president of Country Club Services. "Of course, every time it rained the site got extra soft and difficult to move around."

Smyers says he hasn't changed Lee's core routing but is expanding the too-tight landing areas considerably by removing bunkers and altering tee placements.

"There wasn't a lot of room to hit the ball, even for the better golfers," he says. "We've made it a strategic and more interesting course to play."

Smyers also is enlarging the greens so they average 6,000 square feet, transforming the 13th hole from a par-5 to a par-4 and the 18th from a par-4 to par-5.

The original digging of the lakes necessitated by the muck ended up contributing to a better golf course design, Smyers says.

"Some 22 years later, those big lakes, combined with the strong forest edge and no homes, create a wonderful landscape setting," he says.

DRAINAGE IMPROVEMENTS

Five years ago, Leventhal oversaw a massive drainage renovation on the fourth hole, and since then, drain lines have been installed on the front side of the golf course. While correcting the drainage proved a stopgap, the timing soon became right to shut down the course and complete the entire 18 holes in time to reopen November 1.

Leventhal was excited to install a new irrigation system and drain lines that worked well drying the seventh hole. Expensive but effective, the club chose to use a patented siphon basin.

"To ensure we solve the drainage problems,

To ensure drainage problems were solved, drain lines were installed every 15 feet through the fairways. Photo: Interlachen Country Club

"It wasn't a wetland but a nasty piece of property. Muck would catch fire during the hot season."

- STUART LEVENTHAL, CGCS

we're putting drain lines in every 15 feet through the fairways," Leventhal says. "These drain lines will draw off the subsurface and keep the course playable."

However, the siphon drain system made it tough to install new drainage and maintain the integrity of the design, Farina says.

"The siphon system was installed on nine holes prior to starting, and they installed the others while we were under construction," he says. "We were dealing with a lot of existing drainage that we had to work around."

The club and Smyers also chose to replace the existing Tifdwarf Bermudagrass with Jones Dwarf Bermudagrass on the greens and Tifway 419 elsewhere.

"We sodded all of the disturbed areas with the exception of tee tops and putting surfaces, which were sprigged," Farina says. "Then we planted grass on the putting greens and No. 13 tee."

ENVIRONMENTALLY FRIENDLY

One thing that's not changing is Interlachen's devotion to the environment and relationship with Audubon International. Leventhal's accomplishments with wildlife on the golf course have been recognized, but he deflects most of the credit, citing an idea that led him to tap into the environmental enthusiasm of college students in the area.

Eight years ago Leventhal contacted the University of Central Florida in Orlando and Rollins College in Winter Park, looking for interns with an interest in the environment.

"We wanted to do everything for wildlife inventory, and we got a lot of help from them," he says. "They wanted 20 hours a week, and ever since then, I've had students. One girl's concentration was reptiles, so she put out tree-frog hotels and conducted fish and oxygen-level studies. One student was into butterflies and built a but-



COURSE RENOVATIONS

terfly garden, which we're enlarging. Another was into birds, and we added birdhouses and concentrated in that area for a while."

Eventually, the renovation will transform about six acres of turf into native grasses and wildflowers.

CONTINUOUS IMPROVEMENT

In all, the renovation project went fairly well, Farina says.

"It's always difficult when you do a renova-

tion where you're not tearing up the entire golf course," he says. "There are tense moments around existing drainage and irrigation. It can be trying for the guys on site. Patrick was out there almost continuously, so that helped quite a bit. It started out well with the weather, but the last few weeks, we had a lot of rain."

Yet working on this project won't be the end of the relationship between Interlachen and Smyers. The architect plans to constantly work to improve the golf course by adding landscaping

and perhaps tweaking the design as years pass.

"Members are excited about it," Leventhal says. "Their enthusiasm for what we're doing on the course and their anticipation for our opening in November has pushed us to try to give them the best golf course in Florida." **GCI**

Mark Leslie is a freelance writer based in Monmouth, Maine. He can be reached at gripfast@adelphia.net.

Part of the renovation includes transforming about six acres of turf into native grasses and wildflowers. Photo: Interlachen Country Club





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BY MICHAEL P. ANDERSON

The fingerprinting of Bermudagrass DNA

Genetic relationships are key to efficient production of high-quality varieties

The fingerprinting of plant, animal and human DNA has been practiced by researchers and forensic scientist for many years, especially garnering widespread attention from notorious cases involving DNA evidence. The DNA fingerprint analysis is so powerful it's capable of distinguishing one individual from another. Each of us has a unique DNA pattern as do plant species and plant varieties.

All organisms have identifiable characteristics, which make an organism unique from all others. Physical characteristics in Bermudagrass,

such as: leaf thickness or colors are obvious and readily discernable. However, some characters require detailed measurements, while others are more qualitative in nature. Some distinguishing features can be observed with little or no training, while others need close inspection by trained and experienced personnel. Many subtle differences among closely related Bermudagrasses can't be readily distinguished visually (See photo on opposite page). Another method is necessary to differentiate these Bermudas – DNA fingerprinting.

Differences among organisms are coded by their DNA. DNA is a long linear molecule consisting of a specific sequence of four distinct chemicals called nucleotides in a linear order. If the human genome were represented by letters standing for each distinct nucleotide (A, T, G, C) on a blank page, the length of the alphabetic sequence would run at least to one million pages, enough to fill 1,000 large volumes. The information in the DNA is carried in the linear sequence of the nucleotides. The DNA sequence dictates the look of an organism and how it responds to the immediate environment. This is different for every organism. Consequently, the DNA sequence can be used to distinguish one organism from another.

DNA fingerprinting is nothing more than a sophisticated technique to sample an organisms DNA sequence, projecting the differences as a kind of bar code for ready identification and comparison. Most DNA fingerprinting depends on a technique known as PCR or polymerase chain reaction. PCR was developed in the mid-1980s

to efficiently amplify specific segments of DNA many, many-fold. The PCR technique uses short DNA segments composed of anywhere from six to 20 nucleotides known as primers that are complementary to segments of the target DNA. The primers figuratively scan for matches in the target DNA sequences. Once a match is found then amplification of that segment begins. If there are many matches, many segments will be amplified.

This mixture of amplified segments known as amplicons can be separated on an electrophoretic gel system which effectively sieves fragments based on size, with the largest slower moving amplicons appearing on top of the gel, and the smaller on the bottom. The gel is stained with fluorescent dyes to reveal what looks like a banding pattern or a bar code. Multiple primers can be used to scan different portions or the total genomic DNA revealing additional bar coding.

Fingerprinting with many primers is capable of differentiating even the most closely related of all organisms. Thus while two Bermudagrasses might be physically indistinguishable from each other, the DNA fingerprinting can highlight the intrinsic differences in their DNA using the PCR-based techniques.

All organisms can be finger printed and their DNA patterns stored and analyzed. Analysis of the banding pattern is performed using a variety of statistical techniques known as cluster analysis. The data is inputted in the form of presence or absence of a particular PCR amplicon or electrophoretic band and cluster analysis analyzes the data and connects those organisms that show

Summary

- Researchers at OSU use DNA fingerprinting to evaluate the genetic background of Bermudagrass varieties from a worldwide collection.
- Understanding genetic relationships is fundamental to the efficient production of high-quality Bermudagrass varieties.
- DNA fingerprinting coupled to cluster analysis is able to distinguish and infer genetic relationships among even the most closely related organisms from each other.
- DNA fingerprinting can be used in basic and applied research, genetics, plant breeding, marker assisted selection, agricultural forensics and patenting, and ecological genetics.



similar patterns (Figure 3b). However, to be effective there must be enough similarities and differences in the pattern to reveal relationships among all tested organisms.

A number of fingerprinting techniques exist. These techniques differ in the ability to differentiate organisms, the amount of labor required, the extent of automation available, the expense of use, and nature of the specific targeted DNA segments. AFLP, DAF, SSR, RAPD are a few of the more commonly used techniques used to fingerprint DNA. All of these use PCR to amplify segments of DNA based on the DNA sequence.

In our research, we've used DAF primarily for its simplicity, low cost, ease of use and high resolution (Yerramsetty et al., 2005). Others

have used more sophisticated technology to meet similar objectives (Wu et al., 2005) (Zhang et al., 1999). Sophisticated and expensive commercial packages and instrumentation exists to automate and increase the resolution of the fingerprinting procedure. Access to DNA sequencing instrumentation provides a tremendous boost in fingerprinting performance and throughput, but at a significant cost.

HOW IT'S USED

How has this technology been used in the past, and how might it be used in the future? We'll focus on what we and others have learned about Bermudagrasses or other species using the DNA fingerprinting techniques.

Oklahoma State University is home to a worldwide collection of Bermudagrass varieties, much to the credit of Charles Taliaferro, Ph.D. Photo: Michael Anderson

DNA fingerprinting has been used initially to look at the genetic relationship among a wide range of Bermudagrasses. Some of the first work highlighted the differences among high quality commercial cultivars and select bermudagrasses found in germplasm collections. In 1995, Caetano Anolles and other researchers surveyed 13 Bermudagrass cultivars including African, Common Bermudagrass and several interspecific hybrids for genetic relatedness using DAF. Results showed that DNA fingerprints were easily distinguishable, and the analysis showed clear genetic relationships among all bermudagrass varieties. To probe the limits of the ability to distinguish Bermudagrasses the authors fingerprinted Tifway and its irradiation induced mutant Tifway II, which presumably differed in one or a few nucleotide changes in the DNA sequence. To differentiate these very closely related varieties, the authors found it necessary to use 81 distinct primer combinations to find a one band difference among all 81 fingerprints (Caetanoanollés et al., 1995). From this early work, it was clear investigators can differentiate and draw genetic relationships even among the most closely related Bermudagrasses.

Breeders often collect from throughout the world a wide range of plant introductions in the hope of finding specific genetic traits that might be put to productive use. The genus *Cynodon* is comprised of nine species (Taliaferro, 1995).

Oklahoma State University is home to a world-wide collection of Bermudagrass varieties and plant introductions that was initiated by the celebrated geneticist Jack Harlan. Charles Taliaferro and more recently Yanqi Wu, two Bermudagrass breeders at OSU, have added significantly to this collection, making it one of the most comprehensive collections of *Cynodon* germplasm in the world. In a survey of this world-wide collection using DAF fingerprinting techniques Assefa et al. 1997 (S. Assefa, 1999) examined 42 bermudas for genetic relatedness and found generally that the fingerprinting supported the taxonomic classification based on morphology by Harlan (Taliaferro, 1995). Understanding the genetic relatedness among *Cynodon* sp. and varieties gave us a better understanding the genetic make up of the *Cynodon* genus.

At times, doubts about the genetic identity of a particular cultivar surfaces. To field personnel, the cultivar doesn't look like what it's supposed to be. In previous work, our laboratory responded to the need to evaluate the widely used variety U3 for genetic fidelity (Anderson et al., 2001). U3 was an early success made up of Bermudas collected from golf courses in the Southern U.S. in the 1930s. U3 showed moderate cold tolerance and fine textured leaves and was a general improvement when compared to previous cultivars. Since then, U3 has been sold and marketed throughout the region.

DNA fingerprinting was employed to distinguish the current labeled U3 from presumably authentic U3 collections assembled from throughout the country. Results showed the currently labeled U3 varieties differed substantially from the presumably authentic U3 varieties (Figure 4). How these differences came about couldn't be addressed by the fingerprinting technique, but the research underscored the need for evaluating current varieties for genetic stability and purity. Additionally, our research (unpublished) as well as others (Zhang et al., 1999) has discovered a few other discrepancies between the historical pedigree claims of several varieties and their actual genetic relationships using fingerprinting techniques.

Often times when researchers conduct experiments with particular varieties or germplasm, it's important to understand the genetic background of the Bermudas involved. When constructing genetic mapping populations it's essential to document the genetic background

of the potential parents beforehand. The parents should differ substantially in the targeted trait while showing significant similarity in genetic background. A preliminary DNA fingerprinting survey of potential parents is the best way to do this reliably. The same can be said when selecting Bermudagrass varieties for basic research analysis. Understanding the genetic background and relationships improves experimental analysis and interpretation significantly.

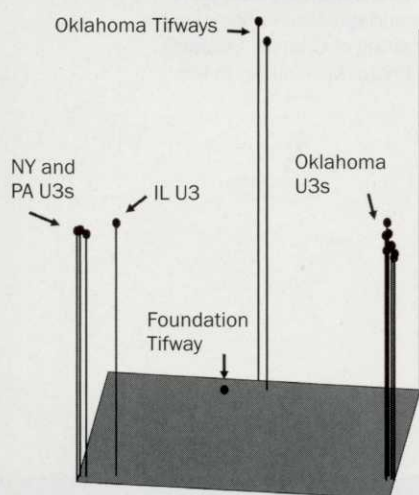
GAINING DIVERSITY

New Bermudagrass germplasm has been and is now being collected and assembled into world-wide collections from many sources. There are areas where collections have only recently been assembled from specific geographic locations, such as Southern Asia and Southeastern Asia. Recently, Yanqi Wu brought a number of Bermudas from China adding to the OSU germplasm collection. DNA fingerprinting using AFLP technique was used to evaluate the diversity within this germplasm.

The Chinese collection seemed surprisingly diverse (Wu et al., 2006) and distinct from other bermudas from other geographic locations around the world (Wu et al., 2004). Additional work in our laboratory easily separated the Chinese collection from all U.S. varieties tested (unpublished). Over all, the work indicated a source of significant variation in the new Chinese collection which may contain valuable genes for Bermudagrass development. Additional diversity assessments needs to be done on collections from India and other areas not surveyed previously.

The same techniques used for DNA fingerprinting such as AFLP or SSR also are used for molecular genetic analysis of specific traits. The goal here isn't so much an analysis of diversity or genetic relatedness but for locating specific genetic elements or genes that contribute substantially to those traits. This is performed by constructing populations with significant variation in a particular trait of interest and then performing the DNA fingerprinting technique on members of the population to identify specific genetic elements that correlated with the phenotypic expression of that trait. These genetic elements are visualized as unique bands on electrophoretic gels that appear to correlate with traits of interest. The bands are valuable because they can serve as genetic markers, markers that are based on the DNA sequence rather than

Figure 4. PCA component Analysis



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some physical characteristic of the plant.

Sophisticated computer software analysis can gauge the contribution of the DNA element associated with the marker to the genetic makeup of the phenotype. These markers can be used to increase the efficiency of selection in a process known as marker assisted selection. Marker assisted selection has been shown to be effective in enhancing germplasm improvement in a variety of cropping systems (Mackay and Powell, 2007; Tuberosa and Salvi, 2006; Yamaguchi and Blumwald, 2005). Constructions and evaluation of mapping populations and usage of molecular genetic analysis are major goals of the OSU Bermudagrass team.

Bermudagrass is an outcrossing species indicating an expected level of genetic heterogeneity within Bermudagrass populations. Typically, seeded populations consist of a range of individuals that differ genetically. The genetic diversity within the population may be wide or narrow depending on the way the population was constructed originally. A wide genetic base consists of many individuals that differ substantially from each other. When we characterize genetic populations we must evaluate the entire population, sampling a representative number of individuals. So far, this has rarely if ever been performed on seeded Bermudagrasses.

DNA fingerprinting of individuals within a populations provides information concerning the genetic make-up of that population. The individual makeup of the population might change with time depending on natural selection and genetic inflow from neighboring Bermudas. To observe these shifts, DNA fingerprinting can be used to document and track alterations in population make-up of seeded Bermudagrasses under a variety of environmental conditions throughout time. So far, little is known concerning this aspect of Bermudagrass culture, which needs more investigation, especially considering the emergence and use of fertile seeded populations in the Bermudagrass industry.

AGRICULTURAL FORENSICS AND PATENTING

DNA fingerprinting also can be used in areas of agricultural forensics. One case illustrates this use. Years ago, a farmer was concerned about theft of Bermudagrass hay bales from his farm. The farmer had several suspected culprits in mind and contacted us to determine if DNA could be used to support a claim prior to legal action. To prove the claim, samples would have

to be taken from the farms of the suspect and victim, and DNA fingerprint analysis performed and evaluated. DNA fingerprinting could never prove complete identity between the collected materials but could provide evidence to support a forensic conclusion based on a certain level of probability.

Further supporting evidence including cultural histories and practices among the im-

plicated parties would have to be provided – a significant and costly undertaking. The evidence would have to be evaluated by an expert using quantitative and statistical models before a legal opinion could be constructed. In this case, the effort appeared too costly in terms of time and money; however, there might be cases where the expense and effort is justifiable.

Finally, DNA fingerprinting can have an

Figure 3a. Cluster analysis
MHP analysis

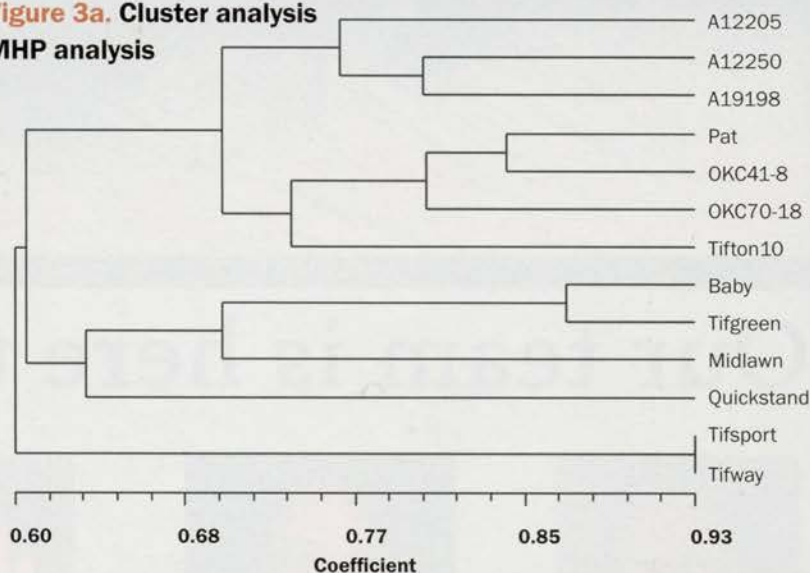
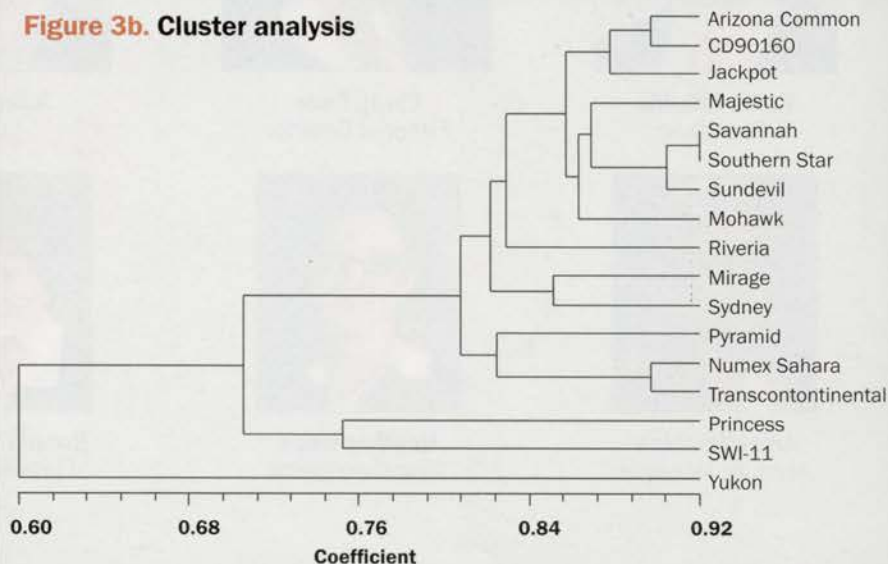
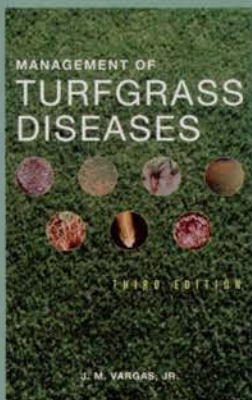


Figure 3b. Cluster analysis



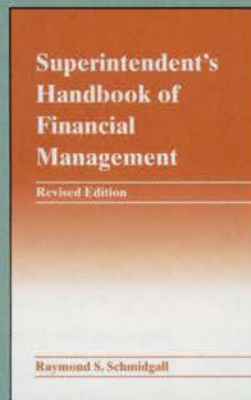
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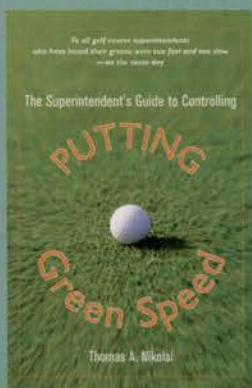
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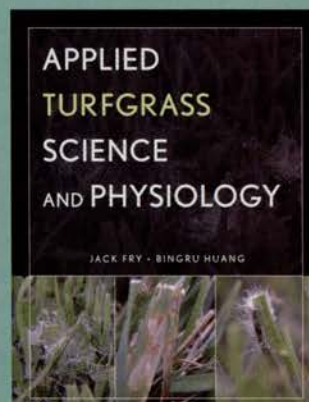
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\$60
Thomas Nikolai
ISBN: 0-471-47272-7, Hardcover, 160 pages, October 2004

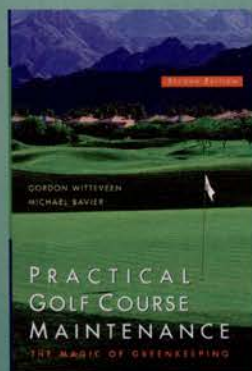
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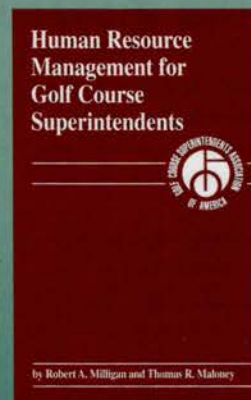
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impact in the area of patent protection. Many years and efforts are expended to develop commercial varieties. Institutions have a substantial investment in terms of developmental cost, and are increasingly desirous of recovering some of that cost through plant variety protection, and the collection of royalties from consumers. To support the patent application process, differences in morphology, cultural characteristics and pedigree needs to be presented to distinguish the proposed variety from those that are currently available. DNA fingerprinting is currently being used on a limited basis to document the genetic differences of new varieties in the patent process. Any infringement on the patent would have to use the DNA fingerprints and other characteristics to justify a patent infringement lawsuit. The process may be costly and subject to interpretation by experts, but may be worth the effort when the stakes are large.

ECOLOGICAL GENETICS

Ecological studies in the natural environment are often times helpful in distinguishing among eco-

types that might differ in desirable or undesirable characteristics. At OSU, we collaborated with a project seeking to identify various ecotypes of *Sericea lespedeza*, a major introduced invasive species that threatens forage production on natural pasture lands in Oklahoma (Farris, 2004). The idea was to look at genetic background of the different ecotypes and its relationship to the ability to control this problem pest. Understanding the genetic base of the *Sericea lespedeza* populations might be an important element in designing more effective control methods.

DNA fingerprinting is a valuable technology that's being used to assist producers, breeders, geneticist and researchers evaluate Bermudagrass populations and germplasm for genetic diversity and background. Information from DNA fingerprinting techniques allow researchers to make informed decisions concerning progress in developing high quality bermudagrass lines. DNA fingerprinting technology remains a powerful technique in assessing the genetic diversity of Bermudagrasses worldwide and at protecting plant varieties from infringement. Our projects

have been involved in using DNA fingerprinting to improve Bermudagrass more. GCI

Michael P. Anderson is a plant physiologist in the department of plant and soil sciences at Oklahoma State University in Stillwater. He can be reached at 405-744-6939.

The author acknowledges the contribution of Charles Taliaferro, Ph.D., for providing access to Bermudagrass collections and for discussions and insight related to Bermudagrass genetics and breeding; Praveen Yerramsetty and Carole Anderson for their technical skills developing the data on which much of the work depends. He appreciates the USGA and the Oklahoma State Agricultural Experiment Station for providing funds for the execution and completion of this and other works associated with Bermudagrass improvement.

Editor's note: References for this article can be found at www.golfcourseindustry.com.

IMPACT ON THE BUSINESS

Fingerprinting takes the guesswork out of turf identification

BY CINDY CODE

From a crop perspective, genetics plays an important role in purity of product, yield and how inputs such as pesticides and fertilizers will react.

DNA fingerprinting in turfgrass allows superintendents and breeders the ability to distinguish between plant varieties, particularly if a choice needs to be made between two or more varieties.

"Fingerprinting looks at the DNA of a particular variety," says Michael Anderson, Ph.D. "It doesn't really check or tell the health of plant, but can distinguish one from the other."

While many superintendents look at variations of color to determine the purity of a

turfgrass plant, the only way to determine whether it's a pure variety is through fingerprinting, which can determine this without question.

This technology, introduced in the 1980s, aids in the identification rather than the maintenance of turfgrass, although fingerprinting is helpful in determining whether or not a turfgrass variety has been contaminated.

Anderson relates a situation in which superintendents and others were wondering whether or not a variety was really what they said and thought it was.

"We did a bunch of tests on a variety that we thought was U3 Bermudagrass. That's how it was labeled, but it didn't look like the

original U3. To nail it down, we conducted fingerprinting and found it was absolutely different from U3."

Fingerprinting answers academic questions such as which variety is better adapted for local conditions.

Rather than trusting the label or counting on visual gut checks, fingerprinting is the only method that will provide superintendents with an absolute.

While superintendents can make do without fingerprinting, breeders, sod producers and researchers rely on the technology to ascertain what variety they're working with.

"In turf plots, I want to know if a variety has been overgrown by a contaminant," Anderson says.

"Contamination can impact the production of new varieties."

Anderson says he's been using these techniques for the past 10 years in his Bermudagrass research because even he can't always distinguish between varieties. He can't leave it to chance when beginning a research project. He needs to know the genetic background of what he's working with.

Breeders also will use fingerprinting to compare the genetics of Bermudagrass collected worldwide.

Superintendents most often can test Bermudagrass on their courses visually, but if contamination is an issue, fingerprinting will help you get a straight answer. GCI

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281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
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August 2007

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BY WAYNE W. HANNA, PH.D.

Improving turf quality

How Bermudagrass genotypes respond to mowing height and nitrogen or growth regulators

TifSport, a high turf quality and fine-textured interspecific triploid ($2n=3x=27$ chromosomes) Bermudagrass hybrid, was released in 1995 (Hanna, Carrow and Powell, 1997). It's genetic purity, improved cold resistance, superior sod strength, pest resistance, turf density and improved traffic tolerance have made it a popular choice to plant on golf courses, athletic fields, lawns and landscape areas.

L. Cella and other researchers (2005) found that golf ball lie varied among Kentucky bluegrass cultivars and the number of plant tillers showed the highest correlation to ball lie. It was brought to our attention that, although TifSport performed

well on golf courses, high handicap golfers wanted to see the ball with a higher lie. Therefore, we initiated this study to see if nitrogen levels combined with growth regulators would increase the lie at four different mowing heights or schedules. We used a modification of an instrument (see top-left photo on page 96) described by Cella and others (2004) to measure ball lie.

EXPERIMENTAL PROCEDURES

TifSport Bermudagrass (plot established in 2004) and two experimental vegetatively propagated Bermudagrasses – Tifton 11 and Tift No. 4 (ST-5) – were established in 2005. Tifton 11 and Tift No. 4 also were selected for testing because both of these experimental cultivars show potential for golf course use. The design was a strip plot test with four replications. Treatments included three nitrogen levels combined with Primo (trinexepac-ethyl) and Cutless (flurprimidol) and four mowing heights. A treatment with one pound of nitrogen per 1,000 square feet per month plus Primo was considered a general practice used by golf course superintendents.

The nitrogen/Primo/Cutless treatments were:

- 0.5 pound of nitrogen per month per 1,000 square feet
- 1 pound of nitrogen per month per 1,000 square feet
- 1.5 pounds of nitrogen per month per 1,000 square feet
- 1 pound of nitrogen per month per 1,000 square feet plus Primo
- 1.5 pounds of nitrogen per month per 1,000 square feet plus Primo
- 1 pound of nitrogen per month per 1,000 square feet plus Primo plus Cutless

- 1.5 pounds of nitrogen per month per 1,000 square feet plus Primo plus Cutless

Primo was applied at nine ounces per acre in Primo-only treatments and at four ounces per acre in Primo/Cutless treatments. Cutless was applied at four ounces per acre. Treatments were applied once a month during the growing season, May through October.

The mowing heights were:

- 0.5 inch (12.5 mm), twice a week
- 1 inch (25 mm), twice a week
- 1.5 inches (37.5 mm), twice a week
- 1.5 inches (37.5 mm), once a week

Mowing heights were selected to approximate practices used in various areas of the golf course. Quality and color ratings usually were taken at the end of the month before the new treatments were applied.

BALL LIE

Ball lie measurements were taken by dropping two golf balls into each plot from a height of six feet and then measuring the distance the ball sank into the turf (see top-right photo on page 96). Data on turf quality were collected in 2005 and 2006. Data on ball lie were collected in 2005 (three dates) and 2006 (three dates) for TifSport but only in 2006 (one date) for Tifton 11 and Tift No. 4 (ST-5). Rating used ranged from one to nine with nine being the best turf quality. A rating of at least seven is needed for acceptable turf quality.

A golf ball is 1.65 inches in diameter. The values listed in tables for ball height indicate the number of millimeters the ball sank into the surface of the grass. Therefore, the smaller the number, the higher the ball lie. All ratings and ball-lie measurements were rounded to the

Summary points

- **Treatments with one or 1.5 pounds of nitrogen per 1,000 square feet produced similar turf quality and color in TifSport, Tifton 11 and Tift No. 4.**
- **Treatments with nitrogen plus Primo or nitrogen plus Primo and Cutless didn't have considerable effects on improving turf quality or color.**
- **An application of Primo or Primo plus Cutless produced a denser turf that provided a higher ball lie in TifSport. Ball lie in Tifton 11 and Tift No. 4 were similar for all treatments.**

whole number because decimal values have little practical value. An analysis of variance was used to determine the effects of various treatments on turf quality and ball lie. Fisher's LSD test was used to determine differences between treatments (SAS Institute, Cary, N.C.).

TURF QUALITY

There were only small differences in overall turf quality except for the 0.5-pound-of-nitrogen-per-1,000-square-foot treatment in which turf quality was reduced for TifSport and for Tifton 11 in 2005. We also observed lighter green color (data not shown) for the 0.5 nitrogen treatment for TifSport and Tifton 11, but not for Tift. No. 4. We observed a little discoloration in the Cutless treatments for a few days after treatment. Cutless appeared to discolor Tift 97-4 more than the other genotypes, probably because this cultivar is the most naturally dense grass of the three tested. We observed the least discoloration in Tifton 11, and it's the most coarse grass of the three tested.

One pound of nitrogen per 1,000 square feet per month appeared adequate for maintaining desirable turf quality in all three grasses (see comparison photo, bottom right, on page 96). However, 0.5 pound of nitrogen per 1,000 square feet per month might be adequate for Tift No. 4, a dense, naturally dark green, shade-resistant genotype. Neither Primo nor Cutless improved overall turf quality in this test. However, clipping removal (not measured in this test) probably would have been reduced by the growth regulators.

Turf quality tended to improve for TifSport from 2005 to 2006 as the turf 'matured'. Treatments with Cutless (at the rate used) caused browning and swirling of the turf at 0.98 inch and 1.46 inches mowing heights for about a week after treatment in TifSport and Tift 97-4, which was especially pronounced at the October treatment. There were only small differences in turf quality because of mowing heights (see table 2 at right).

Table 1. Mean turf quality ratings for TifSport, Tifton 11 and Tift No. 4 in 2005 and 2006.

Turf Quality						
	TifSport		Tifton 11		Tift No. 4	
Treatment	2005	2006	2005	2006	2005	2006
0.5 N	7	7	7	8	7	7
1.0 N	7	8	8	8	7	7
1.5 N	7	8	8	8	7	7
1.0 N + P	7	8	8	8	7	7
1.5 N + P	7	8	8	8	7	7
1.0 N + P + C	7	7	8	8	7	7
1.5 N + P + C	7	8	8	8	7	7
LSD - 5%	1	1	1	1	1	1
Turf quality: 9=best, 7=acceptable quality			N=Nitrogen, P=Primo and C=Cutless			

Table 2. Mean turf quality ratings for TifSport, Tifton 11 and Tift No. 4 in 2005 and 2006.

Turf Quality						
	TifSport		Tifton 11		Tift No. 4	
Mowing height (inch.)	2005	2006	2005	2006	2005	2006
0.5 - 2x/wk	7	8	8	8	7	7
1.0 - 2x/wk	7	8	7	8	7	7
1.5 - 2x/wk	7	7	8	8	7	7
1.5 - 1x/wk	7	8	8	8	7	7
LSD - 5%	1	1	1	1	1	1

Research

BALL HEIGHT

The nitrogen level had little effect on keeping the golf ball from sinking into the grass (see table 3 on page 97). All combinations of nitrogen, Primo and Cutless were effective in improving ball lie in TifSport. As TifSport (planted in 2004) matured from 2005 to 2006, the ball lie improved. Treatments had almost no effect on ball lie in Tifton 11 and Tift No. 4. Tifton 11 is quite vigorous – producing dense turf – so it

Top left: Researchers used a modification of an instrument described by L. Cella and other researchers. **Top right:** Ball lie measurements were taken by dropping two golf balls into each plot from a height of six feet and then measuring the distance the ball sank into the turf. **Bottom left:** As TifSport (planted in 2004) matured from 2005 to 2006, the ball lie improved (right). Treatments had almost no effect on ball lie in Tifton 11 (left). **Bottom right:** One pound of nitrogen per 1,000 square feet per month appeared adequate for maintaining desirable turf quality in all three grasses. Photos: Wayne Hanna



IMPACT ON THE BUSINESS

They know what they like...

BY PAT JONES

Golfers – even high-handicappers – are a notoriously picky breed. When it comes to turf conditions, the old statement about art appreciation holds true for even an average hacker: They don't know much, but they know what they like.

One of the things they appear to like is a lie in the rough where the ball sits up, making it easier to make contact and rescue themselves from lousy shots. In short, even though they've hit the ball where they're not supposed to, they believe lies where the ball sits down are bad.

Thus, Wayne Hanna, Ph.D., and his team at the University of Georgia – the home of the various Tif species – took a look at how the ball rests when dropped on their turf. More specifically, the question is whether nitrogen and plant growth regulator inputs impacted the way the ball sits up on TifSport.

The bottom line of the study – which was largely funded by the USGA – is that growth regulators have a positive impact on how high a ball will sit in TifSport mowed at between 0.5 inch and 1.5 inches.

Trend

More superintendents are using PGRs in the rough than ever before, according to chemical company representatives. The primary value is reduced growth, which translates to less mowing, thus lowering labor

costs. But a secondary benefit such as improved lies provides a nice opportunity to improve the playability of the course for mediocre players who despise bad lies.

Cost/benefit

PGRs aren't inexpensive, but the documented benefits continue to multiply as turf researchers and superintendents experiment with them. Regular treatments using the Primo/Cutlass combination described would add more than \$5,000 annually to a facility's PGR budget.

However, this is offset by the potential for:

- Reduced mowing costs;
- Thicker turf;
- Upright growth (better lies);
- Better annual bluegrass performance (seedheads); and
- Fewer clippings.

Bottom line

Southeastern courses catering to mid- to high-handicap golfers could consider a program like this to manage TifSport fairways and roughs, thus improving ease of play and perhaps speeding up play to accommodate more rounds and make those picky golfers happy. GCI

apparently can mature turf soon after planting. Tift No. 4 is a naturally dense turf. The highest ball lie was achieved with 1.5 pounds of nitrogen combined with Primo and Cutless.

It appears from these results that one pound of nitrogen plus Primo can produce a good ball lie. Users would need to decide for themselves whether the slight improvements in ball lie are worth the extra cost of another half pound of nitrogen and/or Cutless per month. A lower level of Cutless also might prevent some of the discoloration observed in this study.

Mowing at one-half inch twice a week produced the best ball lie in all three Bermudagrasses (see table 4 at right). The lowest mowing height produced the most dense turf. As mowing height increased and mowing frequency decreased, the ball sank further into the grass for TifSport and Tifton 11, and for Tift No. 4 going from the one-half inch to one inch mowing height. There were no differences in ball lie at the 1.5 inch mowing heights for Tifton 11 and Tift No. 4. The ball lie in TifSport improved from 2005 to 2006, probably because of the production of a more mature turf.

Another consideration in this mowing height is how far the bottom of the ball is from the ground for the various mowing heights (numbers in parenthesis in table 4). Although the ball sinks less into the grass at the half-inch mowing height, the ball is further from the ground at the one inch and 1.5 inches mowing heights.

Treatments with Primo or Primo plus Cutless were the most effective for preventing the golf ball from sinking into TifSport. The nitrogen level by itself appeared to have little effect on ball lie. Tifton 11 was exceptional at all treatment levels and mowing heights for keeping the ball from sinking into the turf. **GCI**

Wayne W. Hanna, Ph.D., is a professor in the department of crop and soil sciences at University of Georgia, Tifton Campus. He can be reached at 229-386-3184.

The author wishes to thank the USGA for financial support to conduct the research and to Raymond Cooper for requesting Cutless. Appreciation is expressed to Patrick O'Brien, director of the southeast region USGA Green Section and to Jimmy Allen from Pike Creek Turf for discussions regarding need for the research, and to Larry Baldree and Amanda Webb for technical assistance.

Table 3. Mean ball height measurements (mm) for TifSport, Tifton 11 and Tift No.4 in 2005 and 2006.

Ball height- mm*				
	TifSport		Tifton 11	Tift No._4
Treatment	2005	2006	2006	2006
0.5 N	24	14	5	5
1.0 N	21	14	5	5
1.5 N	20	13	5	5
1.0 N + P	14	10	5	4
1.5 N + P	16	9	5	5
1.0 N + P + C	15	10	5	5
1.5 N + P + C	11	8	5	5
LSD-5%	3	2	1	1

N=Nitrogen, P=Primo, and C=Cutless

* The smaller the number, the higher the ball lie.

Table 4. Mean ball height measurements (mm) for TifSport, Tifton 11 and Tift No. 4 in 2005 and 2006.

Ball Height-mm †				
	TifSport		Tifton 11	Tift No. 4
Mowing height (inch.)	2005	2006	2006	2006
0.5 - 2x/wk	8 (4) ‡	5 (7) ‡	3 (9)	3 (9)
1.0 - 2x/wk	10 (15)	8 (17)	5 (20)	4 (21)
1.5 - 2x/wk	24 (13)	13 (24)	6 (31)	6 (31)
1.5 - 1x/wk	28 (9)	17 (20)	6 (31)	6 (31)
LSD - 5%	2	2	1	1

† Distance (mm) the ball sank into the grass.

‡ Distance (mm) from the ground to the bottom of the golf ball.

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BY KATIE MORRIS

Buying made easy

Online program simplifies a South Carolina superintendent's purchasing process

For most golf courses, handheld equipment is an afterthought compared to heavy-duty equipment such as mowers. But buying and repairing trimmers, edgers, blowers and chain saws can be just as involved as buying and repairing mowers.

For Mike Gregory, his days of anxiously waiting for parts have ended

thanks to Husqvarna's new Golf Solutions program. Gregory, turf equipment manager at the 18-hole Long Cove Club in Hilton Head Island, S.C., has been at Long Cove for the past four years. Previously, he was the equipment technician at the Club at Seabrook Island in Johns Island, S.C.

"When I arrived, the club was using Stihl equipment exclusively," Gregory says. "We started buying Husqvarna last year when it came out with a program targeted to golf courses."

In 2006, Husqvarna introduced Golf Solutions, a direct business model designed especially for golf facilities that allows superintendents and equipment managers to

purchase tools and parts online. The program allows Gregory to order replacement parts straight from the manufacturer. When purchasing Stihl equipment, he goes through a distributor to get replacement parts.

The turnaround time for receiving parts using Husqvarna's program is quicker than going through Stihl's distributor, in which Gregory had to wait three to four days before receiving parts, he says.

"Husqvarna will ship the parts one day ground or overnight if needed," he says.

Since Husqvarna introduced Golf Solutions, Gregory's inventory of handheld equipment includes:

- Two FS 85 string trimmers (Stihl);

Of a \$1.3-million maintenance budget, \$5,000 is spent annually on small tools such as blowers.

Photo: Long Cove Club





The maintenance staff at the Long Cove Club uses blowers about 20 to 24 hours a week. Photo: Long Cove Club

- Five 326 LX string trimmers (Husqvarna);
- Two stick edgers (Stihl);
- Four BR420 blowers (Stihl);
- Three 356BT blowers (Husqvarna);
- One model 350 chain saw (Husqvarna);
- One model 029 chain saw (Stihl);
- One model 025 chain saw (Stihl); and
- One model 021 chain saw (Stihl).

Long Cove has a maintenance budget of \$1.3 million, \$5,000 of which is the annual budget for small tools such as trimmers, edgers, blowers and chain saws. Gregory says it's more cost effective to purchase handheld equipment instead of renting it because of the daily wear and tear on the tools.

"It was just cheaper for us to buy this type of equipment rather than rent it," he says.

Gregory's philosophy is to use the tools until they die or until it doesn't become cost effective to repair them.

"If you're repairing your equipment every week, then you're losing time and

money and should just purchase new equipment," he says.

Gregory uses the trimmers and blowers for about five years before they wear out. He helps extend the tools longevity by cleaning and oiling them, as well as changing air filters once a month. He saves time and money by doing all the repairs himself. The only time he needs assistance from the manufacturer is when he needs a replacement part. There also have been times when Gregory has called for technical support while replacing parts. The Husqvarna technician he deals with is available anytime Gregory needs him.

The affects handheld equipment have on a course can be taken for granted. Without these tools, the course at Long Cove wouldn't look as neat and clean as it is. Gregory uses the trimmers along the cart paths and around bunkers; the edgers to trim around the asphalt cart paths; and the blowers to keep the tees, greens and everywhere else on the course clean. The staff uses the chain saws to trim trees and remove weather-damaged trees.

The staff uses the blowers about 20 to 24

hours a week, Gregory says. All the other tools, including the edgers, trimmers and chain saws, are used on an as-needed basis. When the edges around the cart paths, bunkers and tees start to look overgrown, the staff will make time to make them look neat and clean.

Despite the maintenance staff's work on the golf course, it doesn't handle the maintenance around the clubhouse. The groundskeeping staff does. It has its own separate equipment that includes:

- Five trimmers (Stihl);
- Two trimmers (Husqvarna);
- Three blowers (Stihl);
- Two blowers (Husqvarna);
- Six chain saws (Stihl); and
- Three chain saws (Husqvarna).

The groundskeeping staff uses its equipment around the clubhouse pruning bushes and trees, edging around sidewalks, and trimming around lagoons.

Long Cove's entire maintenance staff – golf course and groundskeeping – consists of 27 workers including superintendent Ashley Davis and technicians. Of the 27 staffers, 20 are part of the golf course maintenance staff, which decreases to 13 during the winter.

It seems Gregory is a convert to Husqvarna's Golf Solutions. After being with Stihl for at least 10 years, Gregory says he's going to start purchasing more Husqvarna equipment.

"The pricing is cheaper with the new program, and the service and parts availability is quicker," he says. **GCI**

Editor's note: The inclusion or lack of inclusion of any manufacturer in this article doesn't mean the magazine endorses or favors any one product, program or company.

HANDHELD EQUIPMENT

BY KATIE MORRIS

Go with your gut

Iowa superintendent knows what to expect when purchasing tools

Mowers may cut most of the turfgrass on a golf course, but it's the little things handheld equipment maintains that helps keep a course looking pristine. Superintendents look for quality products from suppliers, and for Calvin Van Rees, when it comes to purchasing handheld equipment, he opts for products of which he's familiar.

"I've worked with Stihl enough to know what I'm getting, and I like the quality," he says.

When searching for tools, Rees, who is the superintendent at the 18-hole Westwood Golf Course in Newton, Iowa, looks for a small equipment dealership in town he can help. After researching equipment, Rees purchases the best product he can, so he went to one of the manufacturer's dealers.

"We don't want the biggest and the best, but we also don't want the cheapest," he says.

Rees, who has been at Westwood five and a half years and previously worked at Newton Country Club as assistant superintendent, wants equipment that can stand up to the rigors of the job. The tools are going to be tossed around and dropped, so he wants products that are durable and dependable.

"Stihl products separate a good job from a half-ass job," he says.

Rees' fleet of handheld equipment includes:

- Three FS 85 string trimmers (Stihl);
- One edger (Redmax);
- One blower (Redmax);
- Two Farm Boss MS 290 chain saws (Stihl); and
- One MS 280 chain saw (Stihl).

The Redmax blower and edger were bought previous to Rees' arrival, but when it comes time to replace them, he plans to buy Stihl equipment.



At Westwood Golf Course, handheld equipment lasts awhile because it's not used daily. Photo: Stihl



At Westwood Golf Course, no more than \$1,500 is spent annually for handheld equipment such as trimmers, edgers, blowers and chain saws. Photo: Echo

"The blower isn't ergonomically correct," he says. "A person feels like their elbow is going to fall off after using it."

Rees also knows that when he orders a replacement part the distributor will have it on hand or shipped to him in less than two days nine out of 10 times. Rees says he doesn't know of a local Redmax distributor.

Rees' annual maintenance budget is about \$335,000, and of this budget, he spends no more than \$1,500 for trimmers, edgers, blowers and chain saws. His annual maintenance budget is a combination of the operating and labor budgets. The labor budget includes the cost of

insurance for workers and golfers (who can be injured on the course), as well as workman's compensation.

Rees says he would never rent handheld equipment because it's much easier for him to send broken equipment to the on-site mechanic rather than send it back to the company from which he rented it. He doesn't see the cost effectiveness of renting handheld equipment and or the cost effectiveness of repairing broken-down equipment continuously.

"We use the tools until we need to purchase new ones," he says. "And sometimes, when there's extra money in the budget, I use it to buy new equipment

before the money is used for something else."

The handheld equipment lasts awhile because it's not used daily. The oldest trimmer is 6 years old, the edger and blower are at least 10 years old, and the chain saws last an average of five years.

The Westwood crew use the trimmers and edger around bunkers, trees, ball washers, cart paths, water coolers and the clubhouse. The crew uses the blower on greens and tees and chain saws for tree removal and cutting weather-damaged branches.

The staff uses the edger twice a year, during the spring and fall – 25 hours a year at most. The crew uses the blower two and a half to four months out of the year on an average of 10 to 20 hours a week.

Even though the handheld equipment isn't used every day, Rees and the crew still have to keep up on the maintenance. They clean equipment once a week, which includes scrapping off grass and checking engines and air filters.

Westwood's full-time staff consists of six workers. During the season, (April 1 to Nov. 1) the staff fluctuates between nine and 13 workers.

Rees has been in the industry for 13 seasons and has been using Stihl products almost as long. He knows what kind of quality and service he's going to get, so his purchasing philosophy is to stick with what he knows. **GCI**

Editor's note: The inclusion or lack of inclusion of any manufacturer in this article doesn't mean the magazine endorses or favors any one product, program or company.

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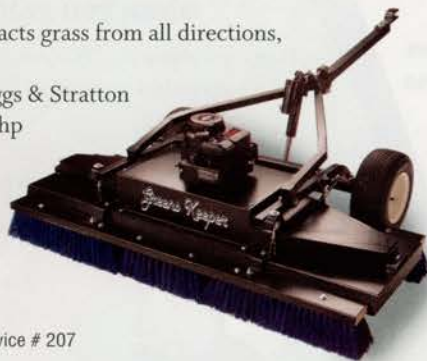


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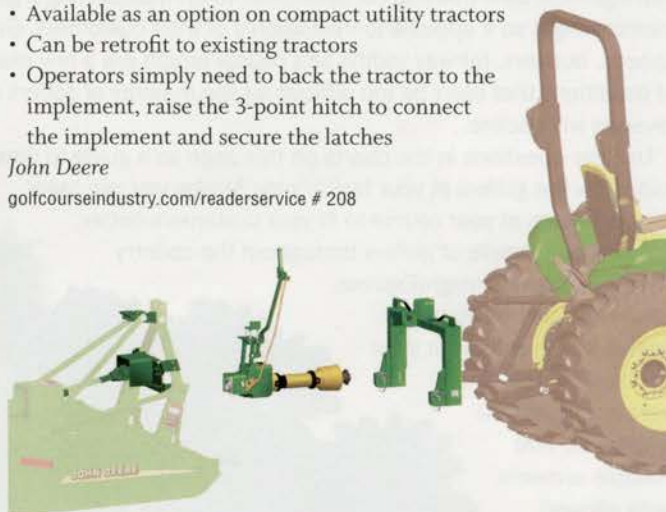


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This year, *Golf Course Industry* is publishing feedback from golfers throughout the United States. We're conducting this research to establish a dialogue between the professional community and golfers. On this page, we'll report trends, likes/dislikes, suggestions and other information we gather through our face-to-face, Web-based and phone research.

How they play

At most golf facilities, golfers' abilities vary greatly, and those abilities are related to golf course conditions. Superintendents and others in management take this into consideration when maintaining a golf course, maintaining it so it appeals to the majority of their customers. Green speeds, bunkers, fairway widths and course length are a few examples of conditions that can't be too difficult for the majority of golfers or else revenue will decline.

Use the questions in the charts on this page as a guide to determine how the golfers at your facility play. Maybe you can tailor the conditions at your course to fit your customers better.

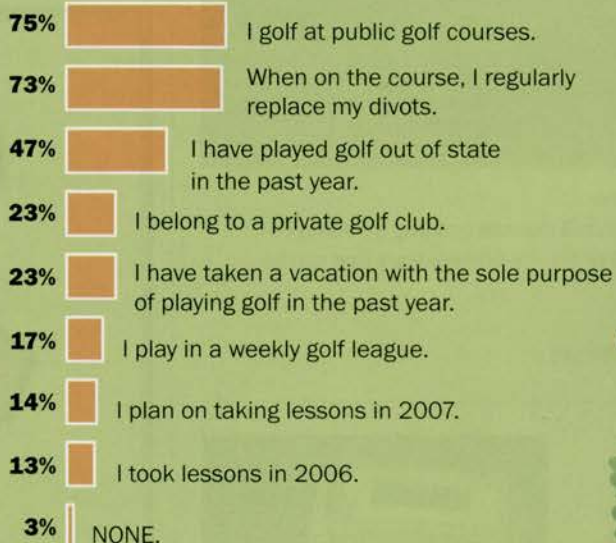
A random sample of golfers throughout the country were surveyed by InsightExpress, a market research company. Golfers surveyed play at least five times a year. There were a total of 200 responses, and multiple answers were allowed.

How many holes do you typically play when you golf?

I play 9 holes and 18 holes a relatively equal amount of time.



Which of the following apply to you and your golf game?



Typically, do you ride or walk when playing a round of golf?



Terry Buchen, CGCS, MG, is president of Golf Agronomy International. He's a 38-year AA life member of the GCSAA. He can be reached at terrybuchen@earthlink.net.



EQUIPMENT IDEAS

Mark it up

Joe Kennedy, CGCS, director of golf course maintenance at the Vanderbilt Legends Club in Nashville, Tenn., and Jon Frydenlund, equipment manager, built a removable Scorpion foam marker for the front of their John Deere 2155 tractor.

The bracket measures 18 inches deep by 24 inches wide and is made of mostly 1.5-inch, square metal tubing and 1.5-inch angle iron welded together. The bracket slides in via quick-disconnect lynch pins over the top of where the removable weight trays normally would be.

The 15- or 25-gallon tank is bolted to the metal tubular frame. The 12-volt electrical wire hook-up has a moisture-proof quick disconnect to the tractor with its own fuse and on/off switch.

The foamer marks a single drop point between the wheels. The operator is trained to determine the proper spacing when applying granular materials with the Vicon fertilizer spreader.

Agsouth manufactures the foam marker (model SC15-FM), which costs about \$400 for the 15-gallon model. The metal framework (some of which was in inventory already) and labor cost \$100.

When the foam marker isn't in use, the weight trays can be placed in their normal positions on the front of the tractor.



Goin' mobile

Osvaldo Cruz, director of golf course operations at the Palmas Del Mar Country Club in Humacao, Puerto Rico, conceived a way to recycle used divot-soil containers. He asked Henry Rodriguez, the club's irrigation technician, to bolt the four used Par Aide Divot Mate containers (model #425-02, hunter green) onto the back of his EZ-Go Workhorse irrigation technician cart. Rodriguez bolted the containers to the sides using one set of 0.5-inch diameter nuts, bolts, and flat and locking washers for each container.

The containers have a hinged top that keeps anything stored inside dry, which works nicely to store Rodriguez's irrigation parts and supplies. Each Divot Mate, which cost about \$48 when purchased new, holds four gallons of material.

The hardware and labor required to bolt the containers to the sides of the vehicle cost less than \$25. **GCI**



Travels With Terry

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

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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.

HELLO! MCFLY!

I've always loved the original version of "Back to the Future." To this day, I want an antigravity skateboard and a DeLorean. Also, Christopher Lloyd, as Doc Brown, reminds me of half the turf professors I've ever met. Part mad scientist, part father figure.

Anyway, one of my favorite catchphrases from that flick is when Biff grabs Marty's dad and, in the process of rapping him repeatedly upside the head, yells: "Hello! McFly!" It's the ultimate cinema noogie.

Well, in that spirit, I'm giving the golf industry a noogie.

One of the unfortunate side effects of the economic challenges our industry faces is carpetbaggers descending on us. You know what a carpetbagger is, right? Originally, they were the unscrupulous Yankees who came to the post-Civil War South to take financial advantage of the carnage the war left behind.

In our case, the golf industry's carpetbaggers are companies trying to sell you stuff cheaper without investing a penny in you and your profession. "Hey, you might never have heard of me before, but you can buy products just like the ones you already use and trust, and you can save money," they say.

You know the usual suspects. I'm sure you've answered the phone before and found yourself entangled with one of those telemarketers selling trash bags, uniforms, biodegradable oils, florescent bulbs, "organic" fertilizers and a whole gamut of other junk. It's easy to hang up on these clowns, but these days, the range of crap these folks are offering is being expanded to include some products that claim to replace key resources for superintendents.

Let's call a spade a spade and just say I'm referring to fly-by-night companies selling knock-off pesticide products. I'm not talking about branded, well-supported, postpatent products offered by legitimate companies and distributors you know already. This isn't about proprietary versus

postpatent. That choice is one you have to make based on research, agronomics and relationships, even though there's much to be said for buying from the company that brought the product to market originally.

Instead, I'm talking about supergeneric stuff that comes in from off-shore (China, Israel, etc.) and is sold essentially off the backs of trucks. During the past year, several major foreign generic chemical companies have hired sales reps who are working our industry like the door-to-door salesmen of old. The market is being flooded by companies you've never heard of with no-name products that are "just like" brand names you've used for years.

... carpetbaggers are companies trying to sell you stuff cheaper without investing a penny in you and your profession.

The good news, if you call it that, is that the Wal-Mart-style pricing these folks are offering is driving down pricing across the board for "commodity" products like chlorothalonil and glyphosate. You can probably get the best deal you've ever had for some of those basic chemicals right now. Unfortunately, that's also the bad news. Companies that have supported and invested in our industry for years are being undercut by newbies who are only on the scene to make a quick buck.

The companies – proprietary and postpatent – that reinvest in our business and your profession are getting slammed by the carpetbaggers, and, quite simply, they can't be expected to take it forever. Nor can they be expected to invest even more to bring new products to the market, conduct research to help you use products better, hire first-class sales reps or sponsor the

numerous educational and social opportunities we've all come to enjoy.

Let's be clear: Good companies won't continue to value this market unless you value them.

I would love to provide a list of the good guys and bad guys in print, but the nice lawyers at *Golf Course Industry* would probably be very unhappy with me. Instead, let me offer a quick quiz to help you sort things out as you plan your purchasing for 2008:

1. Does the company have a name you know and trust? (+10 points)
 2. You've never heard of the company, and you couldn't spell their name if you tried. (-10 points)
 3. Is their sales rep someone you've known for years who has demonstrated good agronomic knowledge and who has served you and your friends well even when he wasn't trying to sell you something? (+10 points)
 4. The sales rep is a guy whose last job involved selling ink-jet cartridges ... and he wasn't particularly good at that. (-10 points)
 5. Does the company support your educational needs by sponsoring events, participating in your chapter and advertising in industry journals? (+10 points)
 6. Is the company's idea of industry support bringing along some donuts for an unscheduled call by their salesman? (-10 points)
 7. Does the company work with a solid local distributor that has a reputation for honesty and quality? (+10 points)
 8. The company claims they "don't need no stinkin' distributor" taking a cut so they can give you lower pricing? (-10 points)
 9. You're almost always willing to try new products and services from the company because it has a good track record. (+10 points)
 10. You have to gulp real hard when it occurs to you you're risking your greens – and your job – to save a few hundred bucks on a case or palette of product. (-10 points).
- If you have anything less than 50 points for the quiz, I have two words for you: Hello! McFly! **GCi**

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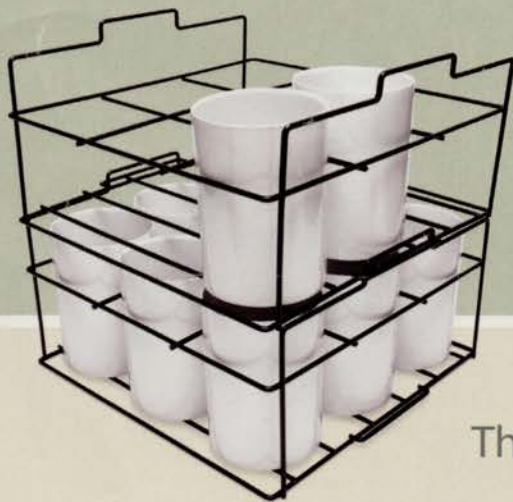
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