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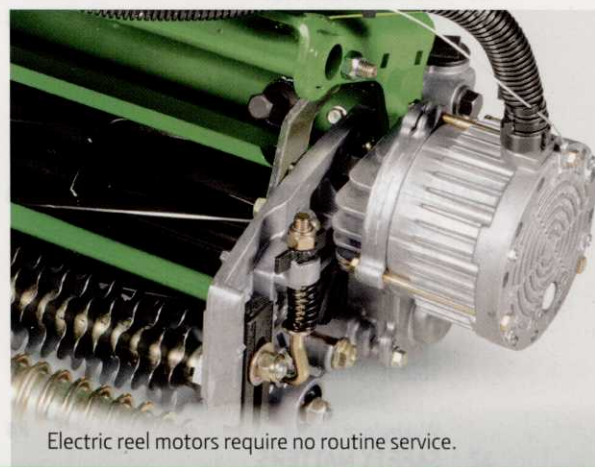
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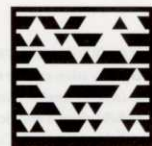
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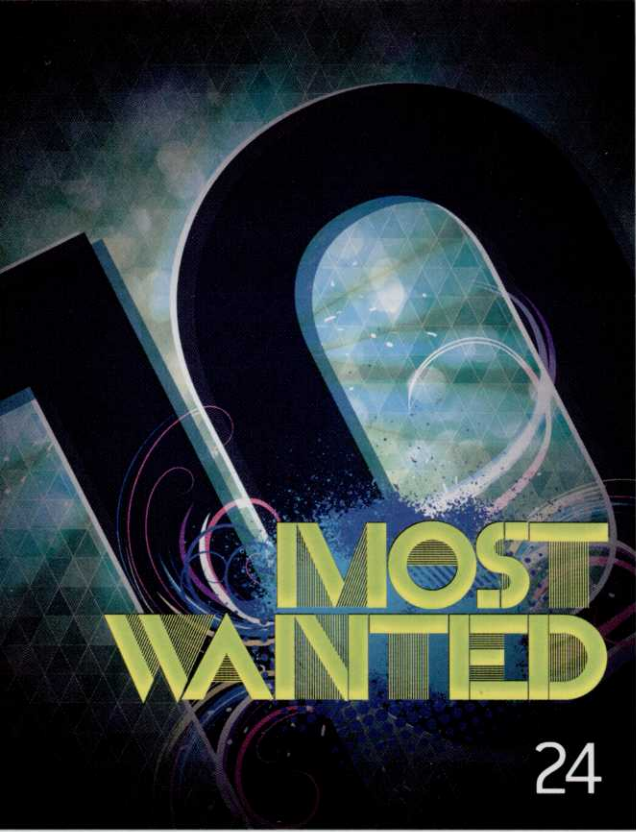


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IN THIS ISSUE

DEPARTMENTS

- 6 **Teeing off**
My Brain on Tim
- 8 **Letters**
- 12 **The Whiteboard**
- 77 **Travels with Terry**
Equipment ideas
- 80 **Classifieds**
- 81 **Ad index**

COLUMNS

- 12 **Outside the ropes**
Tim Moraghan:
The icemen cometh
- 22 **Game plan:**
Henry DeLozier:
Maintaining momentum
- 30 **Johnny Turfnerd**
John Kaminski:
50 shades of green
- 54 **The Monroe Doctrine**
Monroe Miller:
Dodging the bullet
- 62 **Irrigation issues**
Brian Vinchesi:
Budgeting irrigation
system improvements
- 68 **Guest Column**
Ron Dodson:
Links to sustainability
- 76 **Design concepts**
Jeffrey D. Brauer:
Tree planting – Golf Division
- 106 **Parting shots**
Pat Jones:
Plum perfect

COVER STORY

24 **10 MOST WANTED**

Want to go far in this industry? The traits, skills and talents every superintendent should possess to get to the top.

FEATURES

Q&A

14 **PLAN B**

David Pursell started FarmLinks as an ingenious plan to drive sales of his specialty fertilizer company – then he sold it. What's he doing now?

Workplace issues

32 **SAFETY MATTERS**

A golf course is no different than any other workplace. Workers must abide by safety procedures, and a safe environment must be provided for golfers.

Equipment

56 **LOOK SHARP!**

Superintendents share their sharpening and grinding tactics so that your colleagues will be green with envy about your greens.

Water

64 **WATER ISSUES**

Supers share their methods for clearing up their water problems and how they turn bad into good.

Equipment

70 **TIER IV**

As mower manufacturers prepare to roll out emission-compliant equipment, the industry provides some clarity on the impact Tier IV will have at the course level.

Analysis

74 **DESIGN IT FORWARD**

In his analysis, GCI's Bob Lohmann questions whether simplifying golf adds value and suggests that bunkers may hold the real key.



56



14

74



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MY BRAIN ON TIM

Warning: Spending two hours with Tim Hiers can make your head explode. A few weeks ago, I was in south Florida to speak on “career management in the new normal” to a great group of assistant superintendents from the Everglades GCSA. I had some extra time in my schedule, so I called my old friend Tim Hiers, CGCS, the legendary Naples-area super, and he graciously agreed to show me around The Old Collier Golf Club.

Now, unless you’ve been under a rock for three decades, you probably know Tim is not just a leader in environmental golf course management, he’s been driving the pace car.

Moments after arriving at the club, I was in the passenger seat of his vehicle flying around the course, attempting (poorly) to take notes on my iPad as we bolted from spot to spot to see examples of what his team has done.

Tim spewed statistics and metrics like an over-caffeinated Harvard business prof. In all the years I’ve known him, I’ve never once heard Tim say anything without backing it up with a seemingly unassailable fact. I’m fairly sure he has a photographic memory.

Due to Tim’s rapid-fire delivery and the fact we were going about 30 mph, my notes from our whirlwind excursion around Old Collier are a mess. He briefed me about Platinum paspalum, the tough-as-nails turf he helped Dr. Ronnie Duncan develop to cope with the poor water quality he deals with daily. His brackish water is so awful (“Second worst in the world behind a course in Dubai that irrigates with desalinated sea water.”) that Toro Irrigation used what they learned at Old Collier to redesign some of their products.

He showed me the many wildlife corridors they’ve created around the course that are home to dozens of species...some endangered or threatened. We stopped numerous times to check out planted areas with vegetation from around the world, some of it personally selected and planted by our mutual friend Jan Beljan, the former Fazio golf course designer who doubles as a passionate landscaping guru.

In preparation for the rainy season, the course was closed and ripped up completely by aerification. We stopped to watch the process,

including the demo of a potential new piece of equipment that would reduce the manpower required. Tim, as always, had done the math and knew that if the huge new vacuum performed as advertised it would pay for itself in 3.2 years (give or take a week).

The average Old Collier member is probably not that interested in the amazing things Tim has done to make the facility greener and leaner. However, his owners – the revered Collier family – are quite interested. They’re committed to sustainability in everything their vast company does. It’s simply part of the culture for them so Tim, who has arguably been the Old Tom Morris of sustainability in golf, is a perfect fit.

But what does “sustainability” even mean?

For Tim, it comes down to one simple thing...can it be replicated elsewhere? He ticks off dozens of small things he does to ensure all the little stuff has a big impact on the course. Each of them could work at nearly any other course.

But, off the course in his office is where his eyes seem to shimmer most brightly when he talks about everything he’s done to conserve energy –

install low-power lighting, find just the right ice machines and A/C units, reuse materials. Get this: his average electric bill for his entire maintenance facility is less than \$600 per month. He’s so focused on energy savings he has Florida Power & Light on speed dial. Hell, they probably have him on speed dial to find out how he does it.

That’s when it dawned on me. As I sorted through what he’d crammed in my cranium in 128 minutes, I realized my friend – a man consistently recognized as the Pied Piper of “greener golf” – isn’t motivated by some lofty sense of environmentalism. He is – and I mean this in the nicest way possible – cheap.

He hates waste. He loathes using resources unnecessarily. He despises the unnecessary or the extra. He is – to put it simply – frugal.

Frugality gets a bad rap. It sort of sounds old fashioned or Amish. Yet, it’s one of our finest virtues. And, for a successful golf course superintendent, it’s a core value. Think about it. Be like Tim. Be frugal...and prosper. **GCI**



Pat Jones
Editorial director and publisher

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GIE Media, Inc.
4020 Kinross Lakes Pkwy, 2nd floor
Richfield, OH 44286
Phone: 800-456-0707
Fax: 330-659-0823

EDITORIAL

Pat Jones
Publisher/Editorial director
pjones@gie.net

Mike Zawacki
Editor
mzawacki@gie.net

Bruce Williams
Contributing editor

Kyle Brown
Associate editor
kbrown@gie.net

Jim Black
Contributing editor

SALES

Russell Warner
National account manager
330-523-5385

Ted Schuld
Account manager
216-236-5937

Bonnie Velikonya
Classified sales
330-523-5322

Martha Corfman
Manager, books
330-523-5366

Maria Miller
Conferences manager
330-523-5373

Jodi Shipley
Marketing coordinator
330-523-5368

GRAPHICS / PRODUCTION

Andrea Vagas, Creative director
Helen Duerr, Production director
Heidi Clevinger, Production coordinator

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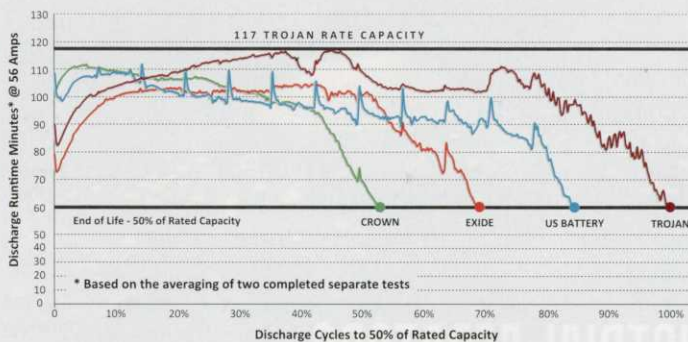




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We'd like to hear from you.

E-mail us at gci@gje.net with your thoughts and opinions.

Past presidents

Mr. Monroe Miller,

Like you, I have had the honor to have known and worked with many of the GC-SAA presidents over the years ("Presidents I Have Known," March 2012). Having served two years on the GCSAA BOD myself I know the time and dedication it takes to serve as GCSAA president and have a great deal of respect for all who have answered the call to serve.

Having the great privilege of being a chapter member of GCSANC, I also have had the honor to know and work with Cliff and Myrtle Wagoner for over 30 years. I was pleased that, as a GCSAA board member, I was able to help make sure Cliff got some recognition when he attended his 50th GC-SAA Conference several years ago. I thank you for calling for some recognition of the great effort Cliff and Myrtle have made to be

at every GIS even though he has been retired for 25 years or more.

I shared your words from your column with Cliff and he was, as always, greatly honored that he and Myrtle were mentioned in your story. Cliff is very humble and certainly appreciates all the great support he and Myrtle have received from his GCSAA family over the years... especially over the past few years which have been a bit more challenging for them.

Thanks for the great story and keep up the good work.

Gary K. Carls, CGCS
 Past-President GCSANC 2000
 Past-President CGCSA 2002
 Golf Operations Supervisor
 Department of Public Works/Golf Division
 City of Sunnyvale, Calif.

Forced fed

Great article ("You Can Fix Stupid," April 2012)... too bad it was on the last page vs. the lead article... Plus, your last paragraph is so on point. Force me to eat your food by charging a minimum. If it were that good, the club would be on my eating rotation,

Mitchell L. Stump, CPA
 Palm Beach Gardens, Fla.

Got something to say?

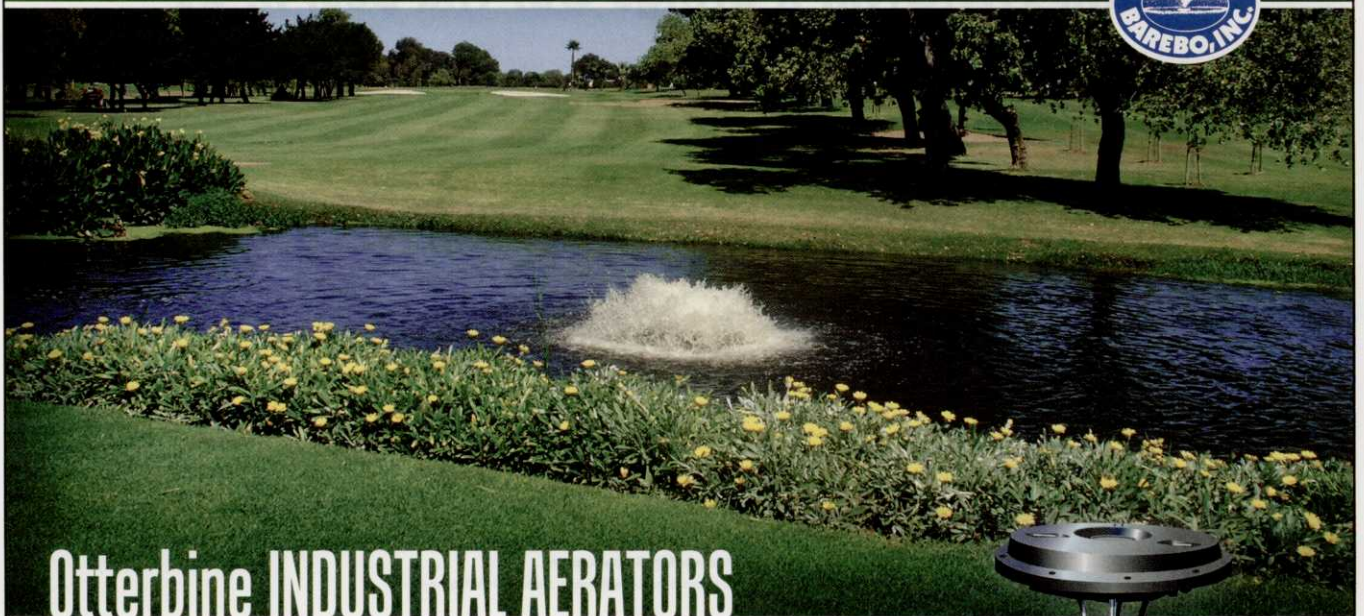
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It's a wash

Beryl might've been classified as a tropical storm when it hit the northeast coast of Florida in late May, but its downgrade as it lost power was exactly what it caused on the Dunes Golf Club: a depression.

As the storm weakened, it should've spent less time pouring rain on the course and surrounding counties, but it lingered long enough to put down 10 inches of rain, according to the National Weather Service.

So much water came down that it washed out several dunes and overwhelmed the drainage systems, uncovering and damaging pipes in the process, closing the course temporarily.

Course maintenance crews are still working to repair the damage, according to general manager Jim Cocchi, but they should be wrapped up in time for a June 16 event.

Tropical storm Beryl wore down the Dunes Golf Club with more than 10 inches of rain, enough to wash out large sections of the course.



GOING INTERNATIONAL

GCI's Pat Jones and Bruce Williams embarked on a whirlwind fact-finding tour of golf in Singapore, Bangkok and Tokyo in May, following the launch of the premier issue of GCI International.

As they traveled throughout Southeast Asia, Pat and Bruce kept us updated via Facebook and Twitter. Here are some of our favorite dispatches:

May 17 - Got a great download from Alan Prickett, Jacobsen's golf market guru in Asia, at lunch yesterday along with Bruce Williams and Mike Sebastian. Key finding: the issues facing golf in most Asian countries aren't that different than the U.S. How do we get more people to play? How do you overcome competition for time? How do you revive courses associated with failed residential developments? Half a world away but the problems sound like home.

May 16 - Singapore is one of the most seductive places on earth. Yes, the hotel is marvelous but the people here are amazing. And lunch with Alan Prickett of Jacobsen was worth the trip. Beginning to get a hint of what GCI International can do in Asia, but pretty sure it's going to require lots more fact-finding junkets to completely figure out. :0)

May 15 - Woke up to a hazy sunrise in Singapore to find a golf course out my window.



FROM THE FEED

We've been hearing about the benefits of the Tee It Forward initiative from the USGA - oh, and also our own GCI columnists. Here's how short tees made golf fun again for one member out there:

Our new short (3000 yds) tees allow one of our members who is battling cancer to make birdies!

Jason Haines@PenderSuper



I imagine it's nice for the younger junior players as well. Good on you.

Brian Jennings@GolfShaper1



Yeah. People are slow to move forward but once they do they LOVE it! #teeitforward #golf #fun

Jason Haines@PenderSuper

Join the conversation on
Twitter @GCIMagazine!



From the Field

GCI's roving reporters attended BASF's 2012 Agriculture Solutions Media Summit in early June and learned that the company has plans to introduce a new fungicide for the golf turf market in 2014.

Lexicon will be a combination of Xemium (a successful ag market product) and Insignia SC. Keep an eye out for more news on this new turf product.

A COURSER ON THE COURSE

Golfers are usually after birdies, but sometimes it's the other way around. Birders were after Kington Golf Club in Herefordshire when a particularly rare species showed up in May.

A cream-colored courser had decided to stay for a few days just out of bounds along the 8th fairway, far removed from its usual haunts. The bird usually hails from North Africa and the Middle East, and hasn't been since 1984 in Britain.

About 2,000 people showed up to see the small wader, with some bird watchers also keeping an eye on the games going on around them and applauding shots while lining up a perfect photo through a zoom lens.





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

THE ICEMEN COMETH

Hockey is my second favorite sport. I grew up playing it and remain a rabid fan. I know quite a few NHL players, and therefore know that since it's now their off-season, they can be found involved in their second favorite pastime – golf.

I read almost as many books about hockey as I do about golf, and one of my favorites is Ken Dryden's classic, "The Game." In it, the savvy and cerebral Dryden made some observations about hockey that have strong parallels to golf. I mention them here not just to note Dryden's prescience, but to encourage golf's organizing bodies to get on the stick and work on these issues so we're not still discussing them 30 years from now. I'm either quoting or paraphrasing from the book. Regardless, you'll get the idea.

"A game we treat as ours isn't ours. It is part of our national heritage, and pride, part of us; but we can't control it."

Golf is part of Britain's national fabric. Not so in the U.S. And although many Americans love the game, we're not nearly as passionate. The intricacies, history and traditions aren't as readily recognized, or appreciated, by American audiences as by the British. As a result, we have a harder time getting new golfers into the game or "lapsed" golfers to return. We need to show the audience that golf fits over here almost as easily as it does over there.

"If the pattern of gratuitous violence were eliminated, what then? Who would watch?"

I'm not suggesting golfers start crashing one another into the turf. But at the same time, we have to let these great athletes and shot-makers do what they do best. If the governing bodies succeed in rolling back the ball

and otherwise manipulating equipment, Bubba Watson couldn't hit the ball as far or make it dance – then who would watch? In every sport, the pros exist to let us dream about reaching the high bar that they set. Take their skills out and we'll get bored and find something else to do. Equipment regulations might be a good way to keep old courses in play, but that's a long-term recipe for golf's demise.

How many of our so-called leaders have actual hands-on experience doing much of anything in golf?

"And, it can only happen if the NHL makes international hockey the climax to its season, in world championships..."

Some of the greatest assets golf has are its international competitions. They generate interest around the world. They also create big revenue. But do they translate into increased participation? I certainly haven't heard that Wales is seeing a big jump in traveling golfers after the Ryder Cup. Everything we do needs to expose the game to potential players.

"In America, hockey is a game most of whose fans were never players... and it seems that they never will be."

Here is one area in which golf has an advantage over other sports: Many fans are already golfers, and those who don't play can be. It's hard to say that about almost any other spectator sport. What we need to do is get non-players to understand what it feels like to hit a golf ball. Watching Phil Mickelson and being Phil Mickelson are two different things. However,

only in golf can you approximate what it's like to be Phil Mickelson, whether it's holing a long putt, hitting a great drive, or just playing on the same course. That unique association between watching and participating is golf's greatest attraction.

"If we were to do something, who would decide what is right and wrong for a game? Who decides what is in a game's best interest? Who is the keeper of the game?"

If we want to do something to improve golf – make it more enjoyable, make it last, get more people to play the game – then who do we trust to make that happen? The governing bodies? Are they really looking out for "our game," or are they looking out for their own best interests? Within the industry, who are they to tell us what to do with our own operations? Are they really that familiar with the intricacies of golf course maintenance? How many of our so-called leaders have actual hands-on experience doing much of anything in golf?

"We let a game follow its intuitive path, pretending to be powerless, then simply live with its results."

Have we lost golf's "intuitive path?" The object is still getting the ball in the hole in the fewest possible strokes. But we, as an industry, have become wrapped up in the outside agencies. These concerns include achieving perfect conditioning year-round regardless of budgets, equipment, staffing, and weather; initiatives designed to get more people playing just the sake of playing rather than for a love of the game; and environmental issues, forgetting that golf courses are the original examples of sustainability.

Our game is being overtaken by their rules. Both in hockey and in golf, I'm very concerned. **GC**

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FarmLinks Plan B

ON THE FARM

David Pursell started FarmLinks as an ingenious plan to drive sales of his specialty fertilizer company – then he sold it. What’s he doing now?

By Pat Jones



I first met David Pursell when his then fledgling fertilizer company came out of nowhere to become a major supporter of GCSAA in the early 1990s. At the time, I was running the scholarship and research foundation (now EIFG) and I was pleasantly surprised to have a company show up and start giving so generously. It was... different.

I had no idea how different Pursell’s path would be.

What I didn’t know at the time I met him was that he had a plan. Plan A for David Pursell was to use branding like no other company had ever used it by building

the world’s first and only research and demonstration golf course on a gorgeous piece of family land south of Birmingham, Ala., and – with the help of major partners – use it to sell his Polyon brand to superintendents in small groups over many years. Hospitality, relationships and “getting close to the customer” had always been a part of the golf business, but FarmLinks took it to a new and unprecedented level.

Two decades later, Pursell is working on Plan B. With his company sold, he’s gone from being a savvy fertilizer marketer to being the savvy owner/operator of what is still one of the world’s

most unusual golf courses.

I was curious about how my old friend was doing and, when I called him, he simply said what he’d told me and so many folks so many times before: “Come on down and see us.” So I did...and here’s our conversation.

Take us back to the origins of building the company and, ultimately, FarmLinks. The company had a long history even prior to my dad (Jimmy) taking it over in the ‘50s. But we really learned the value of hospitality and relationship marketing back in the mid-‘80s when we got into the sulfur-coated urea

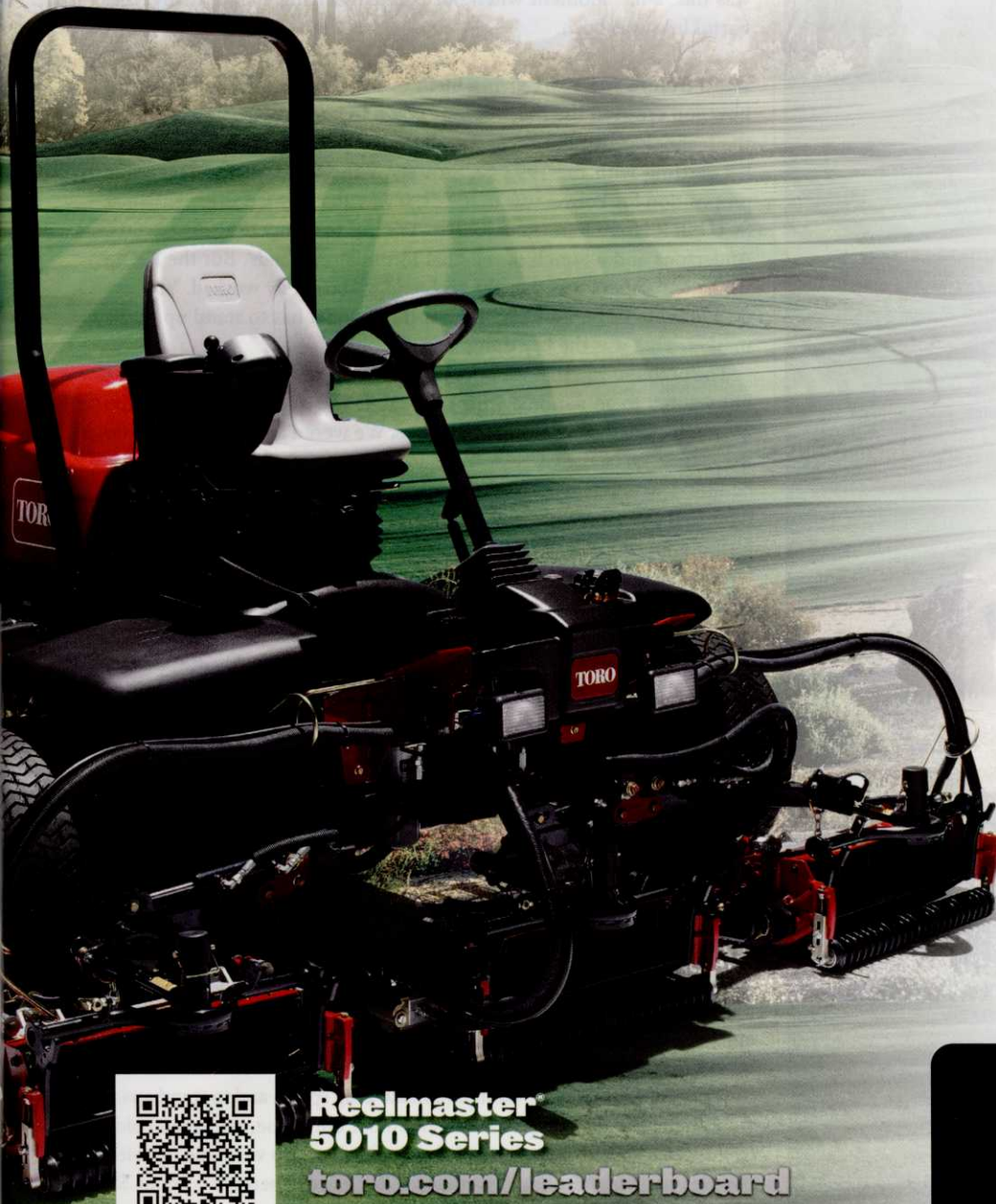
business. We built what was one of only four SCU plants in the world and we needed to get outside contract production going to keep the plant busy. The Howard Johnsons (fertilizer) sales folks contacted us and wanted to visit. So, we spent a week creating an agenda and thinking of things to impress them. We swept the floors and got the cobwebs down and really put on the dog for them.

That next week, six guys from Howard Johnsons flew into little “Sylacauga International” airport. We rented a van to pick them up and put them in the old guest house. We arranged

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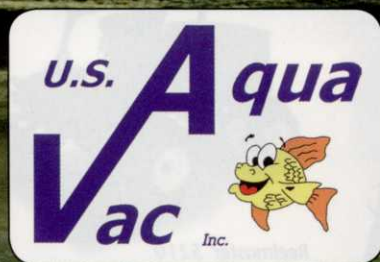
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Q&A

“Operating a golf course in today’s economy is one of the most challenging things I’ve ever done. We have a great product and we work hard at it, but it’s tough.”

evening fun, a plant tour and a fancy slide presentation. The first half of the visit was relational and the second half was informational. We had dinner for them at my Mom and Dad’s house that night and breakfast the next morning. A week later, they called and said, “Thanks... we’ll be switching our SCU business to you.” That’s when the light bulb went off the first time. We discovered the power of relationship marketing: If you can get someone in an undistracted environment for a while and give them the right information, you can sway them. That was the “a-ha” moment when our company changed and, really, that FarmLinks was born.

Wait! Before you start giving birth to the golf course, tell us about how you created the market for Polyon to begin with. We purchased the technology for Polyon and really began to bring it to the golf market starting with the 1992 GCSAA show in New Orleans. Our value proposition for Polyon was that, yes, it was about twice as expensive as SCU but it lasted four times longer. We had to compete against Scotts, Andersons and a bunch of regional formulator/brands. But the leg up we had on others was that the technology absolutely worked. You can do a lot with promotion and PR but the product has to stand up in the market. That was the key thing.

The problem was that we were three steps removed from the end user but wanted to go national with the brand. The question was how you most effectively get that story out there. We weren’t sure whether to do the classic ‘go to the GCSAA show and spend a bunch of money’ route or hire a national sales team like Scotts. Our problem was we didn’t have that sales force or the national brand and we didn’t have regional formulation abilities. We were pretty well known around the Southeast, but nowhere else.

The whole concept was, if we were going to make a big splash, we couldn’t go the same route as everyone else. It was a huge roll of the dice. We weren’t well capitalized and we did a lot of it on debt. But, if we’d expanded manufacturing and distribution and hired a national sales force, it would have been a \$300-500 million thing. So we went and partnered with Simplot and Harrells in the early ‘90s and they used Polyon to fuel their growth. They were true joint ventures with a lot of collaboration. They didn’t have to invest in the technology and we didn’t have to invest in formulation, distribution or a big sales force. That gave us the national footprint we needed and we started the national branding.

Well before FarmLinks, you were famous for audacious go-big-or-go-home marketing. Remind us of some of the things you guys did back in the day. We decided to go big with the brand and we even used to use the “Connoisseur of Manure” tagline, which got a lot of people’s attention. Once we had the business set up, we started with national advertising and then that first GCSAA show in New Orleans. Scotts had introduced PolyS and we wanted to make a big splash and to stand apart from them. We wanted people to remember our name, the green color of the product and the spherical shape of Polyon, so we came up with the idea of giving out the basketballs. They were expensive – about \$3

each – and we gave away about 5,000 of them. But it worked. People carried them around and others saw them. They'd bounce them in the competitors' booths! They bounced them everywhere. I remember Tim Orton and I went to Café Dumond in the French Quarter and superintendents and their kids were bouncing them there! We kept on with that for 15 years. We probably gave out 75,000 of those little green basketballs in the 15 years after that.

You also became the most famous artist in the industry for a decade or so. Yup, the Pursell golf prints at the national show were a surprise hit. It started because we used to go to the show with a simple 10' x 20' booth and banner and we needed something interesting in the booth. I'd always been an artist (Pursell's Auburn degree is in graphic design) and I loved doing drawing of golfers. Just for fun, we put the prints on easels in the booth and people liked them. The marketing people from GCSAA noticed and came up with the idea of giving them out to attendees who completed the 18-hole Challenge at the show. It became one more part of our brand and one more thing that bonded superintendents to the company. It was fun!

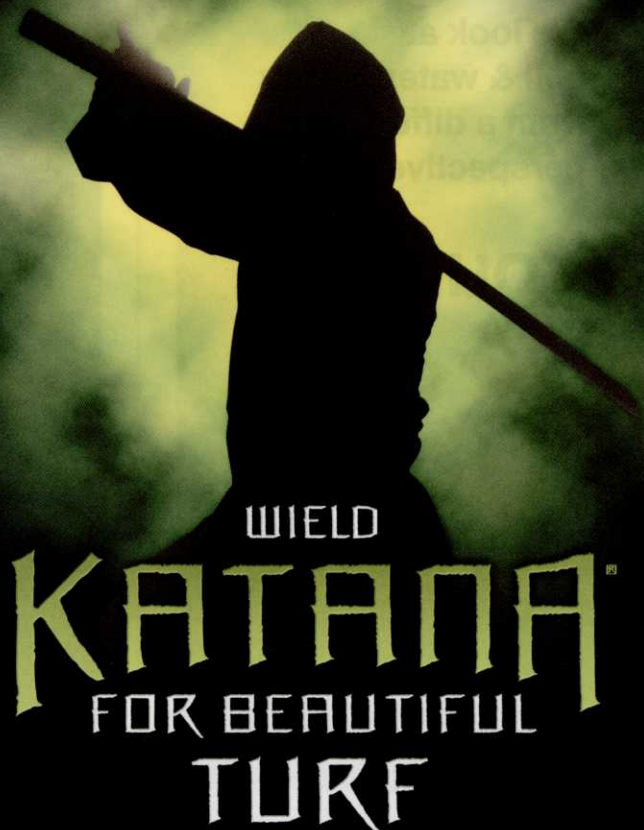
Okay, now about the golf course... I lived in a little house across the street from the old farm and I used to four-wheel a lot on the property, I loved golf and I had a graphic design background so I would literally fantasize about golf design and building a course on the property, but I was never serious. It wasn't my goal in life and it certainly didn't make sense to do it down here in the middle of nowhere for conventional reasons. Then we started growing the company in the early '90s and I'd begun to see the power of bringing people down here. We did an early form of the tour with a few customers and a sales rep or two. We had a plant tour and some slides and then went fishing or four-wheeling. It was rudimentary relationship marketing.

I kept thinking that we had to be willing to take a risk and do things differently if we were really going to compete and change the market. You can't leapfrog anyone unless you jump high. We had the audacity to try. So, we threw a Molotov cocktail into the market and decided to literally bet the farm on the power of relationship marketing by building a demonstration golf course to show off our product and entertain and educate customers.

The other thing we realized was that golf was effectively a market of just 11,000 or so real customers and you could choose the ones who mattered and focus on them.

I met Mike Hurdzan at the (GCSAA) environmental leadership event. I introduced myself and told him I had an idea for a golf course. I got his book and started thinking about it. I knew we needed a way to get our (Polyon) story across and the idea of a golf course started to sound less crazy.

It sounded crazy to your family and other folks in your company, as I recall. Basically I had to win people over one by one. I had to sell the family, our advisors, our employees...but I was in charge and I knew we needed to do it. There were a lot of sleepless nights. We almost bagged it in 2001. We were under construction and everyone hated what they were doing to the land with the D-7s and such. And then Sept. 11 hit. Here we were building a travel-dependent golf resort and people thought no one would travel for years and that the economy might crash, too. I called a meeting of the key players in the company and talked it through. Do we postpone, suspend, cancel...what should



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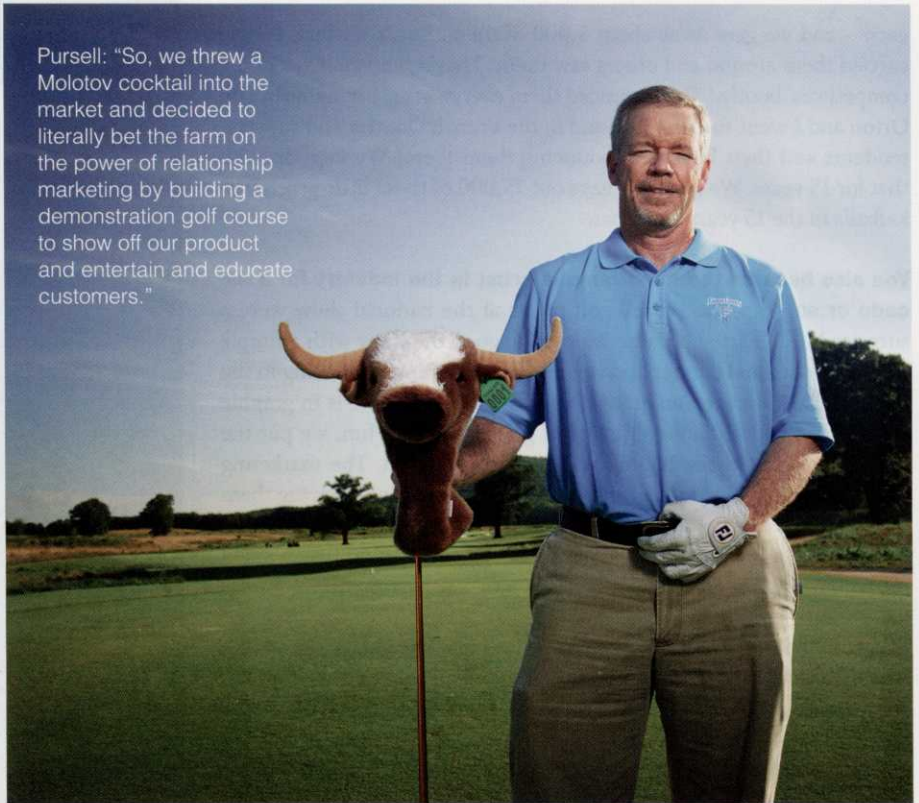
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Q&A

Pursell: "So, we threw a Molotov cocktail into the market and decided to literally bet the farm on the power of relationship marketing by building a demonstration golf course to show off our product and entertain and educate customers."



we do? We decided we're not gonna let these guys (terrorists) dictate our lives and we re-committed to the course.

It was a process over time. Building it, doing PR and promotion, creating a good story, etc. Obviously the endorsement and relationship with Toro, Ingersoll Rand (Club Car) and Syngenta at the time lent credibility. We had the idea and the balls to do it and they jumped on board. It's kind of the drafting effect in NASCAR for them. We put the idea together but our only dog in the hunt was fertilizer. Fertility was well-represented but everyone got their due.

It was clearly successful as a demonstration course, but you never did much to reach out to regular golfers at the time.

Public play was secondary. It served to legitimize the course as an active public facility. We got what we got and it didn't interrupt the Experience to do that. The fact that we spent 10 times on the lodge than what we spent on our clubhouse is a good example of our priorities at that time. We knew that those 15 customers in the Parker Lodge represented more margin than 1,500 rounds of golf. We built the golf course as a marketing tool first and foremost. We never intended to make money on the course.

When we opened 10 years ago, FarmLinks

was here solely to do one thing: help sell fertilizer and help our partners achieve their goals with superintendents and other customers.

Then things changed, huh? In 2005, we had three different companies inquire about buying our company. We were pretty heavily leveraged (with debt) because of the plants and the course. I wanted to make sure that at the end of the game of musical chairs, my family still had a place to sit. It was a perfect storm as far as a time to sell. The company had lots of profit potential, great products, great marketing and the economy was still going well. Plus we had multiple suitors. So the time was right and we sold the company to Agrium in 2006. I worked the transition for a year and a half, which helped the continuum, but I knew I was going to have to have a different plan for FarmLinks moving forward the moment we agreed to sell.

We knew that FarmLinks was going to have to stand on its own two legs. Since then, the economy crashed and golf got hit hard. Golf as an industry will always ebb and flow with the housing market and until that comes back, it's going to struggle.

The correction is going to take place eventually – I think you (GCI) are dead on that we need to have a few thousand courses go away. Golf's in some trouble right now and it's going

to take some effort and luck to get healthy again.

So where do things stand today? FarmLinks is an LLC (limited liability corporation) owned by four Purcell family members.

Any plans to sell homes or develop? We had a master plan in 2007 to do a build-out but didn't do it...and boy are we glad.

And how about the partners? Obviously, Toro, Agrium, Club Car and BASF have been fantastic and we've had great participation from many others. After the sale, we added the Solutions Center concept and we've continued to grow the demonstration capabilities out over time. We added seven cottages and

cabins – which was an idea I plagiarized out of trip to Pine Valley – and now have 28 more rooms besides the Lodge. That's also beneficial to our public golf operation from a stay-and-play standpoint for meetings and events. Even so, we still need more rooms to be able to handle some bigger groups that have approached us.

So how is the public operation doing? We'll turn 17,000 rounds this year and the Experience is only about 1,000 of that. Daily play rounds have grown every year since 2003. We charge \$135 per round and we only do a little discounting. One thing is changing: we never served alcohol and that's obviously an issue for some groups, so we just applied for our liquor

“Then we started growing the company in the early '90s and I'd begun to see the power of bringing people down here... It was rudimentary relationship marketing.”

license. We also have new staff people to help us drive conferences, groups, outings, etc. But, it's just like everything else we've ever done: We talk to our customers and position ourselves where they want to be.

You seem to be all over social media and marketing as ways to bring play in. What's working best? Operating a golf course in today's economy is one of the most challenging things I've ever done. We have a great product and we work hard at it, but it's tough. If something's not

working, you gotta do things differently. What is that we need to do to get people here. Once they come, they're sold. That's why we won the NGF customer loyalty award a couple of years in a row now. People love the way they're treated at FarmLinks, whether they're superintendents visiting on business or a group of friends coming in for a getaway.

So how would you sum up the history and moving from Plan A to Plan B? We're still the only research and demonstration

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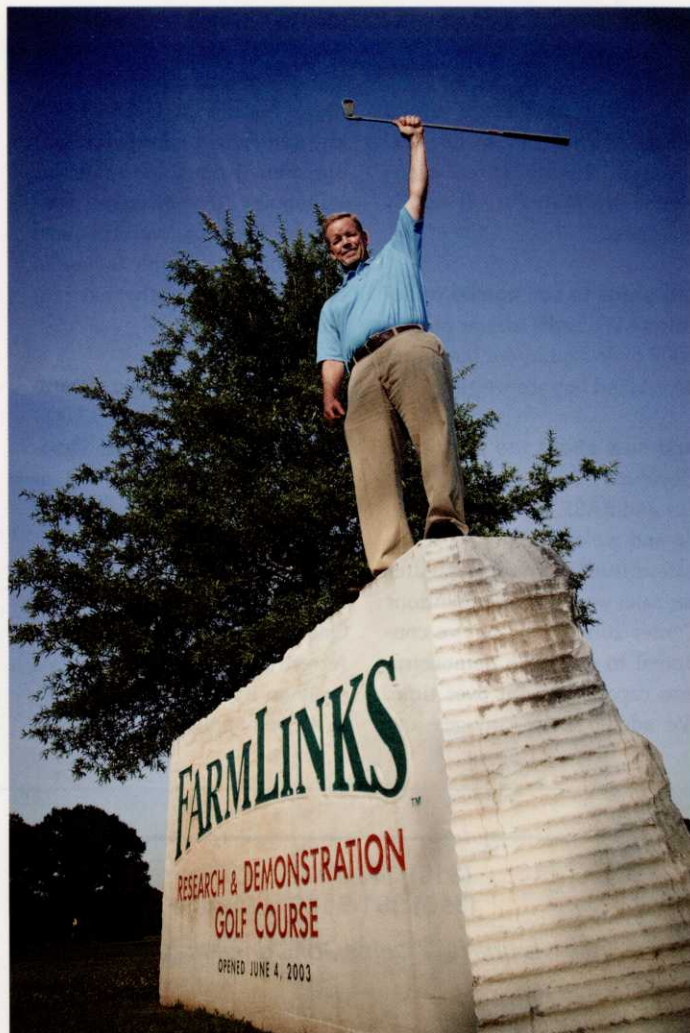
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Q&A



Pursell: "You can't leapfrog anyone unless you jump high. We had the audacity to try."

golf course anywhere. And now we are also a world-class hospitality golf course. Whether you're on business or here for fun, you're in an undistracted environment with high-quality golf and great amenities. We can't assume the Experience won't change in the future. We've had more than 10,000 visits by superintendents and others over the years. We have nearly reached my original goal of reaching everyone in what is about an 11-12,000 customer market. No one has ever touched that many customers directly. And it's all been fully paid. They've been entertained and educated...and it's like a little vacation to them. And most of them, over the course of time, have at least tried Polyon and some of the other products they've seen here. Not everyone has converted, but they've tried it. It worked. It absolutely worked.

So what's next for you? We want to get laser-focused on the hospitality piece. We've always been good at it for our business guests, now we want to do the same for maybe 100 guests a day here coming in groups. It takes time to do something special...but that's the beauty of the family core of all of this. We live here. We're not going anyplace. This is home. GCI

Pat Jones is GCI publisher and editorial director.

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

MAINTAINING MOMENTUM

A mild winter and an early spring gave owners and operators a head start on a promising year. Their challenge will come in sustaining the momentum long after a gentle spring has turned into the dog days of summer. If it's true that fortune favors the most prepared, here are three tactics that will give you an edge.

ENGAGE YOUR GOLFERS. The latest research from the National Golf Foundation (NGF) shows golfers make choices based on their sense of engagement. That means when they're choosing where to play, their choice is based more on where they feel they are appreciated than on their schedule or even price. As NGF CEO Dr. Joe Beditz says: "Golf will grow where golfers are engaged."

NGF data reveal that the number of U.S. golfers has declined but is expected to grow by about 3 million (approximately 1 percent) between now and 2020. Most of the growth is expected to come from high-income and high-participation (seniors) segments.

There will be winners and losers in the competition for the patronage and loyalty of these groups. The winners will be those who engage golfers. It's not hard; here are three simple ways to increase member and customer engagement:

- Know your golfers by name ... and use their names! According to the 2011 NGF study, most people value being recognized above all other factors.
- Make it easy for golfers to remain engaged by inviting them to come back.
- Encourage your most frequent golfers to introduce their friends and neighbors to your club or course.

EMPHASIZE FAMILY FIRST. The PGA of America has launched Golf 2.0 through its 24,000 members and countless collaborators in the golf business. One of the program's foundational elements is the recruitment and retention of women golfers. Women are the key decision makers regarding a family's leisure time activities and spending. What's more, women play with family and friends, which helps fill the tee sheet. Here are three ways to attract families by engaging women:

- Launch a family-first program that allows family time at your facility. Protect the tee times and make it comfortable for families to play without the pressure of more experienced golfers pushing them from behind. Create the "safe haven" that Jon Last of Sports and Leisure Research talks about by installing family tees and a short-course routing that makes your course attractive to families.

- Encourage children to play the game by making your course a safe place for recreation, environmental stewardship and entrepreneurship. Try inviting Boy Scouts and Girl Scouts to the course as a place where they can work toward badges. Remember, moms support those who are good to their children.

- Create a platform for socialization where women can gather with friends for as much golf as they wish to play. Who cares if that's fewer than nine or 18 holes. Make those who participate feel welcome... not simply tolerated.

"NGF data reveal that the number of golfers in America has declined but is expected to grow by about three million (approximately 1 percent) between now and 2020."

REWARD LOYALTY. Facilities that are increasing their customer bases are rewarding loyalty. Price discounting has proven, in most cases, a flawed strategy. However, there is great benefit in yield-management strategies that match price to market conditions to improve tee sheet utilization. Here are three ways to improve loyalty:

- Use the simple approach popularized by Southwest Airlines, which now benefits from an enormous audience of devoted customers. When you comp a free round after every 10 rounds played at your course, for example, you're effectively providing a 10 percent discount for your most loyal golfers without having to use the word "discount."

- Invite frequent golfers to special events. The three remaining major championships of the year – the U.S. Open, The Open Championship and the PGA Championship – provide great opportunities to shower your best customers with appreciation and recognition.

- Host an annual drawing and make every round played count as an additional entry in the drawing to improve the odds for your most frequent golfers. Then make the prizes exceptional – tickets to the PGA Championship or a trip to a luxury destination – and consider the costs the best advertising you could buy.

It appears that 2012 will be a good year for the golf business. But it will be better for some than others. The advantage will go to owners and operators who increase their capture of market share and who retain their best customers. **GCI**

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THE MOST WANTED

Want to go far in this industry? The traits, skills and talents every superintendent should possess to get to the top.

BY GARY GRIGG

The things that will make you the most successful are the things you are the least prepared for coming out of school. You cannot create a leader in a classroom – it takes experience and good mentoring under successful managers. Few people have the natural sense of what it really means to work with other people.

First, let me tell you a little about myself. My 44-year journey through the golf course industry has been varied and very interesting. I have been involved in golf course maintenance, new-course construction, old-course reconstruction, renovation, hosting major tournaments, working in management companies, consulting and being a co-founder and principle of my own golf industry company.

I earned a BS in agriculture and entomology from Utah State University in 1964, and my MS in agronomy from Michigan State University in 1966. I accepted my first golf course superintendent's position in 1968 and retired from the golf course superintendent's profession to work on my own in 2000. I currently work as an agronomist and vice president of Grigg Brothers. During my journey I earned a CGCS from GCSAA and have maintained that certification for 35 years. I also earned a MG from BIGGA and have been certified there for 17 years. I've served on the GCSAA board of directors from 1989 to 1997 and served my term as president in 1995-96. I've spoken at a lot of turf conferences worldwide and I've taught agronomic seminars for GCSAA and private distributors across the USA, taught agronomy for Idaho State University for a year and I've authored numerous articles for professional industry publications.

I love my chosen profession. Someone once said, "It is not work if you love what you do." I strongly believe the more knowledgeable you are of all the many skills required to be a golf course superintendent, the better your chances of long-term career success. I want to spell out what those critical skills are and put them in some type of order with the understanding that, to reach the top, you must prepossess some or acquire all of them along the way.

A person with sound agronomic skills

It is believed you have agronomic skills when you are hired. Therefore, this is the one I will explore least.

Let me sum it up this way. To be a great golf course superintendent requires an advanced knowledge of agronomy. From my many years of travel and consulting with golf course superintendents, I believe agronomic skills are lacking in many of today's modern golf course superintendents. Many golf course programs in the schools or programs within turf schools are fast-tracked and don't have a good, solid agronomic curriculum.

A superintendent must be an expert in plant nutrition, plant pathology, entomology, soil science, weed control, thatch (causes and control), turfgrass varieties and irrigation techniques. I also believe a superintendent must stay abreast of new developments in all of these areas, as well. There is simply not enough room in a single magazine article to explore each of these subjects.

Most of us are maintaining a golf course to the satisfaction of a demanding clientele,

and we must conform to their demands as they own the course.

Never fear new technology. It comes along every day, but look at it in depth and ask for valid data from quality schools and good researchers that back up any salesperson's claim. Sales' claims without valid data are called marketing. Many folks are good at marketing, so make sure it is good science, too. Before you try anything new on your course do your own testing in practice or out-of-play areas.

Yes, agronomic training is important. However, there are other skills that successful, modern turf managers must all have in common.

A PERSON WITH GOOD COMMUNICATION SKILLS



A person's greatest asset in this or any other business is his ability to communicate. The flow of communications must be both down and up the organizational chart of the club – management, staff, members and even the general public.

Be prepared to defend your profession and correct misconceptions whenever possible. Communicate with media and be an expert resource for them. Visit with members and attend club functions. Start a newsletter or a blog and be informative and proactive.

Good, effective and constant communication cannot be overemphasized. Mix-ups in communication are embarrassing for everyone. It's been my experience that most errors on the golf course are caused by improper communication. Most superintendents who lose their jobs don't lose them because they lack particular technical skills. Instead, they're let go because of a failure to communicate properly.

Remember, the responsibility for good communication always belongs to the person who possesses important information, whether this is the proper instruction of the maintenance staff or distributing vital data to the greens committee.

Most of us are maintaining a golf course to the satisfaction of a demanding clientele, and we must conform to their demands as they own the course."

A person who can work effectively with people



Few people have the natural sense of what it takes to work with other people.

The greatest interpersonal issue now confronting the golf course superintendent is working with people. In fact, management is all about dealing with people. You must select people, train people, organize people, inform people, control people and compensate people.

Dealing with people consists of three major areas: Working with a crew, interacting with people in other departments at your facility and communicating with members.

Most superintendents, myself included, rise through the ranks believing that the principal asset they have is their technical agronomic ability. As they move up, they soon find it takes much more than agronomics to be successful in this business.

All at once, it is the superintendent's or course manager's ability to get things done through other people that count most. The crew becomes the most important asset. You must get work done through them. Often, staff management is not taught in turf school, it is acquired from experience. Golf course staffs nowadays tend to be very diverse. Most of what I have learned, I learned by making mistakes. Believe me, some of my mistakes have been big mistakes.

Some things I have learned along the way:

- Don't be afraid to make mistakes. If you risk little, you will probably win little.
- Welcome ideas from your employees. Good ideas from the rank and file are a credit to you as well as to the originator. No superintendent worth his salt ever feels threatened by a good idea from a subordinate.
- Always keep your promises. Likewise, don't make promises you can't keep.
- Never underestimate your workers. Good ideas can come from humble sources.
- Fertile minds are not always labeled with a college degree.
- Learn to use "horse sense" in dealing with others. In other words, learn to treat others as you would like to be treated.
- Keep in touch with key members of your department. Don't shut yourself up in your office and don't depend upon assistants to do your legwork for you.

Interacting with people in other departments is nothing more than good communication. Other department heads at a club or facility are also professionals and they are important for the accomplishment of the superintendent's short-term and long-term goals. The superintendent is part of a business and he

needs to think about the implications of his work and how it affects the other departments of a club.

You must continually ask yourself: "Am I an answer to a problem or am I part of the problem?" The superintendent cannot become overly stressed or become too casual while interacting with the other professional staff at the club. The only thing that really counts is performance. Never make excuses – they only lower your professional standards and soften your character.

The better you become at effectively working with other people, the better your chance of long-term career success.

Lastly, effective leaders retain their key personnel, which is a critical skill. Empower employees to do their job and have an open-door policy with your employees. Communicate to each employee their role in your operation and have weekly meetings with all personnel under your supervision. Work together with your employees to solve all member, guest or maintenance problems as quickly as possible.

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10 MOST WANTED

A PERSON WHO CAN MOTIVATE THEIR EMPLOYEES



The ability to motivate employees is often the difference between success and failure as a leader. The most common mistake leaders make is to believe all of their employees are motivated by the same thing.

People are motivated in a variety of different ways. There are five recognized ways that people are motivated and each way weighs differently in importance from person to person. Lastly, no one is inspired by only one source of motivation

1. Make it fun – The sheer enjoyment of their job. Create an enjoyable work atmosphere. Have fun.

2. Tangible incentives – pay, bonus or leave allowance. Tie bonuses and incentives to job performance. Non-monetary rewards work very well at times, also.

3. Personal achievement – This employee is self-driven to meet his own standards of job performance. They like challenging work and abhor menial tasks.

4. Goal-oriented – This employee works hard if he or she believes in the cause, but not at all if he or she doesn't. Communicate your vision and communicate your end goals.

5. Personal reputation – An employee motivated in this fashion is interested in preserving and enhancing his or her reputation among peers and supervisors. Provide public praise and recognition for good work.

A person who can delegate effectively



Take a lesson from my many years of experience as a golf course superintendent: You will not be able to perform your job successfully by yourself alone. Make it easier for yourself by allowing those subordinate to you to bear the burden with you.

Delegate responsibility to subordinates. By doing so, you do three things:

1. You ease your own workload.
2. You train deserving workers for more important posts.
3. You groom a competent successor who is ready to step into your shoes when it's time for you to move up the ladder or when retirement comes.

Theodore Roosevelt once said: "The best executive is the one who has sense enough to pick good men to do what he wants done and self-restraint enough to keep from meddling with them while they do it."



A person who can plan, prepare and present projects.

Knowing the "why" of anything we do is as important to the success of a task as the "how." It provides you with a defined purpose for taking a particular course of action.

There are a lot of steps involved in planning, and the techniques vary. In my opinion there are four underlying major points:

1. Where do you want to go?
2. What does it take to get there?
3. Implement the decision.
4. Monitor the plan for feedback as you go.

Managers might often have to adapt due to inevitable changes. The key word is flexibility. If the superintendent knows where they want to go and a shift occurs along the way, they will still achieve it if they keep the original goal in mind.

For example, it is critical that you create a maintenance plan for your club. Anywhere else in the business world this is called a business plan. The purpose of a maintenance plan is to define the desired level of quality for the golf course and to serve as a document to support your budget. Most importantly, this plan needs to include a mission statement. Your maintenance plan should be program-oriented, detailing every program it will take to make the standards the team has set forward and you must reflect those programs in your budget and equate budget numbers to this plan. For example, build a greens program and put a price on the following needed programs for your budget: mowing, rolling, topdressing, aeration/cultivation, irrigation, fertilization, hole placement, soil amendments, disease control, insect control, weed control, drainage, seeding/sodding and anything else.

Price the programs needed for greens surrounds, fairways, tees, roughs, out-of-play areas, maintenance shop, office and landscape.

Another example is to establish written standards with buy-in from your management and/or ownership. Put together a small committee to help put the standards together. It should consist of a representative from ownership, membership and the golf department.

The standards, first and foremost, should detail how the golf course is to be maintained and to what level.

A PERSON WHO CAN PROPERLY PREPARE AND SELL HIS BUDGET



Budgeting and selling your budget may be the most important part of your job. Therefore, you must learn how to do a program-based budget. Here are 7 basic steps to establish a program budget:

1. A written maintenance (business) plan based on the standards policy
2. An organizational chart of your department
3. A staffing chart complete with job descriptions
4. A description of each category item in your budget
5. A spreadsheet chart. With category items down the left (X axis) and months across the top (Y axis).

6. Capital equipment purchases
7. Capital or special improvement projects

The value of this plan is that when the budget is being reviewed by those who approve it, they need to fully understand that when cutting money from the budget, they are cutting programs. And if they cut or amend programs, then their stated and approved standards may not be met.

Upper management will find it more difficult to eliminate needed programs rather than just amending a dollar figure.

In the process of budget review the superintendent needs to be seen as an able manager of the club's money.

8

A GOOD ENVIRONMENTAL STEWARD

- Use IPM programs
- Monitor your records and keep track with documentation
- Properly calibrate your sprayer and spreader equipment
- Do your own self audit – on site – on a regular base and keep a log

Regulatory compliance issues include:

- Fuel storage and handling
- Chemical storage facilities
- Equipment wash area
- Occupational health and safety issues
- Sprayer cleaning process
- Disposal/Storage of pesticide containers
- Be an environmentalist and care for your resources
- Get involved in research
- Do you practice what you preach?
- Audubon International program
- Wildlife habitat

The image we must project as a profession is that we can provide quality golfing conditions while accepting the responsibility of being good stewards of the environment.

9

A person who is a skilled professional

It is all these skills that interact together and present the superintendent with an intangible, yet achievable, challenge. Collectively we have diversity in personalities and diversity in professionalism.

Think like a manager and make informed decisions based upon the basic management principles in conjunction with your agronomic skills and you will be met with success.

Believe me, golf courses today are looking for good, skilled business managers as well as solid, technical agronomic-minded turf heads.

Lastly, present a positive image constantly, work at it and dress professionally. Image does not happen by accident – promote yourself.

10

Bonus: A person who knows and plays the game well



Be competent in golf course set up and marking the course according to the rules of golf. Play and understand the game. More and more clubs are looking for good players.

I have emphasized people, time, budgets, planning and communications – all things you do not usually learn in turf school because agronomy was the focus of the curriculum.

For example, a good manager may plan several projects. For budget reasons or time constraints they may be forced to choose between the projects. If you are in the mind-set to think like a manager and make informed decisions based upon the basic management principles I've described in conjunction with agronomic skills, then you will enjoy success. Taking these principles into account will elevate a superintendent in the eyes of his golf course management team. Golf courses today are looking for good business managers as well as good technical trained or agronomic superintendents. Put it all together and you have a great course manager.

Lastly, it also helps to have a sense of humor and an unflappable personality. Why do I say that? Because most superintendents are control freaks – working in an uncontrollable environment. GCI

Gary Grigg, CGCS, is a veteran superintendent and current vice president and agronomist at Grigg Bros.

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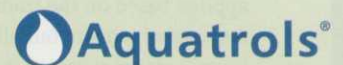
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John E. Kaminski, Ph.D. is an assistant professor, Turfgrass Science, and director of the Golf Course Turfgrass Management Program at Penn State University. You can reach him at jek156@psu.edu.

50 SHADES OF GREEN

This year's early warming brings the potential for increased pest pressure and an overall longer season for your pest control strategy. Let's look at how to ensure a season of green turf.

Identification. The key is properly identifying the problem. While this seems like a simple task, many times it is more complex. In fact, many superintendents send samples to labs only to find multiple answers. Stick to a lab that you: 1) are comfortable with and trust; and/or 2) find one that specializes in certain problems. For instance, some labs have spent years researching certain problems such as root Pythium and other "specialty" diseases.

Pesticide selection. Following positive disease confirmation, select the proper pesticide to apply. This is becoming more difficult due to the availability of numerous individual and pre-mixed products. Think of the new pre-mix products as combinations of individual chemical classes rather than simply saying, "I know this will control dollar spot, so this is what I'm using."

A note on resistance. I can't get into the details of pesticide resistance within the scope of this article. However, it is important to know the individual active ingredients being applied, particularly when utilizing pre-mix products containing two or more products. From the chemical-rotation standpoint, don't make a habit of putting out a pre-mix containing a DMI fungicide only to apply an individual DMI with the subsequent application. Details aside, I often find these products are applied based on the trade name and targeted organism, but all of the active ingredients that were actually applied are sometimes lost in the shuffle.

Now that you've selected a fungicide,

you can go and spray right? Well, not necessarily.

Application Techniques. With pest control, one difficulty is applying the right product the right way. Fungicides may be systemic, contact, localized penetrants, acropetal penetrants, or translaminar. The application techniques including nozzle selection, application volume, the need for post-application irrigation and others strategies depends on several factors including the way the pesticide gets in (or doesn't) to the plant, as well as the disease in question.

The key is properly identifying the problem. While this seems like a simple task, many times it is more complex.

When discussing strategies for disease control, I simplify the process to thinking about three basic regions for targeting turf pathogens.

For foliar diseases like brown patch or dollar spot, I will suggest applying fungicides with a nozzle that will maximize pesticide coverage in moderate water volumes (1 to 2 gallons/1000 sq. ft.). It may be helpful to apply these product to dry turf or to remove the dew prior to application.

For stembase and crown diseases such as anthracnose, I apply pesticides in moderate to high water volumes (2 to 4 gallons/1000 sq. ft.) and not watering-in.

In situations where it is not possible to apply high water volumes, watered-in the products with one or two turns of an irrigation head.

Applying pesticides in a drench or watering-in with a significant amount of water is reserved for pests that reside in thatch or soil, such as root Pythium species and several basidiomycetes responsible for fairy ring.

The dilemma. What if you decide to select a strobilurin fungicide for the control of a "root" disease like summer patch? Just because these fungicides are in the same chemical class does not mean they enter and move within the plant in the same manner. Of the four strobilurins, two are considered acropetal penetrants (move up from the point of contact), one is a localized systemic, and the last has translaminar activity.

So, should you water these products in to the thatch or soil to get the fungicide to the targeted pathogen? It depends on which product you select.

I typically treat these diseases in the "crown" category and recommend application at high water volumes and applying no post-application irrigation. Despite these being root pathogens, much of the damage still occurs close to the surface.

Rates and timings. For some diseases, preventive applications can result in less pesticide use over the course of the season. Curative control of dollar spot, for example, may require higher rates and shorter intervals to stop the pathogen and allow for recovery.

On the other hand, diseases like brown patch are easy to suppress. Curative control when symptoms are first observed is an effective strategy and may lead to fewer apps over the course of a season. Documentation your golf course's chronic and acute problems will allow you to determine which strategy is right for you.

Turf management is not black and white and there are many shades between the two. **GCI**

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Safety MATTERS

A golf course is no different than any other workplace. Workers must abide by safety procedures, and a safe environment must be provided for golfers.

by Bruce R. Williams, CGCS

Safety at the golf course is often overlooked until accidents or problems arise. Golf course maintenance is a business and safety should be a part of every business. Every golf course budget should have a line item for safety equipment, upgrades to facilities, adherence to laws and regulations and training for staff regarding the need for a safe workplace as well as providing a safe place for golfers to enjoy their recreation.

All too often safety becomes a priority after an accident has happened. At that point it may be a little late to be compliant – sort of like closing the barn door after the horse is

gone. It also becomes a priority when inspectors arrive at your door to follow up on a call from a disgruntled employee.

Every golf course needs written sections on safety in the various documents that guide its operation. This includes standard operating procedures, long-range planning, your orientation and training manual and as a budgetary item.

So, you don't have a safety program? Or, the existing one is weak at best. Where do you start? Either conduct an internal audit of your safety program or hire an outside consultant to do it for you. I have contracted people from insurance companies, consultants who may



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“Every golf course needs written sections on safety in the various documents that guide its operation. This includes standard operating procedures, long-range planning, your orientation and training manual and as a budgetary item.”

have been former inspectors and also consultants who have these skills as well as are knowledgeable of the laws and have spent quality time on golf courses.

POINTING OUT THE OBVIOUS. It is pretty easy to do a walk-through at a turf-care center and find the obvious potential violations. Here are some common examples:

- Acetylene tanks are not secured to a non-movable object, such as a wall
- Improper spacing for guards on a bench grinder or mower grinders
- Improper ventilation
- Overloaded electrical wall outlets
- Floors littered with clutter
- Incorrect or unmarked walkways
- Inaccurate and out-of-date records, including OSHA 300 forms
- Poor staff safety-training, including topics, signatures and training methods
- Incomplete first-aid kits
- Inaccessible MSDS sheet
- Poorly labeled emergency gasoline shutoff
- Improper pesticide storage that fails to meet state laws
- Disorganized copies of licenses for qualified applicators
- Poorly written safety plan that follows OSHA guidelines
- Lack of or poorly written emergency-response plan
- Lack of safety training for equipment operators
- Non-compliant fuel-can storage
- Rinsate recovery that does not meet state laws
- Emergency exits with improper signage
- No wash-water eye stations and/or showers
- Improper storage of motor oil and lubricants
- Compressed air lines that lack proper shutoffs and connections

While these topics are more concentrated inside the shop there are also a variety of them that have an impact on outside operations as well.

- Chainsaw safety
- First aid
- Defibrillator training
- Emergency evacuation plan
- Safety equipment training

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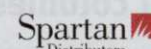


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PREMIUM HOSE-END NOZZLES & ACCESSORIES

Step up to the most professional nozzle you can buy - MAGNUM™ UltraMax. Firefighter quality for professionals in any field, these variable flow, multi-function nozzles are virtually indestructible and leak proof. The innovative TURBO SHIFT feature, available on both high-flow and low-flow models, provides two distinct GPM ranges for added versatility. And the outstanding distribution patterns of all MAGNUM UltraMAX nozzles make them excel in high demand areas like greens/tees, infield conditioning and equipment and stadium washdowns.

features / specifications

- Multi-Pattern Spray: Fog, Jet Stream, Fan
- Built for 1" and ¾" Hose Flow Rates (range: 7-43 GPM)
- Materials: Aircraft Aluminum, Stainless Steel, TPR Rubber



FULL THROTTLE

Single Variable Flow: Delivers steady, maximum volume fog, jet stream and fan patterns.

High Volume Model:

15-40 GPM (57-151 L/min)

Low Volume Model:

12-19 GPM (45-72 L/min)



TURBO SHIFT

Dual Variable Flow: Delivers light fog and low volume jet stream patterns before shifting to high volume jet stream and fan patterns.

High Volume Model:

Opens with 12-17 GPM (45-64 L/min)
Turbo Shifts to 20-43 GPM (76-163 L/min)

Low Volume Model:

Opens with 7-12 GPM (27-45 L/min)
Turbo Shifts to 14-17 GPM (53-64 L/min)



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Firefighter Grip

UltraMAX Valves

NEW!

Heavy duty ball valve, push-pull on/off control handle and exceptional build quality for long life under demanding use. Available in Firefighter Grip for two-handed operation or ergonomic Pistol Grip for comfortable, extended use. **Nozzles sold separately.**

ordering

All flow rates based on 80 psi (5,5 bar)

Part # NG550-DFH-75	Turbo Shift 12-43 GPM (45-163 L/min) - ¾" FHT inlet
Part # NG550-DFH-10	Turbo Shift 12-43 GPM (45-163 L/min) - 1" FHT inlet
Part # NG550-DFL-75	Turbo Shift 7-17 GPM (27-64 L/min) - ¾" FHT inlet
Part # NG550-DFL-10	Turbo Shift 7-17 GPM (27-64 L/min) - 1" FHT inlet
Part # NG500-SFH-75	Full Throttle 15-40 GPM (57-151 L/min) - ¾" FHT inlet
Part # NG500-SFH-10	Full Throttle 15-40 GPM (57-151 L/min) - 1" FHT inlet
Part # NG500-SFL-75	Full Throttle 12-19 GPM (45-72 L/min) - ¾" FHT inlet
Part # NG500-SFL-10	Full Throttle 12-19 GPM (45-72 L/min) - 1" FHT inlet
Part # SVPG-75	Pistol Grip Valve - ¾" FHT inlet
Part # SVPG-10	Pistol Grip Valve - 1" FHT inlet
Part # SV-75	Firefighter Grip Valve - ¾" FHT inlet
Part # SV-10	Firefighter Grip Valve - 1" FHT inlet

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SOLID METAL HOSE NOZZLE

Underhill™ Magnum™ contains no plastic internal parts to break, stick or wear out. Our unique ratchet mechanism easily adjusts from gentle fan to powerful jet stream and prevents over-tightening damage. Precision-machined, incredibly smooth operation and outstanding distribution patterns make it ideal for high-demand areas like greens and tees. Magnum™ is also an excellent equipment wash-down nozzle.

features

- Multi-pattern sprays - effortless control with hydraulic assist on/off
- Solid metal internal - no plastic parts to break or wear out
- Ratchet mechanism prevents over-tightening damage
- Ultra-durable construction withstands any abuse
- Fire hose quality nozzle feels great in your hands
- Beautiful, consistent spray patterns for life
- Built for 1" and ¾" flow rates

specifications

Materials: stainless steel, aluminum, TPR rubber

Flow: 37 GPM at 80 psi

Inlet: ¾" hose thread (1" brass adapter available, see Page 4)



Magnum™ nozzle pictured with 1" brass adapter (sold separately on Page 4)



solid metal internal body

Won't stick...won't break



fan



jet



soak

NEW!
Bumper Design



CoolPro™

COOL WITHOUT OVER WATERING - NO ROOT DAMAGE

A hot summer day can be murder on your greens. Use too much water and you risk damage to the roots. CoolPro™ is the first nozzle specifically designed for the single purpose of lightly misting the turf canopy to cool without over watering. And its 25 foot fogging pattern gets the job done quickly.

features

- Precision™ nozzle fogs at 70 psi to deliver a 25 ft. pattern with only 4-6 GPM
- ¾" inlet (1" brass adapter available, see Page 4)
- Ergonomic handle/valve provides easy grip and variable on/off control.
- Durable solid metal design: zinc, aircraft aluminum and stainless steel.

Perfect for tournament play, CoolPro™ puts down only enough water to cool the turf canopy. It prevents wilting while maintaining good ball speed. CoolPro is a great tool for protecting grass on hot days without damaging roots.

ordering

Part # NG450	MAGNUM™ Hose Nozzle
Part # HNC075	CoolPro™ Valve and Nozzle
Part # HN0600	CoolPro™ Nozzle only
Part # CV075L	CoolPro™ Valve only

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Underhill Precision™ nozzles deliver millions of soft, uniform droplets to provide rapid yet surprisingly gentle water application over a huge range of flow rates. From soft watering to powerful drenching, patented Precision nozzles are designed with ideal flow rates and droplet sizes to fully irrigate without disturbing turf, dirt, seeds, etc., providing a precise solution for every hand watering application.



Rainbow™ TASKS: Greens, tees, seed beds, transplants, delicate landscaping (15 GPM)



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Cloudburst™ TASKS: Dry spots, drenching, and wetting agent application (35+ GPM)



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Note: GPM will vary with pressure at nozzle.



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Bumper Design

high-flow valves



COMPOSITE / STAINLESS STEEL:
¾" hose thread inlet/outlet, oversized handle, up to 55 GPM



SOLID BRASS: ¾" hose thread inlet/outlet, up to 50 GPM

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- Part # HN1500CV Precision™ **Rainbow™** Nozzle Kit
- Part # HN2300CV Precision™ **Rainmaker™** Nozzle Kit
- Part # HN4800CV Precision™ **Cloudburst™** Nozzle Kit
- Part # HN5000CV Precision™ **Cyclone™** Nozzle Kit

Nozzle Kits include brass High Flow Control Valve and ¾" MHT x 1" FHT Adapter.

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- Part # A-BV77FM High-Flow ¾" Valve - Composite/Steel
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- Part # A-BA107MF 1" MHT x ¾" FHT Brass Hose Adapter
- Part # A-BQ7M ¾" Quick-Connect, male end
- Part # A-BQ7F ¾" Quick-Connect, female end
- Part # HN075W replacement washer, ¾" hose

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APPLICATOR GUN FOR SOLID WETTING AGENT TABLETS

Our heavy-duty surfactant applicator, high-flow valve and Precision™ Cloudburst™ nozzle combo comprises the finest wetting agent gun available. PelletPro™ accepts all wetting agent tablets and provides a high volume, yet soft spray for watering or applying surfactants to tight, hydrophobic soils.

features

- 35+ GPM to get the job done faster!
- Ultra Heavy-Duty - brass fittings, aircraft aluminum, stainless steel, and precision engineered glass-filled materials
- Patented Cloudburst™ nozzle delivers large droplets in an outstanding fan pattern
- Pellet rotation (1 RPS) evenly dissolves/applies tablets



PelletPro™ rotates pellets at one revolution per second (RPS) to evenly dissolve/apply wetting agent



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| Part # A-PPQ-100 | PelletPro™ In-line Applicator: 1" FHT inlet, 1" MHT outlet |
| Part # A-PPB | In-line Filter Bowl |
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"Profile nozzles lived up to our expectations and eliminated patchy dry spots and donuts. We retrofitted all our fairways and now run a more efficient irrigation program."

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730 SERIES Full Circle: Front/Rear Nozzle Set		
Part #	Nozzle Color # range/spreader	Toro Noz #
T730-3313	Brown 33 / Gray 13	33
T730-3413	Blue 34 / Gray 13	34
T730-3515	Violet 35 / Red 15	---
T730-3515L (50 psi)	Green 35 / Red 15*	35
T730-3615	Red 36 / Red 15*	36
T730-3617	Red 36 / Lavender 17	

* For square spacing, specify #17 (lavender) nozzle with the #35 and #36 range nozzles



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760 and 860 SERIES Part Circle: Midrange/Close-in Nozzle Set	
Part #	Nozzle Color: midrange/close-in
T760-GY	Gray / Yellow
T860-GY	Gray / Yellow



830, 834S, DT SERIES Full Circle: Midrange/Close-in Nozzle Set		
Part #	Nozzle Color: midrange / close-in	Toro Series
T830-GY	Gray / Yellow	830
T834-GY	Gray / Yellow	834S
TDT100-GY	Gray / Yellow	DT 34/35



835S SERIES Full Circle: Midrange/Close-in Nozzle Set	
Part #	Nozzle Color: midrange / close-in
T835S-WP	White / Plug

630 SERIES CALL FOR AVAILABILITY



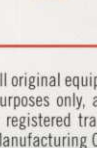
670 SERIES Full Circle: Rear Nozzles	
Part #	Nozzle Color: midrange / close-in
T670-BY	Black / Yellow



690 SERIES Full Circle: Rear Nozzle	
Part #	Nozzle Color: spreader
T690-G	Gray



750 SERIES Full Circle: Front/Rear Nozzle Set		
Part #	Nozzle Color #range / spreader	Toro Nozzle #s
T750-5617	Red 56 / Lavender 17	56
T750-5717	Gray 57 / Lavender 17	57



780, 854S, DT SERIES Midrange/Close-in Nozzle Set		
Part Circle (780), Full Circle (854S), Part/Full Circle (DT 54/55)		
Part #	Nozzle Color: midrange / close-in	Toro Series
T780-BY	Black / Yellow	780
T854-BY	Black / Yellow	854S
TDT150-BY	Black / Yellow	DT 54/55

855S SERIES Full Circle: Midrange/Close-in Nozzle Set	
Part #	Nozzle Color: midrange / close-in
T855S-PP	Pink / Plug

650 SERIES CALL FOR AVAILABILITY



Profile nozzles for **Rain Bird®**

EAGLE 700 SERIES Full Circle: Midrange/Close-in Nozzles		
Part #	Nozzle Color midrange / close-in	Rain Bird Nozzle #s
R70028-RG	Blue / Gray	28
R70032-RG	Red / Gray	32
R7003640-GG	Blue / Gray	36/40 and larger



Look familiar? Poor performing Eagle 700 sprinklers are often the result of clogged and worn nozzles. Profile nozzles' solid metal construction and nozzle shape were scientifically designed to solve this exact problem. They simply don't wear out. And they don't clog. **Upgrade your old golf sprinklers to better than OEM with Profile!**



900 EAGLE SERIES Full Circle: Close-in Nozzle	
Part #	Nozzle Color
R900-M	Maroon



91 SERIES BRASS IMPACTS Full Circle: Close-in Nozzle	
Part #	Nozzle Color
R91-G	Gray



51 SERIES BRASS IMPACTS Full Circle: Front/Rear Nozzles		
Part #	Nozzle Color # range / spreader	Rain Bird Nozzle #s
R51-1411.5	White 14 / Gray 11.5	14 / 11.5
R51-1611.5	Blue 16 / Gray 11.5	16 / 11.5
R51-1811.5	Yellow 18 / Gray 11.5	18 / 11.5
R51-2011.5	Red 20 / Gray 11.5	20 / 11.5
R51-2213	Green 22 / Black 13	22 / 13
R51-2413	Black 24 / Black 13	24 / 13



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AuditMaster™

EXPERT SPRINKLER PERFORMANCE TESTING KITS

Increasing watering times to compensate for poorly performing sprinklers wastes a lot of water. Accurately measuring sprinkler application rates with Underhill™ AuditMaster™ helps maximize water savings.



4" x 5" Marking flags on 21" wire (50-pack) are available in 6 colors.



AuditMaster Combo ST/LT Kit pictured, includes large CatchCanPro cups (blue) and CatchCanPro Mini cups (30 each).

AuditMaster ST Kit excludes the large CatchCanPro cups. This kit is ideal for **SMALL TURF** audits.

AuditMaster LT Kit excludes the CatchCanPro Mini cups, 3/4" Hose Bib and Gauge and the Spray Head Tester w/Gauge. This kit is optimized for golf courses, sports fields and other **LARGE TURF** audits.

CatchCan Pro™

features

- Self standing - easily anchors into turf, even on slopes
- Measures sprinkler application in inches or centimeters
- Unique design allows for shorter duration test
- Made of durable polypropylene engineered plastic
- Can be stacked for easy storage
- Each 10 pack kit comes with instructions



CatchCan Pro (CCPK-10) for **LARGE TURF** audits. Measures ml, cm, inches.

CatchCan Pro Mini (CCPMK-10) for **SMALL TURF** audits. Measures inches.

ordering

Part # AUD-ST	AuditMaster ST Kit	Part # MT-100	Fiberglass Measuring Tape: 100'
Part # AUD-LT	AuditMaster LT Kit	Part # A-FLAG	Marking Flags: Yellow - 50 Pack
Part # AUD-STLT	AuditMaster Combo ST/LT Kit	Part # A-FLAG-B	Marking Flags: Blue - 50 Pack
Part # SALES-PRO4	AuditMaster Wheeled Carry Case	Part # A-FLAG-O	Marking Flags: Orange - 50 Pack
Part # A-STW	Stop Watch	Part # A-FLAG-P	Marking Flags: Pink - 50 Pack
Part # A-WIND	Anemometer (Wind Gauge)	Part # A-FLAG-R	Marking Flags: Red - 50 Pack
Part # CCPK-10	CatchCan Pro (Blue) - 10 Pack	Part # A-FLAG-W	Marking Flags: White - 50 Pack
Part # CCPMK-10	CatchCan Pro Mini - 10 Pack		

TurfSpy™

EARLY STRESS DETECTION GLASSES

Disease, drought and weed invasion are plant and turf killers. But by the time you see them it can be too late. TurfSpy™ glasses, with stress detection technology developed by NASA, lets you “see into the future” to identify problems 2-10 days before they are visible to your naked eye. Keep your turf and vegetation healthy BEFORE serious problems arise.

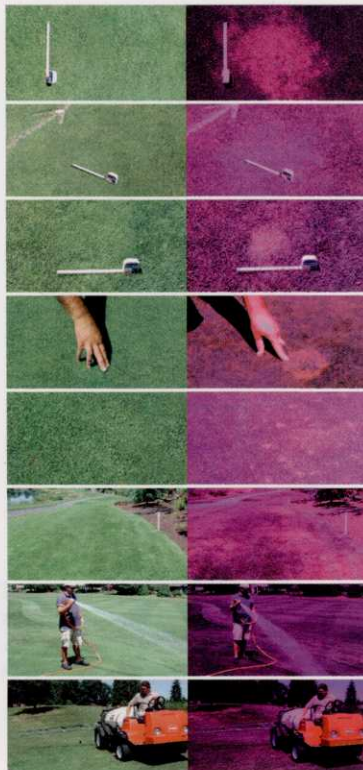


features

- Shatterproof/polycarbonate stress detection lens (ANSI approved safety lens)
- Wrap-around lens limits ambient light for optimal detection
- Sports frame with adjustable ear piece
- Lightweight case included

HOW IT WORKS

Dying vegetation absorbs and reflects sunlight differently than when its healthy. The earliest signals occur at the outer limits of the human visual spectrum, and are rendered invisible compared to the predominant middle wavelengths. TurfSpy™ filters the light in the center so that fringe spectra, which show early plant stress, become visible.



fusarium patch

pythium blight

yellow patch
(rhizoctonia)

brown patch

anthracnose

get a jump on broken or poor-performing sprinklers

highly efficient spot watering saves time and labor costs

superior weed location and spraying saves time and money



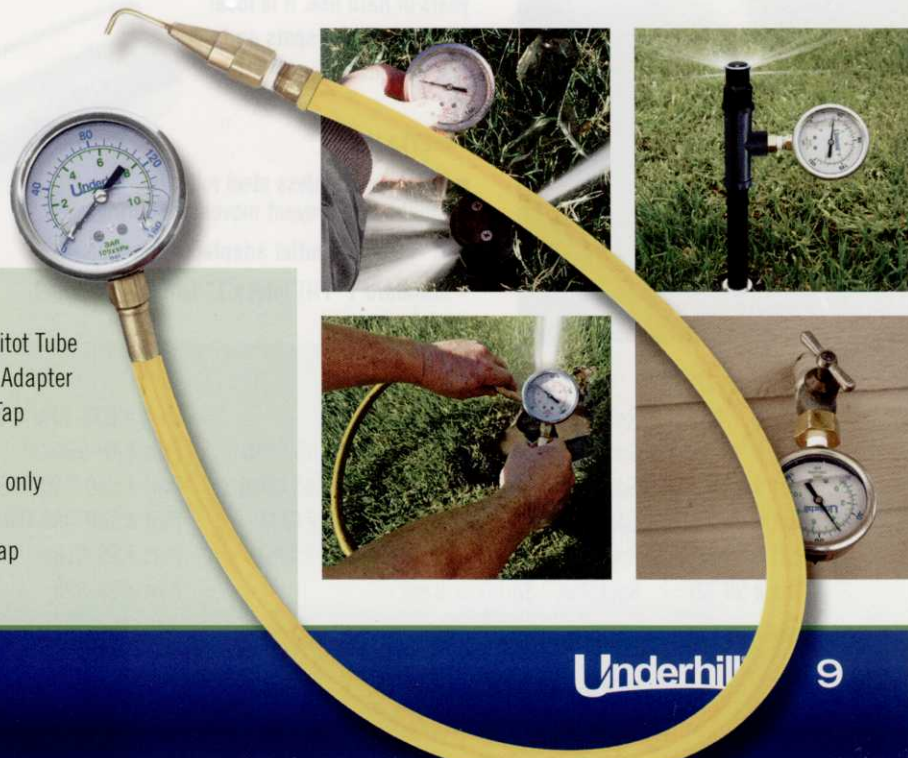
ordering

Part # NG655-01 TurfSpy™ Glasses and Deluxe Case

HeadChecker™

NOZZLE DISCHARGE PRESSURE GAUGE

Use this liquid-filled 160 psi gauge with 30" flex hose and solid brass Pitot tube, hose bib, or spray head adapter to measure water pressure at discharge points.



ordering

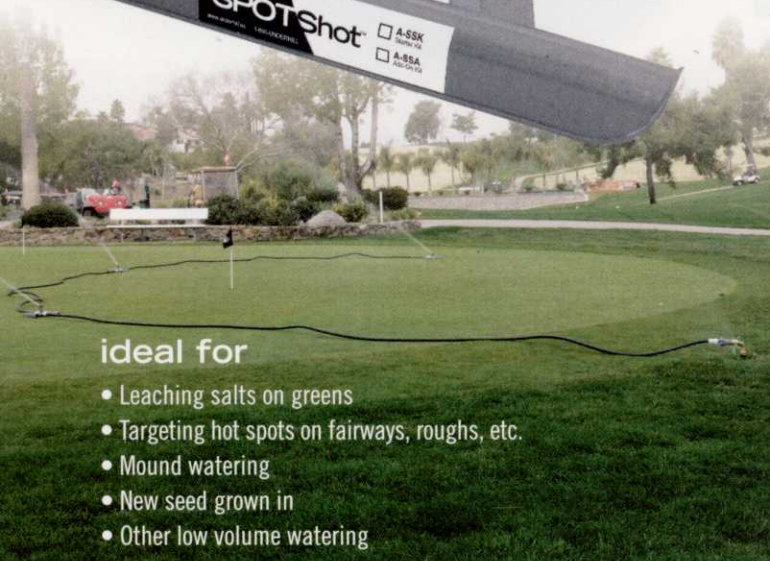
- Part # A-PHG-160K HeadChecker™ gauge, 30" Flex Hose, Pitot Tube
- Part # A-SHG-160K HeadChecker™ gauge with Spray Head Adapter
- Part # A-HBG-160K HeadChecker™ with 3/4" POC Hose Bib Tap
- Part # A-HCGPK HeadChecker™ gauge and Pitot tube
- Part # A-PG160L HeadChecker™ 160 psi pressure gauge only
- Part # A-HCP Pitot tube only
- Part # A-HBT 3/4" Hose Thread x 1/4" Brass Hose Bib Tap
- Part # A-SHA Spray Head Adapter



SpotShot™

LOW VOLUME PORTABLE SPRINKLER KIT

SpotShot™ is an expandable sprinkler system kit ideal for turf areas requiring low volume watering for extended periods. Connect the Starter Kit to a quick coupler (or golf sprinkler with the HoseTap™ on page 12) and connect Add-On Kits for larger area needs.



ideal for

- Leaching salts on greens
- Targeting hot spots on fairways, roughs, etc.
- Mound watering
- New seed grown in
- Other low volume watering



Starter Kit includes 20' of ½" flexible PVC tubing with connection fittings, pressure regulator, sprinkler base and low volume rotating sprinkler (20 ft. radius / 0.65 GPM - 0.16 in./hr.)



Add-On Kit includes 20' of ½" flexible PVC tubing with connection fittings, sprinkler base and low volume rotating sprinkler (20 ft. radius / 0.65 GPM - 0.16 in./hr.)



Micro-Sprinkler Options

- 20 ft. radius / 0.65 GPM (0.16 in./hr.)
- 20 ft. radius / 1.2 GPM - (0.26 in./hr.)



RollerPro™

PORTABLE SPRINKLER BASE

The 22" wide stainless steel roller of RollerPro™ provides a stable field position for supplemental watering. Designed for years of hard use, it is ideal for watering dry spots and newly seeded areas.

features

- 22" wide stainless steel roller is weighted to prevent movement during use.
- ¾" inlet and outlet adapters included
- Standard 1" FHT inlet x 1" female NPT outlet



RollerPro™ works with both 1" and ¾" hoses and sprinklers using the included adapters. Sprinklers sold separately on page 12-13.

ordering

Part # A-RP221	RollerPro™
Part # SS-SK	SpotShot™ Starter Kit (20 ft. rad, 0.65 GPM)
Part # SS-AOK	SpotShot™ Add-on Kit (20 ft. rad, 0.65 GPM)
Part # SS-SK26	SpotShot™ Starter Kit (20 ft. rad, 1.2 GPM)
Part # SS-AOK26	SpotShot™ Add-on Kit (20 ft. rad, 1.2 GPM)
Part # SS-SB	SpotShot™ Sprinkler Base

Part # R75-HFM-40	Pressure Regulator (40 psi)
Part # TP-050-20	20' Coil of ½" PVC, SuperFlex Pipe
Part # S40-050-HFS	¾" Hose Thread Female x Male, Slip Fitting
Part # S40-050-HMS	¾" Hose Thread Male x Female, Slip Fitting
Part # SS-S16	Micro-sprinkler (20 ft. rad, 0.65 GPM - 0.16 in/hr)
Part # SS-S26	Micro-sprinkler (20 ft. rad, 1.2 GPM - 0.26 in/hr)

Tracker™

PORTABLE IRRIGATION MACHINE

The Tracker™ offers an economical solution for supplementing seasonal watering needs of ¼ acre to 2 acre areas. It's also ideal for irrigating athletic fields, cemeteries, golf course roughs, or other large areas where an underground system is impractical. Built to last with precision German engineering and high quality materials, this portable powerhouse can irrigate an entire football field in just two passes.

specifications

- Weight: 58 lbs.
- Size: Length 33", Width 22", Height 22"
- Materials: Aluminum, Brass, ABS
- Minimum Water Pressure: 50 psi
- Hose Required: 1"
- Includes 1" brass quick-connect adapter



ordering

Part # T-400 Tracker™ Portable Irrigation Machine

NEW!

Nozzle Locker™ Kits

STOP LOSING YOUR NOZZLES!



THE VERY BEST NOZZLES - KEEP THEM SECURE (and handy)

- Entire Precision™ nozzle series (Rainbow™, Rainmaker™, Cloudburst™ and Cyclone™)
- Solid Brass High-Flow Valve
- CoolPro™ with Precision™ fogging nozzle
- Your choice of MAGNUM™ multi-pattern nozzle (original, UltraMAX Turbo Shift, or UltraMAX Full Throttle)
- Unbreakable, lockable, corrosion-proof case to keep these tools safe and secure



ordering

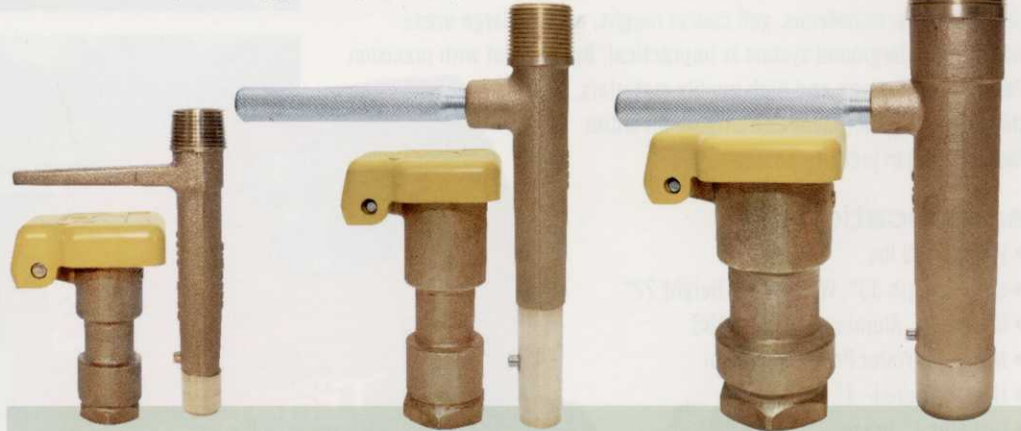
- Part # HP-K1 NozzleLocker™ with ¾" Magnum (yellow) nozzle
- Part # HP-K2 NozzleLocker™ with ¾" Magnum UltraMAX Full Throttle nozzle (high flow)
- Part # HP-K3 NozzleLocker™ with ¾" Magnum UltraMAX Turbo Shift nozzle (high flow)
- Part # HP-K4 NozzleLocker™ with 1" Magnum UltraMAX Full Throttle nozzle (high flow)
- Part # HP-K5 NozzleLocker™ with 1" Magnum UltraMAX Turbo Shift nozzle (high flow)



Quick Coupler Valves & Keys

SOLID BRASS, SINGLE SLOT/LUG ESSENTIALS

Built to last, Underhill valves and keys are constructed of solid red brass and stainless steel. Valves incorporate rugged one-piece design.



Valve: Part # QV-075R
($\frac{3}{4}$ " FPT inlet)

Key: Part # QK-075
($\frac{3}{4}$ " MPT x $\frac{1}{2}$ " FPT outlet)

Valve: Part # QV-100R
(1" FPT inlet)

Key: Part # QK-100
(1" MPT x $\frac{3}{4}$ " FPT outlet)

Valve: Part # QV-150R
($1\frac{1}{2}$ " FPT inlet)

Key: Part # QK-150
($1\frac{1}{2}$ " MPT x $1\frac{1}{4}$ " FPT outlet)

hose swivels

- Part # HS-075 $\frac{3}{4}$ " FPT x $\frac{3}{4}$ " MHT outlet
- Part # HS-100 1" FPT x $\frac{3}{4}$ " MHT outlet
- Part # HS-101 1" FPT x 1" MHT outlet
- Part # HS-151 $1\frac{1}{2}$ " FPT x 1" MHT outlet



The Claw™ pictured with 1" quick coupler, key and hose swivel.

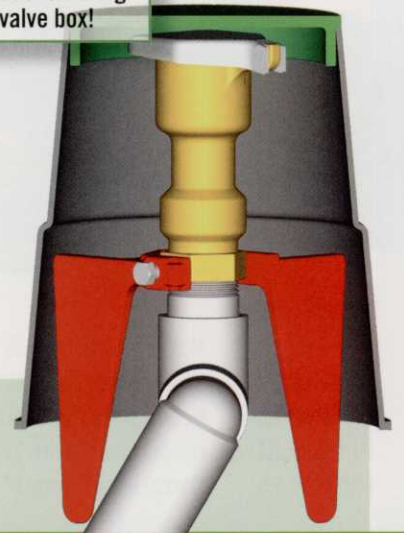
The Claw™

QUICK COUPLER MOTION RESTRAINT

When quick coupler valves become unscrewed from swing joints, it's more than just a hassle - it can be dangerous. The Claw™, new from Underhill, offers a simple solution. Embedded in the soil below the quick coupler, and then securely attached to its base, The Claw provides significant resistance to rotational, vertical and horizontal motion, preventing the valve from moving. Made from high strength ductile iron, this compact anchor attaches easily with a single steel bolt.

EASY RETROFIT!

Installs without removing valve or valve box!



ordering

- Part # QCA-075100 The Claw™ for $\frac{3}{4}$ " and 1" valves
- Part # QCA-150 The Claw™ for $1\frac{1}{2}$ " valves

Impact Sprinklers

SOLID BRASS, ULTRA-RELIABLE WORKHORSES

For reliable, trouble-free, high-performance year after year, you just can't beat our brass impact sprinklers. Available in full circle and full/part circle, in inlet sizes of 3/4", 1" and 1 1/4".

features

- Solid brass construction
- Stainless steel drive spring
- Bearing assembly hood for longer wear life
- Chemical resistant bearing seals
- Solid brass nozzle



Underhill brass impacts atop the RollerPro™ portable base (see page 10) puts a powerful sprinkler anywhere you can run a hose.



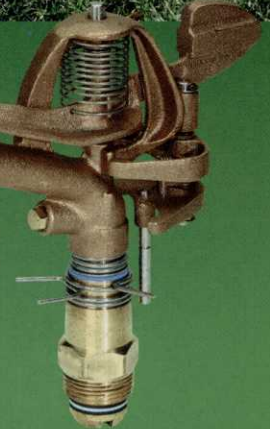
3/4"

Flow: 5-15 GPM
Spacing: 40-60 ft.



1"

Flow: 15-45 GPM
Spacing: 50-80 ft.



1 1/4"

Flow: 25-120 GPM
Spacing: 75-110 ft.

ordering

		GPM	Radius (ft.)
Part # SI075F	3/4" MPT Full Circle	13	57
Part # SI075P	3/4" MPT Part/Full Circle	11	48
Part # SI100F	1" MPT Full Circle	23	71
Part # SI100P	1" MPT Part/Full Circle	23	71
Part # SI125F	1 1/4" MPT Full Circle	51	96
Part # SI125P	1 1/4" MPT Part/Full Circle	54	78

Performance data shown at 80 psi. GPM and radius will vary with pressure at sprinkler

HoseTap™

SOLID METAL HOSE ADAPTER

HoseTap™ gives you a hose connection anywhere you have a Toro® or Rain Bird® electric, valve-in-head sprinkler... a fast connection when quick-couplers or hose bibs are not available. Includes aircraft aluminum body (won't break or wear out like plastic) anodized with sprinkler manufacturer color, o-ring, riser, 1" brass swivel and 3/4" adapter. Also available without brass swivel/adapter.



Includes HoseTap, 1" MHT brass swivel and 3/4" adapter

ordering

- Part # HN-T100S HoseTap™ for Toro® 1" inlet golf sprinklers
 - Part # HN-T150S HoseTap™ for Toro® 1 1/2" inlet golf sprinklers
 - Part # HN-R125S HoseTap™ for Rain Bird® Eagle 700 Series sprinklers
 - Part # HN-R150S HoseTap™ for Rain Bird® Eagle 900 Series sprinklers
- Includes 1" brass swivel and 3/4" adapter. Add "B" for BSP thread.
To order without brass swivel: Remove "S" from part number.

REPLACEMENT O-RINGS

- Part # OR-100 Fits Toro® 1" inlet and Rain Bird® Eagle 700 Series golf sprinklers / HoseTap
- Part # OR-150 Fits Toro® 1 1/2" inlet golf sprinklers / HoseTap
- Part # OR-150R Fits Rain Bird® 1 1/2" inlet golf sprinklers / HoseTap



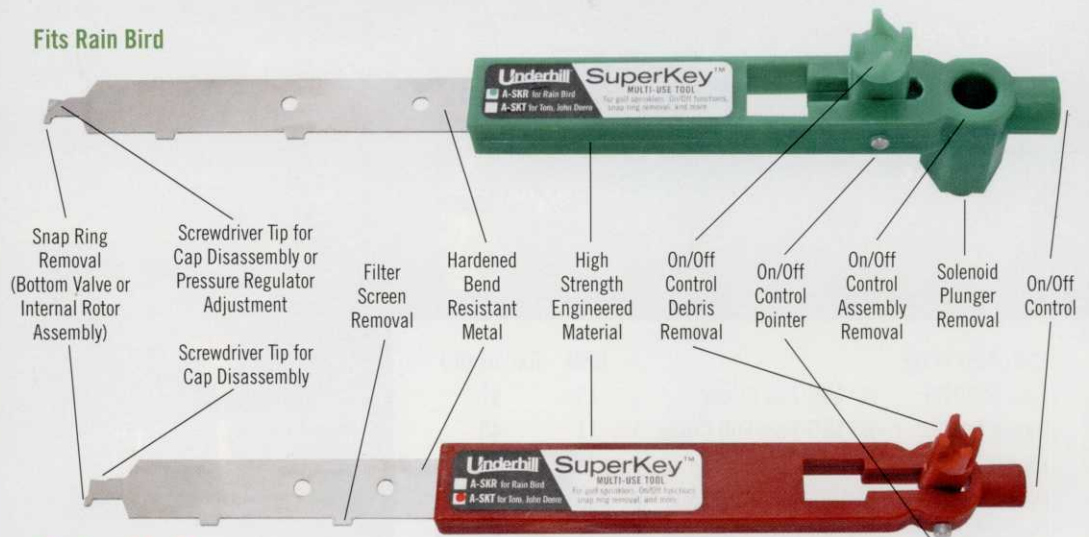


SuperKey™

MULTI-PURPOSE GOLF SPRINKLER TOOL

This ultimate multi-purpose tool designed for Rain Bird®, Toro® and John Deere® golf sprinklers is a must have. Made of stainless steel and composite material, it effortlessly turns Electric-Valve-In-Heads on and off, removes internal assembly snap rings and performs many other sprinkler maintenance chores.

Fits Rain Bird



Fits Toro, John Deere

ordering

- Part # A-SKR SuperKey™ for Rain Bird® golf sprinklers
- Part # A-SKT SuperKey™ for Toro® and John Deere® golf sprinklers



VersaLid™

VALVE BOX UNIVERSAL REPLACEMENT LID

VersaLid™ is the easy solution for broken or missing valve box lids. No need to guess what brand a buried box is or even worse - dig it up to find out - VersaLid's locking system fits all 6"-7" round valve boxes.

features

- Fits all 6"-7" round boxes
- Universal fit
- Greater top-load strength and more UV-resistant than structural foam lids
- Purple Lid available for non-potable/reclaimed water

STRONGER! BETTER FIT!
than original equipment lids



Splice Kit

3M DIRECT BURY SPLICE KIT

Each kit includes one wire connector which can accommodate wire sizes from 18-10 gauge and a waterproof gel case. Excellent for golf, commercial and residential applications.

ordering

- Part # VL-6 Green VersaLid™ 6"-7" valve box lid
- Part # VL-6P Purple VersaLid™ 6"-7" valve box lid
- Part # DBRY-4 Direct Bury Splice Kit - 4 Pack

Gulp™ UltraMAX

SUPER HIGH-CAPACITY WATER REMOVAL SUCTION PUMPS

Whether you need to remove water from sprinklers and valve boxes or other areas or devices, UltraMax Series Pumps are the ideal tools for the job... huge capacities and the smoothest pumps you will ever use as well.

special features

- Super Smooth Pumping Action
- Extra Volume Capacity
- Strong Aluminum Pump Shaft
- Heavy-Duty Clear Tube Material
- Self Priming

also great for



fountains

pipe repair

boats

toilets

spas

and more!

Aluminum shaft



GULP SYRINGE ULTRA

- 12 oz./stroke
- 12" pump chamber



Contour grip handle

BIG GULP ULTRAMAX

- 12+ gallons per minute!
- 36" clear pump chamber
- 72" or 36" outlet hose

GULP ULTRAMAX

- 8 gallons per minute!
- 14" clear pump chamber
- 18" outlet hose

Aluminum shaft



Easy, push-button cleaning system



Gulp UltraMAX and BigGulp UltraMAX include debris filter attachment for very dirty water.

ordering

Part # A-G12-C	Gulp™ UltraMax
Part # A-G3636CK	BigGulp™ UltraMax w/ 36" outlet hose
Part # A-G3672CK	BigGulp™ UltraMax w/ 72" outlet hose
Part # A-G12S-C	Gulp™ Syringe Ultra
Part # A-GTUB-C	100 ft. outlet hose

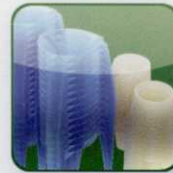


20505 Crescent Bay Drive • Lake Forest, CA 92630 USA

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An industry leader in innovative watering products all over the world, Underhill brings 33 years of know-how in developing our inventory of "Products that work...smart.™"



UNDERHILL INTERNATIONAL PROFESSIONAL WATERING PRODUCTS 2012

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Form No. UIWP-B12

Products that work...smart.™

- Personal protective equipment and the regulations surrounding its use
- Training on what to look for on the golf course to prevent accidents

STEPS TO SAFETY. Over the years I have worked with a variety of clubs and management companies to assist in the formation of viable safety programs. It's hard to believe that some facilities say they cannot afford to have a safety program. My opinion has always been that you can't afford not to have one.

After a facility assesses their shortcomings in the safety arena, the next step is to prioritize the things that need to be done. Take into consideration the amount of time to do all the tasks required, the cost and whether you have

the expertise to do so. There are a variety of templates out there to get started with. Should you encounter an inspection, they will see that you are making an effort to be compliant. This will not get you off the hook, but many inspectors will cite you and then give you a period of time to take the corrective measures necessary to comply.

One of the best investments any golf facility can make is to purchase safety training videos. Many of these videos come in bilingual editions and all training must be in a language that the employee can comprehend.

Jim Becker, of Epic Creative, has several different excellent videos on not only safety, but equipment operation and such. This type of video should be shown annually as well as at the

point of hire during the orientation of new employees. My favorite is "Safety Basics on the Golf Course."

It may not come as a surprise that another company specializes in golf course safety and has consultation as well as safety training videos specific to golf facilities. I have recommended clients to consider using Golf Safety, which is a risk-compliance company. Bill Culbertson and Todd Miller have a very nice product and service, which could help anyone across the country. They have information specific to each state to be sure you are following your local regulations.

While I will not roll out the specifics of each written program, I can surely share what is required in most every state. So if you don't have these in your

"No matter how good your golf course looks, your job may be in jeopardy if you have serious accidents, workers' compensation claims or injured golfers."

facility, it is likely you will fall short after an accident or an inspection.

- Hazardous Communication Program or HAZCOM
- Respirator Program, including annual testing for tightness on each applicator

weedalert.com

The Turf Professional's Free On-line Source for Weed ID and IPM Control Recommendations

- Weed ID Photos
- Regional Alerts
- Control Options
- Turf School Links

**TEST YOUR WEED IQ!
WEEKLY CONTEST-**

**Correct ID
Can Win This**

Magic Mug
With Disappearing Ink



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An Employee-Owned Company

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EPA
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PARTNER

**Design, GPS, Evaluation
and Audit Services**



Independent Golf Course Design Services
Experience on more than 300 Golf Courses

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We look at
soil & water quality
from a different
perspective.

Yours.



AQUAPLEX Ca X

Calcium When You Need It

- Ideal for turf managers who use a liquid calcium in their programs
- High quality soluble calcium nitrate source
- Effective calcium solubilizing agent for greater availability
- Patented Synergy Technology for more uniform penetration, distribution and availability

For more information, contact
your Aquatrols distributor today.

Aquatrols®

www.aquatrols.com

WORKPLACE ISSUES

“One of the best investments that any golf facility can make is to purchase safety training videos.”

- Lock Out/Tag Out Program to identify equipment not to be used while under repair
- Guidelines for dealing with a blood-borne pathogen hazard
- Contingency Plan that includes an emergency plan and spill control
- Personal Protective Equipment Plan should include the training and usage of turf equipment that is required by law for

operators and applicators

- Heat Stress Program that is utilized to prevent heat-related illness

SAFE CONDITIONS. Another area that requires attention is the responsibility of the staff to ensure safe conditions on the golf course. Each and every employee should have the proper training to look for any conditions that could be deemed unsafe on the property. This could include sink holes, low-hanging limbs, uneven steps and any areas that could result in a slip/trip and fall incident. There are certainly many more dangerous situations, and it is incumbent upon staff to report any unsafe conditions to their supervisors.

When an accident happens, employees should follow the procedures outlined in the written documents and also through what they have learned in ongoing monthly train-

10 rules for safe handling chemicals

Business & Legal Resources (BLR), a provider of employment, safety and environmental compliance solutions, lists some key rules for workers who handle dangerous chemicals. You'll undoubtedly have other safety rules to add to the BLR's list. Better yet, present the list in a safety meeting and get employees involved in helping you add to the list. This will create a sense of ownership over your safe chemical handling rules. To employees, they'll be "our" rules rather than "their" rules. That way, people will be more likely to follow them.

RULE #1. Follow all established procedures and perform job duties as you've been trained.

RULE #2. Be cautious and plan ahead. Think about what could go wrong and pay close attention to what you're doing while you work.

Rule #3. Always use required PPE – and inspect it carefully before each use to make sure it's safe to use. Replace worn-out or damaged PPE; it won't provide adequate protection.

RULE #4. Make sure all containers are properly labeled and the material is contained in an appropriate container. Don't use any material not contained or labeled properly. Report any damaged containers or illegible labels to your supervisor right away.

RULE #5.

Read labels and the material safety data sheet (MSDS) before using any material to make sure you understand hazards and precautions.



RULE #6. Use all materials solely for their intended purpose. Don't, for example, use solvents to clean your hands, or gasoline to wipe down equipment.

Rule #7. Never eat or drink while handling any materials, and if your hands are contaminated, don't use cosmetics or handle contact lenses.



RULE #8. Read the labels and refer to MSDSs to identify properties and hazards of chemical products and materials.

RULE #9. Store all materials properly, separate incompatibles and store in ventilated, dry, cool areas.

RULE #10. Keep you and your work area clean. After handling any material, wash thoroughly with soap and water. Clean work surfaces at least once a shift so that contamination risks are minimized.

ing sessions on safety. First responders and others on the scene will need to fill out a written accident report. Such a report will indicate what happened and what the area looked like at the point of their arrival and dealing with the accident. Items in the accident report can and will be used later by either the insurance companies or legal counsel. For this reason alone it is important that the form be filled out accurately and may also include photos or video, accurate date/time and corrective action to prevent future accidents.

Insurance companies and lawyers will ask the typical questions after the accident.

- What happened?
- Did you complete an accident report?
- Did you take corrective measures to ensure this accident won't happen again?
- Was the employee trained properly?
- Is there documentation of training?
- Is training on a monthly basis, and do you have written records confirming attendance?
- Do you have an OSHA log for accidents and lost time from work?

In recent years the various OSHA entities in each state have offered volunteer programs in which a facility can have an inspection without facing fines or penalties as long as any items cited are fixed within about a 30-day period. This is a wonderful program and something worth consideration. However, I would only pursue it after I developed my own audit and remedies in areas where safety is deficient. That way the sticker shock may not be so great.

SAFETY FIRST. Over the years I have encountered more than a few people employed at golf courses who have lost a few fingers or a toe or two. Equipment operation and the use of blades can be a dangerous working environment. While we can't always take the danger away, we can certainly educate our staff on the proper operation of all equipment they will be using.

Each facility should have a checklist that shows what steps were used to train equipment operators. That training should also include reading and understanding the operator manual for any piece of equipment that they may operate. There is a reason each piece of equipment comes with a service manual and also an operator's manual or video that may be bilingual. Have your staff view these materials and sign off on their training to protect the business from liability in the future.

No matter how good your golf course looks, your job may be in jeopardy if you have serious accidents, workers' compensation claims or injured golfers. It is the moral and legal obligation of a facility to provide a safe work environment and also a safe place for golfers to play. Make safety a top priority at your facility. Once you develop the many plans and programs, they are easily transferable to other facilities you may work at in the future.

Update your programs annually to be sure they meet the needs of the facility and also any new regulations that may have developed in the preceding year. Safety is an ongoing issue. Make it a priority at your golf course. The attitude should be "Safety is our No. 1 concern!" **GCI**

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



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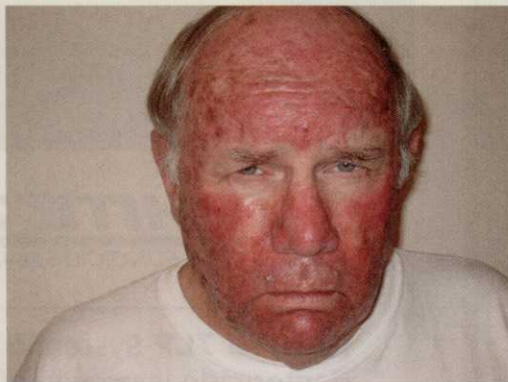


Monroe Miller is a retired golf course superintendent. He spent 36 years as superintendent at Blackhawk Country Club in Madison, Wis. Miller can be reached at groots@charter.net.

DODGING THE BULLET

I was stunned when I saw the USGA Green Section's Jim Moore at the Golf Industry Show (GIS) a few years ago. His face was swollen and red and distorted. After he was done speaking I rushed up to the speaker's podium and, with my usual bluntness, asked him, "What in the world happened to you?"

After he had chuckled a bit he explained that he was undergoing a treatment that, if successful, would reduce his chances of having skin cancer on his face. I called him this past winter before the GIS in Las Vegas and visited with him at the show about the procedure because I was ready to start it myself.



"For the first few days I thought it was going to be easy. But after about the fourth day the swelling really developed, my skin was tender and sore, dryness set in and my face was bright red."

I have been going to a dermatologist for many years, like any number of golf course superintendents I know. Each trip meant a number of pre-cancerous spots on my face and scalp and arms would be removed by freezing with liquid nitrogen. In a few weeks the resulting scabs would peel off and I assumed all was well.

However, the frequency and number of these spots gradually increased over the years until this

year when the skin specialist recommended setting time aside – in my case about six weeks – to undergo a program with Efudex. This is the trade name for the chemotherapy drug fluorouracil. This chemical removes pre-cancerous cells where it is applied, thereby decreasing the chance for development of skin cancer.

In my case, I applied a 5-percent topical crème to my face, forehead and scalp. However, I know of some guys who have used it on their arms, as well. It is applied twice a day, carefully, for the period of time prescribed by the physician. My prescription was two weeks for face and four weeks for forehead and scalp.

I wouldn't call it painful, but it is very uncomfortable, more so as the days move along. You know before you start it is a strong medication – apply with rubber gloves or triple wash hands if gloves aren't used. For the first few days I thought it was going to be easy. But after about the fourth day the swelling really developed, my skin was tender and sore, dryness set in and my face was bright red. I went one day too long using a razor; it was a real blood bath and my wife had to purchase an electric shaver for me. I had to sleep sitting up for a while.

Most importantly, it was critical *not* to be in the sun. This requirement, coupled with my increasingly sorry appearance, kept me confined indoors. That was the hardest part. We Skyped our two little granddaughters almost nightly so that when their planned visit occurred, I wouldn't surprise and scare them.

The confinement bothered me the most but, like Jim Moore, I chose to make my first public appearance among colleagues. For me it was at the Wisconsin Golf Course Superintendents Association's spring business meeting. By then I was on the mend – my skin had started to really peel off, almost in sheets – but my presence was the "elephant in the room." It was a chance for me to demonstrate just how serious skin cancer can potentially be for golf course superintendents. In front of me was a perfect audience because all of those in attendance were at an age when protective steps can really count in their favor.

I've never been surprised that this could potentially be a problem for me sometime in my life. In my youth I watched my grandfather make regular

trips to a dermatologist in Dubuque for skin cancer treatments. Also, my genetic composition predisposes me to skin cancer. My bloodlines all come from Northern Europe – Norway, Scotland, England and Germany. I am also a former farm kid who lived outdoors, mostly with no shirt or hat on during the summer months. My Army experience

was only a few hundred miles from the equator. And then there are the 40 years on golf courses with much of that tenure at a time when skin cancer dangers were not well understood.

Most tragic of all, skin cancer – at least indirectly – killed by father. He suffered terribly for years, and my brother and I were present when he underwent the surgery that removed his nose and chunks of his face. Some cancer cells got away, resulting in salivary gland cancer. After that it was a tumor wrapped around a carotid artery, which then ended with a good-sized tumor in his right kidney. He would have welcomed a chance to use Efudex when there was still a chance for prevention.

Nowadays, there is no

lack of information on this form of cancer. In many cases it can be avoided if a superintendent or anyone who spend a lot of time under the sun takes care and listens to medical advice and then takes it seriously.

Golf course superintendents love sunny days. They are good for healthy turf, great playing conditions and happy players. But they can be an insidious and harmful enemy, too.

The plain and simple fact is that precautions must be taken to avoid injury that will almost certainly develop one way or another into a threat that will, in the end, take your life.

Jim Moore turned out to be a poster boy for Efudex treatment. By writing this column and sharing these details with you I hope I will be, too.

Many of you have the opportunity to never let this medical malady get that far. For your own good, don't lose that opportunity. GCI

JUST THE FACTS

According to a recent study conducted by the American Academy of Dermatology, nearly three-quarters of respondents (74 percent) did not know that skin cancer is the most common form of cancer in the U.S., and only half (53 percent) of respondents knew how to examine their skin for signs of skin cancer.

The need for a comprehensive skin cancer resource is evident based on the public's general lack of understanding of detecting and preventing skin cancer.

Here are some basic facts:

- More than 3.5 million skin cancer cases affecting 2 million people are diagnosed annually.
- Current estimates are that one in five Americans will be diagnosed with skin cancer in their lifetime.
- The five-year survival rate for people whose melanoma – the deadliest form of skin cancer – is detected and treated before it spreads to the lymph nodes is 98 percent.

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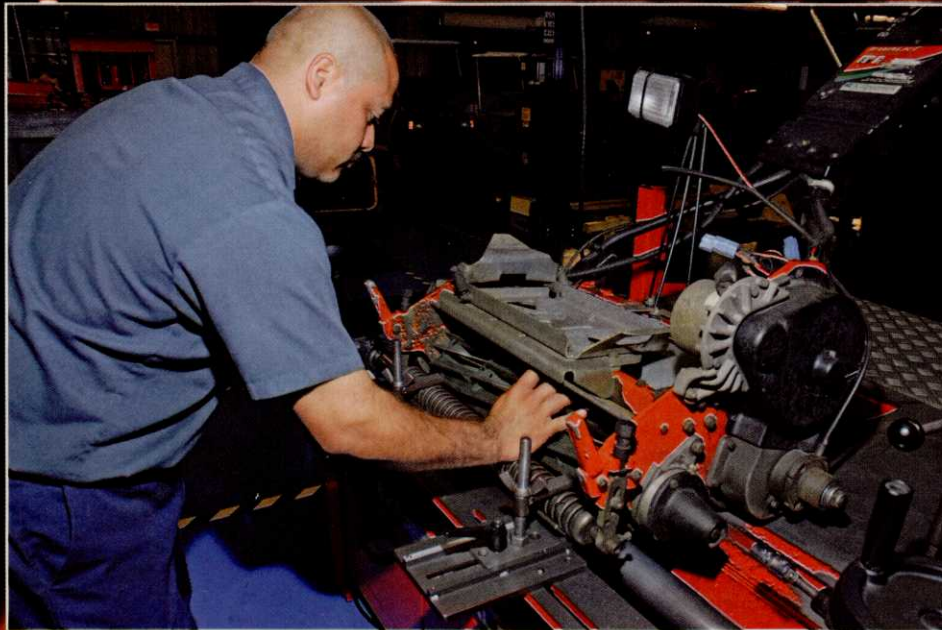
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Superintendents share their sharpening and grinding tactics so that your colleagues will be green with envy about your greens.

LOOK sharp!



Like anything else, the methodology in keeping reels sharp varies from course-to-course.

“How are the greens?” Invariably this is the first question one golfer will ask another when discussing a particular golf course. In this one little four-word sentence lies a dozen other unspoken questions with regard to speed, roll, size, firmness and even color.

What the golfer doesn't realize is the amount of maintenance that factors into the answers to these questions. Aside from your fertility and irrigation practices, the quality of cut from your greens mowing equipment can make all the difference between enticing a one-time customer and securing a repeat player.

Reel maintenance has been one of the most evolving practices of turf maintenance almost since the dawn of golf. Commercial reel mowers date back to the early 1800s and needed to be pulled by horses. Even then technicians were forever tweaking and adjusting the reel-to-bedknife relationship in their attempt to achieve optimum results.

Today superintendents and equipment managers have honed the practice of reel maintenance to a fine art. Whether the philosophy is light contact or no contact, spin grinding or angle grinding, all come down to the same thing: a clean cut goes a long way toward healthy greens and happy golfers.

Like anything else, the methodology in keeping reels sharp varies from course-to-course, one equipment manager to another. Budgets, equipment, personnel, and training all come in to play and it's vital that the superintendent and equipment manager see eye-to-eye on what is best for their facility.

For example, at Grand Traverse Resort & Spa in Acme, Mich., golf and grounds manager Paul Galligan keeps it pretty simple.

“Every time the mowers come in,” he says, “the reels are gone over, period.” Contact, height of cut, front facing if needed – everything is checked out. Of

course, Grand Traverse is a resort with 4 techs maintaining equipment for 3 golf courses. This level of maintenance is necessary, expected, and budgeted.

However, it's a whole different world at a public facility with a small budget and a single equipment technician. There, it's not unusual to hear reels spinning for hours on the backlap machine or witness mowing operations come to a grinding halt while a reel gets serviced because there was no backup equipment. That's never a good scenario.

Kenny Meals, turf equipment manager at Baltusrol Golf Club in Springfield, N.J., put things in perspective. “First you have to look at the golf course as a whole,” he says. “What grinders you have, what equipment, how much time you can afford to spend on grinding are all factors.

“Over the years, I've done different methods of maintaining reels and bedknives,” Meals adds. “First it was contact and backlapping, sharpening twice a year. Then I moved on to spin grinding and sharpening only on a Bernhard grinder with no contact. Once the reels started to make contact they would get sharpened, but that was mainly due to the ease of the setup of the Bernard... In general, you can grind the reels quicker. Fortunately, too, we had spare sets of reels for all the machines, which worked out very well.”

In the South, where there never really is an off-season, equipment techs don't have the luxury of a winter rebuilding program. Winter is the height of the season as the snowbirds fly south to play golf, and maintenance practices don't vary as much as they do in northern climates.

Stephen Tucker, equipment manager at the Ritz-Carlton Members Golf Club in Bradenton, Fla., explains his situation. “We don't have a winter rebuilding/sharpening routine here as winter is our prime season, so equipment has to perform day in and day out. Our summer and winter schedules look very similar despite the

growth patters of the turf.”

Tucker goes on to explain that because of the changing conditions there isn't a specific grinding “schedule” to follow.

“Whether we topdress, verticut, etc., all of these cultural practices affect the quality of cut so we address the need to grind as it becomes apparent from our daily checks,” Tucker says.

Obviously budget-sensitive, the ability to do daily checks on your cutting units goes a long way to maintaining a quality cut throughout the season. At those courses without the high-end budget, usually the mechanic depends on the operator to tell him if the units seem to be cutting OK. If there are no comments or complaints from the operator, then the mechanic usually moves on to put out some other fire instead of worrying about the reels.

While this method may work a majority of the time, superintendents must question whether the health of their greens is worth the risk? The operator might say the mower was cutting OK, but later in the afternoon the white cast across the green is the tell-tale sign the units were dull or out of adjustment and tearing the turf instead of cutting it clean. It's something an operator can easily miss during the morning mowing.

Remember, too, that an effective height of cut will be a little different than the bench setting. Factors such as the weight

Additional factors

If you've never been to a Toro University training session, then you've missed out on an opportunity to learn some of the different factors that affect the quality of cut and the health of your turf. Some may surprise you and include:

- Tire pressure on the mower
- Traction speed
- Reel bearing condition and adjustment
- Roller and roller bearing condition
- Roller selection
- Reel and bedknife sharpness

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of the cutting units, attachments, as well as turf conditions like excessive thatch will all influence the effective height of cut. Be aware and adjust accordingly.

For Meals, Baltusrol GC has some pretty high standards as far as reel maintenance goes. "To maintain sharpness we adjust the mowers after we mow six greens with the walkers, and adjust the fairway units after each cutting. We backlap all the mowers once a week and front face every two weeks."

When it comes to grinding Meals is in the 'light contact' camp. "Currently when we grind we relief grind and spin grind," he says. "Setting the reel to bedknife at light contact allowing the contact to keep the edges sharp through metal-to-metal contact."

Tucker, on the other hand, has a similar routine, but with a slightly different methodology.

"Every machine we use gets checked out after use," he says. "There isn't a time where

Often overlooked grinding advice

Superintendents and technicians all seem to have their own ideas on when and how to grind reels. For some, their grinding philosophies are as guarded as a certain colonel's seven secret herbs and spices.

So, for an expert look at reel maintenance, Erik Sides, training manager for Jacobsen Turf Equipment, offers a few basics superintendents and technicians should keep in mind when it's time to grind.

Check the reel first

Before doing any grinding, Sides advises that you thoroughly clean the reel and cylinder. Next, always check to make sure the reel and roller bearings are good and reel has proper end play.

"It's virtually impossible to get a good, consistent grind if there are worn bearings," he says. "Save yourself the headache and check these before wasting time at the grinder."

You should also look for a "coned" reel by using a pi-tape or other measuring device to check circumference. An uneven reel can affect cut quality as well as lead to contact with the bed knife. If you find a coned reel, Sides recommends following the directions for your specific grinding equipment to get the reel back to true.

Maintain proper clearance

"Easily the most overlooked, but key component of reel maintenance is to make sure bedknife clearances are maintained," Sides says. A couple of minutes spent ensuring the reel blades are not coming into contact with the bedknife can save hours of grinding time down the road.

"We definitely promote daily clearance checks," he adds. "As a rule, you want between one-thousandth to two-thousandths clearance between the bed knife and reel blades. Avoid metal-to-metal contact, as that quickly wears down a reel."

Pulling a reel, mounting it in the grinder and replacing the unit can take up to an hour per reel. Daily clearance checks take just a few minutes and can help extend reel life and save shop time by extending the duration between spin grinds.

Don't overlook the relief angle

When you do have to grind, Sides says, don't

overlook the relief angle.

"There are two distinct schools of thought on grinding," Sides says. "Those that spin grind only and those that relief grind in addition to spin grinding. I wholeheartedly recommend everyone maintain the relief angle throughout the life of the reel."

The relief is key to keeping the reels and the tractor working the most efficiently.

"Without the relief angle, you potentially increase drag on the reels or increase the likelihood of metal-to-metal contact," he says. "This puts more strain on the entire tractor and generates more heat in the hydraulic or electrical systems."

In addition to adding wear to the unit as a whole, this additional strain can also start to have a negative impact on fuel economy.

"Drag, wear and heat are minimized with a relief angle and proper bedknife clearances," Sides says.

The proper angles for reels can generally be found in manufacturer's manuals.

Time to grind

How often to grind is another question Sides is frequently asked. While there is no hard and fast rule, this is a major factor that a lot of folks overlook.

"How often and how heavy you topdress will dictate how often you'll need to grind," he says. "The more sand that goes down, the more frequently you'll have to grind."

One way to extend reel life and still aggressively topdress is to make sure the sand gets worked in well before mowing. Brushing or dragging will help keep the sand down at the root level where it belongs and not up eroding the reels on your mowers.

Lay out a grinding schedule

Finally, Sides recommends setting up a grinding schedule. This will help ensure that units get taken care of in a regular fashion as well as allows superintendents to plan enough time to get the job done.

"Too often, we see reels get overlooked because there's 'Just no time to grind,'" Sides says.

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we don't bring the machine in after it has been used and check the height, adjust the cut and file the bedknife. The reason being is that the most important job we do is to maintain cutting units."

The difference is in the backlapping, Tucker says. "We don't

backlap at all nor have I in my 13 years as an equipment manager," he says. "This is simply due to the fact that I have always been fortunate enough to have grinders."

He verifies that there are a lot of different schools of thought and all the tech's out there need

to do what allows you to produce the best results for your course.

"I look at it like maintaining an airplane," he says. "Pilots have to go through a series of checks every time they go from one airport to another to insure the safety of the aircraft and that it

will perform as intended. If they see the least little thing wrong they address it immediately. I don't see cutting units as needing any less attention than that." **GCI**

Jim Black is a frequent GCI contributor.

Backlapping vs Grinding

There are many practices and philosophies for maintaining reels and bedknives. Some choose to grind and utilize no backlapping, some will backlap only to get the longest life between grinds, and others prefer a position somewhere in the middle. Regardless of your preference, the key to proper cutting is to have a sharp reel and bedknife.

The modern technology in backlapping valves provides

Backlapping is a very quick and simple process and, depending on the number of reels on the machine, should take no more than two to 10 minutes to complete an entire mower. In regard to how often to backlap, first determine what level of expectation you require for your cut quality. The lower your height-of-cut, the more maintenance is required for the turf and for the

substitute for grinding. There will come a point in time during the reel's life where simply backlapping alone will not be sufficient. The land area of the reel blade will eventually increase, the length of the relief angle will decline, and there won't be as much surface area to hold the backlapping compound. At that point, the reel must be ground. However, backlapping is successful in extending the time between grinds to save maintenance time during the growing season.

When a reel is ground, it is important to re-establish the relief angle to allow for backlapping again in the future. The relief angle is critical in that it gives a place for the reel to hold the backlapping compound when it is applied.

Even more important, when both reels and bedknives are ground, backlapping after grinding matches the bedknife to the reel to ensure both components are operating in exactly the same cutting plane. Backlapping hones the reel and bedknife to the same cutting plane.

Also, when a reel is ground, it's common for a burr to exist on the backside of the reel blade. Technicians may sometimes experience issues where the bedknife-to-reel clearance opens up while mowing, causing the mowers to lose their cut. The cut may be shaggy, and grass blade tips may be torn and brown out. What causes this in a lot of cases is that the bedknife-to-reel clearance was set with the burr still present on the back of the reel blade. The machine cuts paper when it leaves the shop, the fairway or green may be cut very well for a few holes, and then – all of a sudden – the mower is cutting poorly. The burr on the back of a freshly ground reel wears very rapidly. By backlapping after

grinding, the burr is removed and the cutting unit can be set properly before it goes out to mow and it will stay on cut for a longer period of time.

Tracy Lanier and Brad Aldridge are John Deere Golf product managers.



There are many philosophies for maintaining reels and bedknives.

all reels on a machine can be backlapped at the same time. Backlapping valves are innovative in that they sense the restriction between the reel and bedknife when the backlapping compound is required, and adjust hydraulic flow accordingly to keep reel speed constant for a premium backlap. This makes the backlapping process the quickest method to help maintain the sharpness to the reel and bedknife. The more frequently a golf course backlaps, the longer they are able to keep a pristine, sharp edge on both the reel and the bedknife, and extend the time between grinds.

reel mower. There are also other variables – such as top dressing program, grass type, course soil conditions and the amount of grass being mowed by the machine. These variables and expectations for cut quality will determine how often to backlap and each individual course should determine its own program. It can be as frequent as after each mowing or it can be once every week or two. The key to backlapping is that you are maintaining the sharpness, while not trying to re-establish like when you are grinding. So, backlap before you lose your edge.

Backlapping should never be a

Spin Grinding vs Relief Grinding

This is public information on the www.deere.com public website that will provide some excellent information on relief vs spin grinding.

www.deere.com/en_US/ProductCatalog/GT/servlet/com.deere.u90785.cce.productcatalog.view.servlets.ProdCatProduct?pNbr=RG55_XF&tM=GT

When opening the page, click on the "More" link at the end of the first bullet point that says "Choose from spin only or spin and relief grinding ..."

Bedknife Grinding

This is also public information on the www.deere.com public website that will provide some information on the importance of maintaining proper bedknife angles.

www.deere.com/en_US/ProductCatalog/GT/servlet/com.deere.u90785.cce.productcatalog.view.servlets.ProdCatProduct?pNbr=BG15_XF&tM=GT

After the page has opened, click on the "More" link at the end of the first bullet point that says "Maintaining bedknife angles is key to premium golf course playing conditions ..."

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

BUDGETING IRRIGATION SYSTEM IMPROVEMENTS

When you think about suggesting to your owner, board or other entity you report to that a new irrigation system is needed, the first thing they are going to want to know is how much will it cost?

Today's irrigation systems are much more expensive than those of the past and given the current economy, providing accurate cost estimates is imperative. You might believe it's an easy number to establish. You just ask the local distributor or contractor for a rough cost or one of your peers that just got a new system. But beware: A.) No two golf courses are alike; therefore, neither are their irrigations systems; and B.) There are many more costs to a system than just the irrigation contractors cost.

For proper budgeting, you need to make sure you have covered all of the anticipated costs and some unanticipated ones, too.

You base cost is going to be the irrigation system itself. This includes all of the materials needed: sprinklers, pipe, fittings, controls, computers and wire, as well as the cost of installing those components.

This can be established on a per sprinkler basis, such as \$1,500 per sprinkler or through other techniques; 2 or 2.5 material costs or by getting a hard number by bidding. But that is just one number that reflects the basic irrigation system cost, not the project cost.

You may want more than a basic system and the costs of added features of what some might call "bells and whistles" need to be added in, too.

Examples might include green and/or tee out systems, additional weather stations and bunker irrigation (all of the bunkers or just a few?).

Additionally, there are unique issues that may only apply to your golf course such as stream or road crossings. Both of these are expensive, and the more of them you have the higher your budget will need to be.

In addition, road and stream crossings most likely will need to be per-

"Members never think you will come in on budget so they automatically add in their head to whatever number you give them."

mitted. You need to add in the costs of the permit including specialists you might need to obtain the permit; wetland specialist, environmental consulting firm, surveyor, civil engineer and in too many cases, a lawyer.

Are you going to redo the tennis irrigation too so you get the tennis vote? What about the clubhouse grounds and entrance area? Add those costs in, too, but as a separate line item as they are not the golf course itself.

Now that you are going to have a new system, what happens to the old stuff? That needs to be budgeted too, even if your staff is going to remove all the old stuff. Not something I would advise, though.

Then there is the pump system, do you need a new one or just a

refurbished one? If it's new you need the costs of the pump station, pump house, wet well, new electrical supply to the pump house, and the cost of the electrical work in the pump house plus any power company charges. You don't want to miss the mighty utility – they do nothing cheaply.

And if you are thinking about fertigation you need to include the cost of that equipment plus the building will need to be larger by about a third increasing its cost.

Do you need to add make-up water from another source to your primary irrigation supply, either municipal, groundwater or from another pond?

You need to include the costs of the piping and pumping. Don't forget those pumps will need electricity and how it will be controlled.

If it's a potable supply, it will have wet tap, meter and backflow prevention costs. If the irrigation system obtains water from an existing pond, does it need to be dredged, even just around the intake?

Include those costs and the cost of permitting the dredging work. You're probably going to have some miscellaneous electrical costs too for controller power or for your central control system so add a small number for those.

So while you're digging up the golf course what else might you like to install? Remember, most of the trenching costs are in excavating and restoring the trench. So while its open, what else might you put in it?

A few things you might want to consider: fan wire, drinking fountain

(continued on page 81)



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water ISSUES

Supers share their methods for clearing up their water problems and how they turn bad into good. By Richard J. Skelly

With a possible drought on the way for courses in the Midwest and East this summer, it pays for superintendents to consider just how they make use of bad water, or effluent water, on their golf courses. Golf Course Industry talked with three superintendents in three different parts of the country about their approach to using “bad water” for irrigation purposes.

All agreed on one thing: stringent, conscientious monitoring and testing of soil and water is necessary throughout the year in order for the program to be a success.

Brian Vinchesi, an irrigation

consultant outside of Boston, says, “Probably the biggest problem superintendents have is salt running into their water, either from wells or effluent. The bottom line is, if you have enough money, you can effectively eliminate the problem. But it can be horrendously expensive.”

Dan Dinelli, the longtime super at the private North Shore Country Club in Glenview, Ill., or north suburban Chicago, says the poor water quality situation took the club’s membership and greens keeping staff by surprise, beginning in the mid-1980s.

“It was a unique situation in the Chicago area to have poor water quality,” Dinelli says, not-

ing the club, built in 1924 by Alison, Colt and McKenzie, drew water for years without incident out of the Mt. Simon aquifer. The well was 2,200 feet deep, “and we don’t know why they generated the well that deep back in the 1920s when they dug it, but, they did.”

“The salt migrated to the north as people used the water source, including us,” he says. As population grew in Glenview, Evanston and surrounding towns, so did the area’s water needs. Dinelli says the solution, which wasn’t easily arrived at by him or the club’s loyal membership, was to drill a new well at a cost of \$250,000.

“Back in the day when the club was built there was no such thing as municipal water. The deep well they generated was used for drinking water and to irrigate the course back when they got the system installed in the early 1930s,” Dinelli says.

“I can’t answer to what the salt levels were like back then, but I can tell you each year we tracked it, the sodium levels increased. Because of people around here drawing off of it, the salt concentration got greater. It began to appear as a problem in the 1980s, but it wasn’t until 1995 that I got a new well put in,” he adds.

Well-digging engineers and

irrigation specialists properly sealed off the old well “and we generated a new one that tapped into the Galesville aquifer, just above the old aquifer.”

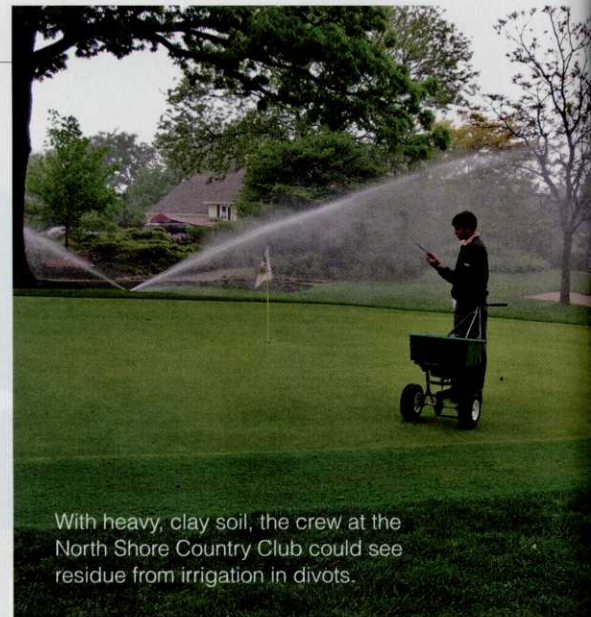
Dinelli says the soil composition at North Shore Country Club is heavily clay-based, so it packs tight, “and the golf course is pretty flat and doesn’t drain terribly well.”

“When we were irrigating for a period of time, you would literally see the white crusty residue develop in the divots on fairways,” he says, “the best thing we could do for it was to have a natural rain event to push those salts down, but obviously you can’t program those things,” he says.

Dinelli and his crew made use of soil penetrants and an injection system, and they used an acid injection system to keep the porosity of the soil at North Shore as open as possible, so the salts would sink down more quickly.

“We bought two deep-tine aerifiers for greens and fairways to poke 10 to 12 inch deep holes into the soil. We also tried biologically and chemically to open up the soil by using compost, which got us on the whole compost kick we’re still on today, because we found there’s other values to using it,” he says.

“We used compost to build the



With heavy, clay soil, the crew at the North Shore Country Club could see residue from irrigation in divots.



Disease management can suffer when working with effluent water. Be sure to plan for additional stress on turf.



Dinelli and his crew used soil penetrants and an injection system to help salts move through the soil.

soil structure back up that we found the salts were destroying.”

One night when he was checking irrigation in his truck, water splashed on his windshield and he could hardly see through it. He demonstrated for members with a vial of water from the old well and a vial of water from the well he wanted to switch to, using a simple glass coffee table.

Once the water from the old well dried, a milky white film was visible. Members were convinced they had to dig a new well.

Opening the new well in 1995 was the final step in North Shore conquering its salt encroachment problems, Dinelli says, but his greenskeeping crew started their composting practices back in the 1980s when they dealt with poor water quality on a daily basis.

In retrospect, what has Dinelli learned that he could share with other supers?

“Well, we survived it, but the situation also brought on some diseases like anthracnose, and take-all patch got worse, so our disease management program had to be stepped up a bit to accommodate the extra stress,” he says.

“It’s hard to judge,” he says, when asked how he’d rate the success of having an entirely new well dug.

“We survived long enough to get the money we needed to get off that poor water source and on to a much better water source,” he says, admitting not every superintendent is so fortunate.

“Keep in mind, the chemistry of this stuff is pretty straight-

“When we were irrigating for a period of time, you would literally see the white crusty residue develop in the divots on fairways.”

— Dan Dinelli, North Shore Country Club

forward and there are a lot of good labs out there to help you,” Dinelli says.

When dealing with salt encroachment into ground water supplies, Dinelli says keep records of your soil and water tests for yourself and to show members later.

“I think the first thing you can do as a manager is take soil samples and water samples periodically and track what’s going on out in the field. You can compare differences and be tracking things and manage these things

as they change over time,” he says. “Most water quality is fairly stable, but not always, and water quality changes over time out of wells. It can happen.”

Mike Terry, the superintendent at The Currituck Club near the Outer Banks in North Carolina, has had one series of challenges after another in growing grass at this unique resort facility, sandwiched as it is on a spit of land between the Atlantic Ocean and Currituck Sound.

This Rees Jones-designed golf course opened in 1996, but Terry



Rain events flush the course, but Terry uses products to help balance the soil.

arrived in 2005.

"We have a quality and a quantity issue here," Terry says. He waters 66 acres of Currituck with reused effluent water that's tertiary-treated on an adjacent site that was built with the irrigation system to work with the wastewater.

"Everything that goes down the toilets and sinks here at the community goes to the waste treatment plant and then it comes by way of an underground pipe to me to a pond here on the 6th hole, a par 3, where we have a large pond," he says, "and we pump out of that pond to two irrigation pump stations. We've got some holes that may be irrigated on the edges with fresh well water and some of the middles of the fairways are irrigated strictly with effluent, where it does not spray off the property," Terry says.

To call the water quality at The Currituck Club challenging is an understatement.

"We're basically on a sand

dune and we're using a grass that can take a bit of salt," Terry says. When the course was built, the entire site was laid with sod.

"They sodded the entire site and it's a large site, just to get something on it immediately. It was just a big sand dune, and out here, the shape of the golf course would just blow away," he says.

"We don't buy any water here and we basically irrigate out of these ponds, and we get free effluent water from the nearby subdivision," he says, noting the effluent is treated with ultraviolet light and treated two more times before being pumped out to the ponds on the course. "It's probably some of the most complete treatment you can do to water."

What happens from season to season, Terry says, is the wells get pumped hard, the water table draws down and the level of chlorides rise.

"We'll test them in the spring and then we test them in late August, and the chlorides are

higher. We find we have to constantly test the water, keep an eye on what's going on with it," he says, including injecting a product called Fairway, composed of sulfuric acid and urea, which helps adjust the pH, reduce bicarbonates and improve water penetration and infiltration into the sandy-based soil at Currituck.

"I've been here seven years and I'm still studying and educating myself about salt water encroachment. It's been a crash course for me, so I've learned a lot about water quality and effluent," he says. Terry and his crew do spot applications of granular gypsum and calcium applications, "we pile the gypsum and fertilizer on it and find we can't fertilize it enough because of the sand-based soil here. With this soil, we can't hold nutrients and we can't hold water."

Naturally, rain events help to flush the course, Terry says, but, "I don't think we've conquered the problem at all. We're always

going to be dealing with extreme weather out here on the Outer Banks, and a big sand dune is just a difficult place to grow grass."

Terry is thankful for the experts he can call on for advice, since the course is managed by Club Corp. Having information and data on hand is the best way to make good water decisions.

"In dealing with bad water, you need to know what's in that water, you need to educate yourself on how best to use that water and you need to soil test to see what the water is doing out there. You've got to be paying attention, watching your heads, your water, your control system and make sure everything is applying efficiently and properly. Testing is the big thing for us, it's a huge part of what we do, so at least if you know what is happening out there with your water and your soil, you can anticipate things, because bicarbonates and pH are big issues."

Tim Cloninger, the superintendent at Shadow Creek Club in North Las Vegas, a property owned and managed by MGM Mirage Resorts, gets just one to three inches of rainfall a year in his location. Shadow Creek is a Tom Fazio-designed resort course designed to make people forget they're in the desert, as its fairways and roughs are lined with about 20,000 pine trees. Shadow Creek is situated about 15 minutes from the Strip.

"Out in the desert one thing you can definitely do is look at your variety of grasses," Cloninger says. "You need to manage your golf course for the most environmentally strong turf grasses. You need to have a good Bermudagrass base. If your water quality is that bad, you have to look into not over seeding, or look into a change in variety of your grasses." GCI

Richard J. Skelly is a veteran golf writer in Spotswood, N.J.



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Ron Dodson and **Bill Love** are the founders of Love & Dodson, LLC a firm that specializes in sustainable planning, design, construction and management of golf courses, recreational facilities and sanctuaries. www.loveanddodson.com

LINKS TO SUSTAINABILITY

The golf industry is at a crossroads.

Much has been accomplished during the last two decades concerning golf course planning, design and management, especially as they relate to ensuring and maintaining environmental quality. However, our industry, like everyone else, has been and continues to be gripped by economic uncertainty.

As we make our way the best we can through this economically uncertain time, there are opportunities for the golf course industry to build upon its previous environmental improvements and become prominent leaders in the more recent movement connected with sustainability.

The International Sustainability Council (ISC) supports golf course facilities that are run as well-rounded, well-thought-out businesses. For example, the ISC publicly states:

"A sustainable golf facility is an economically sound business that provides safe, healthy and enjoyable environments for all employees, members, visitors, and guests. A sustainable golf facility is sited, designed, and constructed in ways that enhance the local community, and reduce or eliminate its impact on natural resources. It is managed in ways that provide balance between optimum playing conditions for golfers, and good stewardship of the natural environment. Management strategies are based upon scientifically sound site specific best practices that improve the quality of all life on the site, regionally, and beyond. Through outreach and education, a sustainable golf facility is a champion and advocate of sustainability."

The issues faced by the golf course industry are wide and varied. Economic conditions are the driving force for the future of the industry.

While many factors that drive economic conditions are beyond the scope of an individual course manager, those economic factors nevertheless go hand-in-hand with environmental management opportunities that are available and accessible to course management. The relationship between economic, environmental and social concerns is not always obvious, but the three issues are nevertheless intimately connected.

Sustainability is a characteristic of a process or state that can be maintained at a certain level indefinitely, according to the ISC. The term, in its environmental usage, refers to the potential longevity of vital human ecological support systems, such as the planet's climatic system, systems of agriculture, industry, forestry and fisheries, and human communities in general and the various systems on which they depend.

In recent years, an academic and public debate has led to the use of the word "sustainability" in reference to how long human ecological systems can be expected to be usefully productive. Observers point out that in the past, complex human societies have died out, sometimes as a result of their own growth and associated impacts on ecological support systems.

You see, the important implication to note here is that a modern industrial society, which continues to grow in scale and complexity, might also collapse.

Therefore, the implied preference would be for systems to be productive indefinitely, or be sustainable.

In many regards, past unsustainable business practices are responsible for the present state of the global economy.

"Many courses are, in fact, part of their community's 'green infrastructure' and are important segments of a community's water management system."

Sustainability is focused on the "triple-bottom line" of profit, planet and, of course, people. Plainly spoken, this means it is vital that we focus on monetary issues, environmental issues and social issues, both locally and globally.

Many golf course superintendents and managers recognize that they are managing their facilities as part of a watershed and community resource. Many courses are, in fact, part of their home towns' green infrastructures and are important components of those communities' water-management systems.

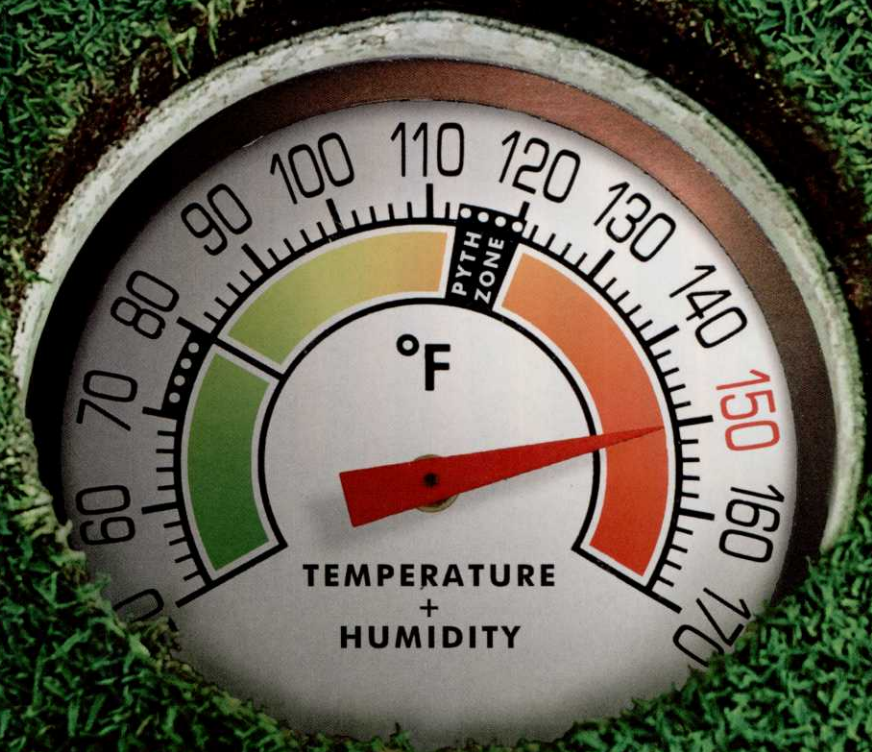
However, most people don't value natural systems and ecological processes. And they most certainly don't value the human-managed systems created and managed by professional golf course turf managers and stewards.

Even with all of the improvements made with regard to environmental management in the golf course industry over the past 20-plus years, there is still much to be accomplished.

Now is the time for those of use in the golf course industry to fully embrace the leadership opportunities associated with insuring a sustainable future not only for the game of golf, but also a sustainable future for our planet. **GCI**

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As mower manufacturers prepare to roll out emission-compliant equipment, the industry provides some clarity on the impact Tier IV will have at the course level.

From the moment President Richard Nixon signed the Clean Air Act in 1970, industries across the country have been working toward improving the air we breathe. Be it cars and trucks on the roads or factories that dot our landscape... this crucial policy has saved countless lives by reducing harmful pollutants.

While the golf course industry has been at the forefront of many environmental issues, the Clean Air Act is now taking center stage as the new Tier IV begin to take hold.

Environmental Protection Agency's website reads:

"EPA has adopted a comprehensive national program to reduce emissions from future non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest emission reductions. To meet these emission standards, engine manufacturers will produce new engines with advanced emission-control technologies similar to those already expected for highway trucks and buses. Exhaust emissions from these engines will decrease by more than 90 percent. Because the emission-control devices can be damaged by sulfur, we are also adopting

a limit to decrease the allowable level of sulfur in non-road diesel fuel by more than 99 percent."

These reductions in NOx and PM emissions from non-road diesel engines will provide enormous public health benefits. EPA estimates that by 2030, controlling these emissions would annually prevent 12,000 premature deaths, 8,900 hospitalizations, and one million work days lost.

The NOx – or oxides of nitrogen – form smog, while PM – or particulate matter – comes out of exhausts as smoke. The PM will see the most significant reduction – a 90-percent decrease from current standards.

While equipment manufacturers work closely with companies building the engines for their machines, Grant Young of Toro says his company and its competitors are waiting for final engine specifications before moving forward.

"From there, the equipment manufacturers have to make it work in the equipment, which is where engineering dollars for the equipment manufacturers comes into play," Young says.

Rachel Luken, Jacobsen product manager, says her company has taken a hands-on approach. "Jacobsen has been working in conjunction with our diesel engine supplier, Kubota, on technology methods and approaches to meet the lower emission standards," Luken says. "With Kubota's rugged and reliable engine expertise, coupled with Jacobsen technical staff, we believe we are designing and incorporating engines, filtration and electric needs in efficient and innovated ways.

Jacobsen will be utilizing multiple solution paths for the range of products affected, such as:

- Conventional Tier 4 Final path using fuel injection and exhaust after-treatment technologies, while also paying close attention to the machine's hydraulic and electrical efficiencies so optimal power is transferred; and
- Utilizing engines under 25 hp by reducing

VIEW

by Rob Thomas

power without compromising overall performance or supplementing with hybrid power to manage peak power demands.

“Jacobsen is also striving for commonality and consistency where possible between existing product and across newly powered product to reduce customer technical maintenance and service parts complexity,” Luken says.

“Ultimately, Jacobsen is using innovative solutions to make equipment more environmentally friendly while still meeting customer performance, productivity and quality expectations,” she adds.

Mark Ford, marketing manager at John Deere Golf, says his company is looking beyond the Tier IV standards.

“Our objective is to do more than meet

Replacement plan

Jacobsen offered a few thoughts to consider as capital equipment budgets are developed for new or replacement equipment:

- Buy on regular routine: When a capital equipment plan calls for new equipment and/or existing equipment useful life ends, buy what is available and pay market price.
- Buy ahead: Prices are forecasted to rise when Tier IV compliant equipment is released, so postpone the purchase of higher-priced equipment and buy in advance of a regular replacement cycle.
- Buy environmentally friendly: Despite the expected higher prices, actively seek out and purchase the greenest Tier IV product.
- Buy used: Since equipment is compliant based on the year of engine manufacture, buy equipment that is already in use.

the requirements of Final Tier IV,” Ford says. “We are using this as an opportunity to provide additional value for golf course superintendents and technicians.”

The John Deere approach is five-fold:

- Optimized. Engineering and product development teams are working to ensure the equipment fully meets regulatory requirements, while delivering the power, reliability and low cost of ownership.
- Fluid efficiency. Rising fuel costs are on everybody’s minds. Deere’s Final Tier IV-compliant equipment will not compromise on fuel efficiency.
- Field proven. Deere engages in a comprehensive program of field testing prior to new equipment launch. Machines that meet these new standards undergo thousands of hours of testing before they are released.
- Integrated. Deere’s engineering, supply management and product management teams have been engaged in a thorough, ongoing design review with engine and component suppliers to work hand-in-hand to supply the most seamless solution possible.
- A Fully supported solution. A history of agricultural and construction equipment manufacturing means the John Deere enterprise has a great deal of experience transitioning to new compliance standards. They will be there as an organization for customers every step of the way.

Positives are plentiful, but John Patterson, president of the International Golf Course Equipment Managers Association, expects to see the price for new equipment rise substantially.



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“When it comes to cost increase, the number I am hearing most often is 20 percent for affected machines which remain diesel powered, and between 10 and 15 percent for machines which are converted to gasoline power, to cover the cost of development.”

— John Patterson, International Golf Course Equipment Managers Association

“When it comes to cost increase, the number I am hearing most often is 20 percent for affected machines which remain diesel powered, and between 10 and 15 percent for machines which are converted to gasoline power, to cover the cost of development,” Patterson says.

“At PGA National we are evaluating the cost benefits of turning our large equipment fleet (for 90 holes) one year early, potentially saving \$100,000 in purchase cost, plus R&M savings,” he says. “It is difficult for any operation to accelerate capital purchase plans, but potential six-figure savings are very persuasive.”

There are other options, Patterson says, but at what cost?

“There may be a slight increase in the used equipment market, but generally the increased cost of running older equipment far offsets the higher initial cost of new, efficient – and warrantied – stock,” he says. “Those who would normally purchase outright may be more likely to look at leasing for tax benefits to offset the purchase cost as well.”

While the Tier IV regulations are forcing changes and likely adding cost, Luken says Jacobsen has evolved with the environment in mind since the Clean Air Act amendments affected off-road diesel regulations

(continued on page 79)

New standards

Considering the shakeup across the industry - from engine and equipment manufacturers to golf courses – many wonder if the Tier IV emissions regulations constitute the “finish line” or if there are even higher standards to meet on the horizon.

“I believe we will be done with this type of regulation for a while, but it is anyone’s guess,” says Stephen Tucker, equipment manager for the Ritz-Carlton Members Golf Club in Bradenton, Florida. “Regulations are driven by government policy, so as new policies are approved and mandated, our regulations will change. Nature of the beast, I guess. Maybe one day they will ask the effects of the policy before implementing it, but of course why would they do that ... makes too much sense?”

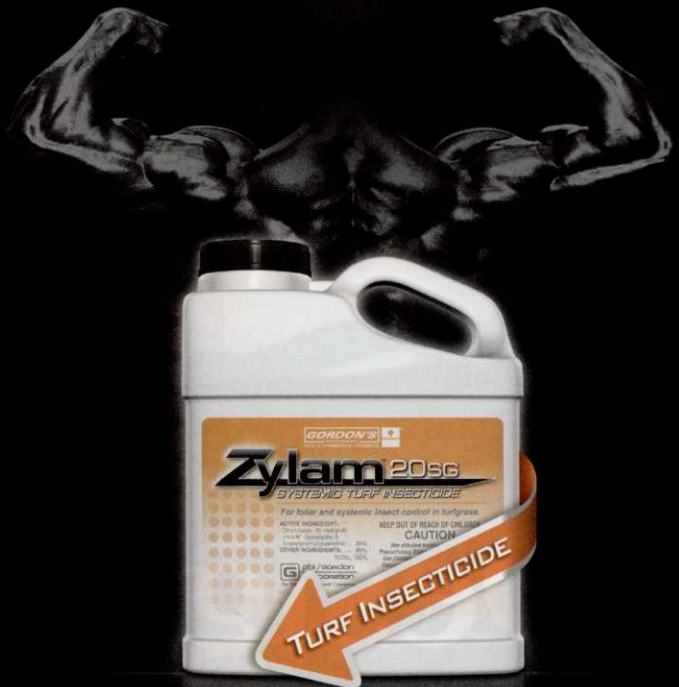
Tucker sees potential for fleet changes at many courses.

“I believe you will see a gas version of many of the machines that will fall into Tier IV,” he says. “I really believe this is the direction that most facilities will go as long as the machine can perform to the same level and the costs remain where we currently are or less.

“If you’re an equipment manufacturer this becomes an even tougher question because they are not sure what direction the industry will go, so you can’t really put all of your eggs in one basket ... or at least I wouldn’t.”

John Patterson, president of the International Golf Course Equipment Managers Association, joked “Tier IV is it until we all get the new ‘Mr. Fusion’ power plants.”

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Design it **FORWARD**

In his analysis, GCI's Bob Lohmann questions whether simplifying golf adds value and suggests that bunkers may hold the real key. By Bob Lohmann

Many of us course design types are recently back from Chattanooga, Tenn., site of the 2012 American Society of Golf Course Architects annual meeting. There's a lot of fraternizing that goes on at these events, but there's a good amount of strategizing about where the game is going, too. Big picture stuff.

Everyone's hearts are in the right place, I'm certain of that. But I'm quite amazed these days by how architects and other "guardians of the game" view that big picture. More and more, these big-picture conversations seem to be shorthand for reduc-

ing the length and difficulty of golf holes, and/or enabling the play of golf holes in less and less time.

The catch here, and it's a big catch, is that we may be removing interest from those golf holes. We may be devaluing them.

My old friend, the architect Gary Panks, spoke for me at one point when he warned that all these efforts to play faster and get more golfers on/off the course will, if we're not careful, destroy some really good golf holes. Earlier this year, I wrote about this in light of the Tee It Forward initiative – a good idea for adapting full-sized holes to young and otherwise novice players. But it's

a tough task to carry this through an 18-hole routing, accommodating senior and women players, without effectively addressing the design of all 18 holes. You have to Design It Forward in order to Tee It Forward, and we have to ask ourselves: Is this initiative worth undertaking that expense? Is it worth risking the alienation of regular customers who appreciate the hole as is?

The way we think about bunkers today is indicative of where these discussions are taking the golf business, perhaps against our better judgment. When we aren't talking about eliminating bunkers – to save money and make golf holes more "playable"

(read: *boring*) – we're talking about ways to make them more expensive via new liners and premier sand products.

One extreme feels like a shortcut. The other feels like we're throwing money at something in the name of "excellence." Neither gets at the heart the matter, in my view.

Let me frame the larger issue another way – a way superintendents will understand, because they think in these terms all day, every day – way more than architects do incidentally: Do these measures and initiatives add value? If so, for how many golfers do they add value?

If we want to attract new golf-



our courses and clubs. Throwing some tee markers down in fairways to create a 3,000-yard routing is a way to add value for kids and their parents – and most important, it's simple. That act does not affect the hole's value for other players.

It becomes much more complex, say, when you try to move the white tees forward for seniors, who then hit the ball into unseen hazards, or drive the ball past landing areas into the narrowest parts of fairways. This does not add value. In order to add that value, an entire hole must be assessed in light of what type of golfer is playing that new yardage.

Let's boil it down and get specific: You know what adds value? Bunkers add value. Their role should be separated from the pace-of-play and course-difficulty equation. Eliminating them in the name of faster, easier play might save money or maybe even drive revenue in the short term. But ultimately, in the longer term, removing them waters down the value of golf holes.

Superintendents work at the confluence of these issues. It's a balancing act, reconciling pressure from the top to make holes harder, make them easier, speed up play, bring down costs, etc. Superintendents do the actual balancing. They're the ones who've always been best equipped to determine where the value is, where it can be preserved, where it should be added.

Back to the bunkers... How do you make a course harder? You make it longer and tighter right? A lot of people think bunkers make a course harder, but they don't. Properly placed, they add value. Allow me to count the ways.

DIRECTIONAL AID. Down in Tennessee, we ASGCA-ers played

the Honors Course, an unfamiliar track for most of us. I can't tell you how many times my caddie, or the player in our group with local knowledge, told me to "Aim for that bunker", or "Play in front of that bunker", or "Fly that bunker." You can't do that with distant trees lining a fairway. If you eliminate too many bunkers in the name of cost-cutting, what's left? Does that add value?

FLEXIBILITY/STRATEGY. Bunkers provide golfers the opportunity to play tactically, using the hole's width, whereas trees do not. A long dogleg lined with trees will crush the new or short-hitting player. If they can't get to the corner, they're screwed. But if that corner is guarded by bunkering, he/she can play in front and cut the corner on the next shot. I'm not advocating for a sea of bunkers, but a wide fairway with a smattering of well-placed bunkers can be played a hundred different ways, most of them attainable by new or short-hitting golfers. That's value for all players, not just good ones.

RECOVERABILITY. Sand shots aren't easy to master, but even a novice player would rather play from a fairway bunker than a forest. You can't play at all from a pond, of course. Catch bunkers are an inherent sign that trouble lurks beyond, and they can actually protect golfers from unseen hazards. Now, let's be honest: An "unseen" hazard is problematic in its own right, but that bunker serves a distinct purpose. Can't put a value on that.

AESTHETICS. Bunkers break up the monotony of green. They provide texture and contrast from the tee. On a dead straight hole, extending bunkers out into the line of play makes the

fairway appear to weave back and forth between them.

HARMONY/BALANCE. Bunkers help to achieve visual balance and establish scale and proportion, which contributes to the visual harmony of a hole. In other words, they make things look pleasing. In some cases, they can even be placed to make things look intentionally unpleasing (harder than they are) or to affect depth perception (camouflage).

Think about all the trees on your golf course. How much value do they add to the golf experience? They can certainly evoke pleasantness, but maybe a handful of trees have the sort of comprehensive impact mentioned above. The rest are either inconsequential or actively eliminate value – shot values, but also agronomic value when you consider how trees compete with turf for soil nutrition and sunlight.

Now think about your bunkers. How many add value? In a variety of circumstances, I'm betting they all do. And I'm betting most superintendents could think of a half dozen more, in key spots, that could add even more.

My point here isn't that we should go on a bunker-building binge. My point is, we need to assess our golf courses based on the value each feature provides. It's a cost-benefit analysis in one way.

With the resources available, we must maximize the value we provide to golfers because it's the value of that golfing experience – not ease, not speed of play – that hooks new players and continually engages regular players. **GCI**

Bob Lohmann is founder, president, and principal architect of Lohmann Golf Designs and a frequent GCI contributor.

ers, does it really make sense to simplify golf courses en masse? What happens when these novices develop into intermediate players – won't they go elsewhere? I have to laugh when I hear people reminisce about the crappy old munis they played as kids. Yeah, they might romanticize those courses, those memories – but they wouldn't be caught dead playing those tracks today. They were all they knew back then. When they got a glimpse of what a good course could provide, in terms of value, there was no going back.

We need to do a better job of creating and preserving value for our customers, the golfers at



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@jeffreybrauer.com.

TREE PLANTING – GOLF DIVISION

Given the importance of trees to your golf course, “now” is always the time to develop a long-term plan for these important landscape elements. Some courses hire landscape architects for tree planting plans, failing to realize what a golf course architect brings to the task. Those talented, well-intentioned landscape architects then often locate the wrong trees in the wrong places, out of an ignorance of good golf. Many golf course architects are also landscape architects, and can consider all aspects to your tree planting master plan. These will include:

IT'S A GOLF COURSE. Strategy and playability trump landscape beauty. That small tree planted on the inside corner of the dogleg may eventually grow into a problem, blocking shots or narrowing the play corridor. Only golf course architects know what those effects may be. Golf course architects also understand where trees may aid safety, frame or block views, control and direct traffic, etc.

I once hired a non-golfing, college student as a summer intern and took him to a meeting for experience. Ignoring my instructions to remain silent, he burst in to suggest plantings of pines in play areas, believing that lost balls contributed to difficulty, which he thought was a good thing on a public golf course.

It's not an arboretum. Turf health also trumps landscape beauty, making trees of secondary importance to shade, framing, safety, etc. A golf course architect also considers the relatively high cost of various species (such as breaking limbs and short lifespan of cottonwoods) or use of attractive, but non-native species that require regular high maintenance practices that don't necessarily reflect in your bottom line when devising a tree plan.

IT'S NOT AN ARBORETUM, BUT... While it's usually best to avoid the highly flowered Augusta National look in most cases, sometimes, landscape accent is required. A common mistake is to put ornamental plantings in areas where they will gobble golf balls. A golf course architect will know where limited ornamentals will get multiple views, while avoiding slow play.

IT'S NOT A SOD FARM, EITHER, BUT... Golf turf often has higher traffic than a park, and the turf takes precedence. Tree locations should consider allowing early morning sunlight to reach tees and greens.

WATER CONSERVATION. Studies show that most trees require most soil moisture than turf. Most courses need to conserve water, so golf courses should factor landscaping into their irrigation scheme. Some locales have ordinances dictating both decreased irrigation use and increased tree planting, which can be contradictory. One way to counter it is to use water miser trees, wisely incorporate native species. In some areas, water quality affects tree canopy, requiring drip irrigation. Irrigation lake location/expansion/design etc. is also best suited for a golf course architect to design.

LONG-TERM EFFECTS. If done as part of a long-term master plan, the golf course architect will consider not only where the greens and tees are now, but also where they will be at the completion of the master plan.

It's not an arboretum. Turf health also trumps landscape beauty, making trees of secondary importance to shade, framing, safety, etc.

LONG-TERM EFFECTS PART II. A healthy tree community requires annual replacement of 2-10 percent of its total trees. A careful tree management plan allows you to maintain a majority of your trees in their primes. Long-term thinking also reduces the emphasis on a currently popular, but unproven trend, which may not be durable – think dutch elm disease. I've seen young landscape architects ignore hard-learned past lessons in using borderline hardy trees in tough climates. Old timers know that extreme conditions killed off similar trees well before the “young pup landscape architects” were even born.

CLUB POLITICS. Given the sensitivity towards tree issues, your golf course architect should be more in tune with the course politics, and probably better at guiding the decisions through your political process.

SHORT VERSION. Don't forget your trees in long term planting, and don't forget that your golf course architect is probably the most conversant in how trees affect your golf experience. **GCI**

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

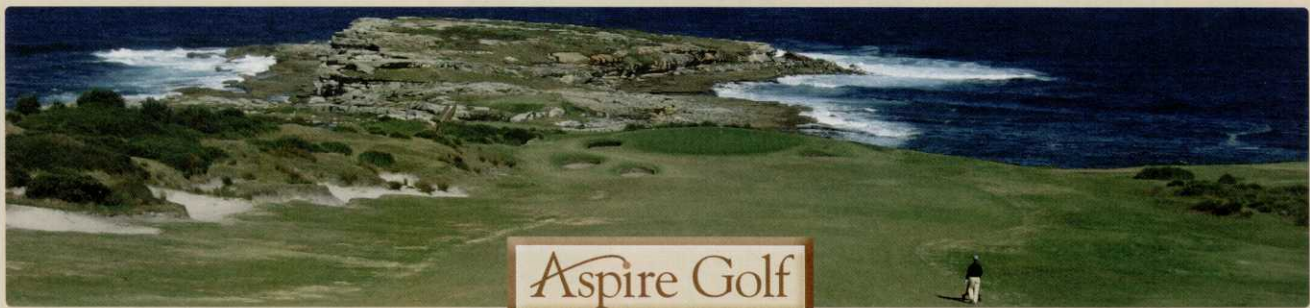


Travels With Terry

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.

RACKS FOR SPARES

This triangle-shape design houses two sets of triplex greens mower cutting units along with one set of verticut reels. The 1 x 1/8-inch thick welded mechanical square tubing is 50 inches high, 32 inches wide with 5-inch diameter heavy-duty rubber caster wheels. The height is limited to no higher than chest height for safety and for easier handling. The platform shelves are 12 x 24 inches using 1/2-inch thick CDX plywood attached to the 1-inch square tubing with #10 self-tapping screws with #10 fender washers. The backstops for the rear rollers are 2 1/2 inches high and 18 inches apart that are welded in place. The triangle shape and caster wheels make it very easy to rotate the rack for easy on and off of the spare units. The materials cost about \$100 and it took about six hours of labor time. Another option would be to use aluminum, which is lighter, but more costly and difficult to weld. Tom DiFonzo, CGCS; Jason W. Bryant, equipment manager; Steve Powell and Mario Linardo, assistants, make up the team at the Laconia Country Club in Laconia, N.H.

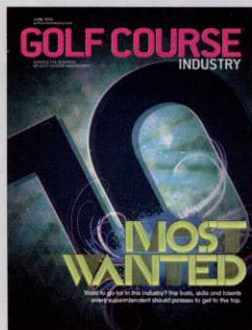


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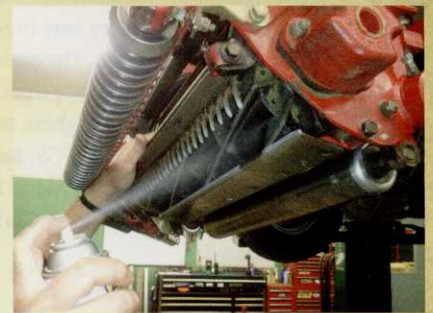
Travels With Terry

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DRY FILM REELS LUBRICANT



The greens and tee mowers cutting units are washed after each daily mowing and then allowed to air dry. The reel-to-bedknife adjustment is completed and then a light coating of Zeptron dry film lubricant (www.zep.com) is applied to the reels and bedknives. This procedure keeps the edges clean, keeps them from rusting and grass blades will not stick to the metal. Zeptron does not contain silicone, moly or graphite, so it is a non-staining film, which is also a dry and odorless compound. The fairway mowers also receive the lubricant after each usage. Using this lubricant eliminates the need for pre-cleaning with air prior to washing with water. Each can costs about \$10 and it takes less than a minute for each cutting unit. Jason W. Bryant is the equipment manager, along with Tom DiFonzo; CGCS, and Steve Powell and Mario Linardo, assistants, make up the team at the Laconia Country Club In Laconia, N.H. GCI

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(TIER IV continued from page 73)

in the mid 1990s.

Many Jacobsen models will ultimately go through as many as five different lower-emissions standards: Tier 1-3, Tier 4 Interim, and Tier 4 Final," Luken says.

"In past tiers, the adaptation of the new lower-emission-com-

pliant engines into equipment was more streamlined," she says. "In most cases the changes were internal to the engine with minimal mechanical and electric affect to the host pieces of equipment. Therefore, the cost to the market place were typically absorbed or incorporated into normal pricing cycles."

"The best way to lessen the impact is being proactive in planning out your equipment purchases or leases for the next eight years. Whether you have the capital money to spend or not, there should always be a plan."

*– Stephen Tucker, equipment manager,
Four Seasons Resort and Club*

pliant engines into equipment was more streamlined," she says. "In most cases the changes were internal to the engine with minimal mechanical and electric affect to the host pieces of equipment. Therefore, the cost to the market place were typically absorbed or incorporated into normal pricing cycles."

Now with the upcoming new Tier 4 Final, the cost to make engines and equipment meet the lower emission standards is much greater – significant R&D, engineering, development and testing investments are being spent by both engine and turf equipment manufacturers to ensure their ability to meet the standards, Luken says.

"Tier 4 Final compliance means much more than just an engine change," says Luken. "There are many more components and subsystems external to the engine that will need to adapt."

According to Luken, the Tier 4 Final turf equipment will be outfitted with new engines and exhaust systems with advanced electronic controls, additional filtration and after-treatment, and updated cooling systems, to name a few. To accommodate

these new, additional, and larger components, many turf equipment chassis, engine compartments, and functional controls require redesign... leading to added costs.

Young agrees that the previous tiers of compliance haven't been

as onerous in terms of technology, complexity or cost.

"Most have been transparent – or of nominal consequence – to the end customer," he points out. "That says, we are always looking at alternative fuel/energy options, many of which have benefits – one being lower emissions – but typically come with a cost."

As for the increased cost to the consumer, Young says attempts to lessen the financial impact by Toro is always ongoing.

"One thing to remember in this is the engine, and decks/cutting units are usually the majority of the expense as it relates to a mower," Young says. "So, when the cost of the engine goes up significantly, you have to look very hard at the rest of the machine to recoup or find cost savings to offset, and weigh that against what those may mean in terms of performance and/or customer satisfaction."

Stephen Tucker, equipment manager, Four Seasons Resort and Club, Dallas at Las Colinas, believes looking well into the future will soften the economic impact of Tier IV regulations.

The best way to lessen the

impact is being proactive in planning out your equipment purchases or leases for the next eight years, Tucker says.

"Whether you have the capital money to spend or not, there should always be a plan," he says.

Tucker also believes general managers and owners need to get educated on Tier IV now so they can make the right decisions going in, or at least know the impact.

"It is much easier to plan for bumps in the road than to have to make a decision once you have it right in front of you," Tucker says.

He adds that everyone needs to be open to the alternatives such as gas engines.

"At the end of the day, if we can get the grass cut without sacrificing quality for less money, then that is the decision we should be making right now," Tucker says.

While the new systems and technologies come with a price, they may also allow improvements to engine noise, sound levels, performance and diagnostic capabilities that may provide return on the purchase price investment, according to Luken.

"Jacobsen is also exploring innovative, non-conventional approaches where technically feasible to deliver lower emissions and meet compliance where needed using additional non-diesel power to manage peak power demands," Luken says. "A hybrid-powered solution would alleviate a portion of the equipment's total cost of ownership by offering fuel savings up to 40 percent annually."

She points to the Jacobsen Eclipse 322 riding greens mower as an example. It utilizes true hybrid power – lower hp engine coupled with buffer electric power to deliver equivalent total system power – and when com-

paring that to other all-engine-powered and hydraulic machines in its class, it delivers significant annual fuel savings, as well as saving on hydraulic oil since it is an all electric machine.

Jacobsen offers an online cost savings calculator to estimate possible savings (www.jacobsen.com/eclipse-calculator/).

If the bottom line is cost, Tucker sees a great deal of uncertainty.

"In an economy that is unstable with rising fuel costs and a business that needs some normalcy, this will make an impact which some are addressing now," he says. "We have been asking for advancements in technology over the years and the manufacturers have delivered with hybrids and such.

"However, at the end of the day, in the current economic climate," he adds. "We just need to get the grass cut for the least amount we can do so without impacting the quality.

"We can work on advancements later," Tucker concludes. "Let's make some cost-effective machines and get past this rough spot, then push toward technology advancement again."

Patterson knows superintendents and course management will adapt.

"The IGCEMA's tag line is 'Educating technicians for the future' and we hold the belief that any new technologies developed within our industry can/will be mastered through education," Patterson says. "Just as with any other new technology (or change), most will embrace it, many will complain, some will resist it, mistakes will be made, but ultimately it will become mainstream." **GCI**

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

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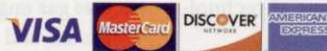
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(IRRIGATION continued from page 62)

pipe and wire, communication cable to the halfway house, aerator wire and wire or piping to restrooms. If you want to include any of these items in your project, add them to the budget, but make sure you bid show them and bid them as separate items as again, they are not part of the irrigation system and can then be easily removed from the project if there is not enough money. And you might think about adding a lightning detection/protection system, either with or without horns/sirens.

You also need to include your design fees, staking fees and engineering fees. And if you want a GPS as built, then that fee, as well. You may also have a programming fee for your central depending where you are located and who is providing the programming.

Lastly you need to think about rock.

If you're lucky enough to not have any on your course, you just saved a lot of money. Odds are you have some and it has to be carefully budgeted. You need to use your experience digging on the golf course and how much exposed ledge there is. If you have rock walls on the golf course that's a good sign that you have lots of rock because it had to come from somewhere.

Rock is the one big "if" and you can't afford to be very far off in its budgeting. You'd rather be over than under, trust me. I recently broke my course record with \$560,000 of rock costs on an 18-hole system. That's not a number you can afford to miss in the budget.

Your budget should also have a contingency. I am not a believer in big contingencies for golf course irrigation systems. If you and your designer do your due diligence up front so you know all your costs, you won't have to carry a large contingency and will come in on budget.

Make sure you have good numbers when you go to the membership for funds and/or approvals. This means have a design and if at all possible hard bid numbers, especially if your course has a reputation for being over budget on projects.

Members never think you will come in on budget so they automatically add in their head to whatever number you give them. They cannot argue with hard numbers, just estimated ones. **GCI**

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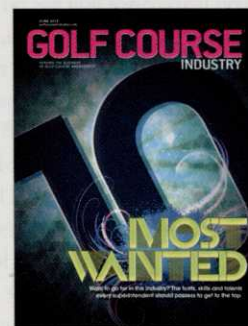
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Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 216-236-5854.

PLUM PERFECT

NOTE FROM PAT: For a couple of decades, I've tried to write columns that offer perspective and insights for superintendents. Recently, I read a blog post by Adam Garr, superintendent at Plum Hollow CC in Southfield, Mich., and realized I could never write something that captures life in the crazy world of golf course maintenance as well as his words. I just couldn't write it better than this...so we're reprinting Adam's blog post here to give it the attention it deserves.

I'm a golf course superintendent. I wake up before the birds. I am fueled on caffeine, sugar and adrenaline. I have the worst farmer's tan you've ever seen. I grind my teeth when I see a cart parked too close to a green. I don't punch a clock so I never know when my day will end. I bite my tongue when I am regularly assaulted about green speed. Most people think all I do is drive around all day on a cart. I know the golf course better than the most-tenured member. I am a motivator, a scientist, a counselor, a disciplinarian, a politician, and a psychologist – sometimes all at the same time. I race the setting sun on my way home. And I wake up and do it again the next day.

I'm a superintendent and I love my job. But there's a hidden cost to this business, and it's not something you learn in turf school. It's something you learn once you get out here and realize this isn't just a job, it's a way of life. You must be committed to what you're doing, and you must believe in yourself and get your staff to believe in you. You must be the hardest working guy on staff, and lead by example. You have to love the course like it's your own property – but it's NOT your property, it belongs to the members and you must never forget that.

At Michigan State University, I learned all about soil profiles, turfgrass physiology, pesticide applications, and just about every aspect of golf course management with the exception of one glaring omission: balancing one's

life with "the job."

At times I feel like my standards are higher than the expectations of my membership, and most certainly my budget. It's tough to reconcile the difference sometimes. If I want something done outside my budgetary constraints, I end up doing it myself on my own time. It's a curse to pursue this level of perfectionism, but

I'm a superintendent and I love my job. But there's a hidden cost to this business, and it's not something you learn in turf school.

it drives me almost as certainly as it does for many of my peers. I love hard work, getting dirty, and going home with the scars to prove it. I love seeing the finished product. I like being proactive, not reactive. It becomes an addiction over time.

But this level of commitment to the job comes with a high cost. I have missed birthday celebrations, weekend trips up north, weddings, barbecues, and sporting events because the course called to me louder than my family. Other times I came home so tired, I was virtually useless around the house. This loss of balance catches up to you over time, wears on you, wears harder on those around you, and eventually it forces you to take notice that something's missing.

A couple weeks ago, a phrase popped into my head and has stuck with me ever since: "Don't blame the job for your own personal shortcom-

ings. It all comes down to personal choices and making time for the things that really matter."

Do I really need to be here 15 hours a day, essentially watching the grass grow at times? I have two young daughters at home, and they need their father more than the golf course (needs me) at 6 p.m. on a Sunday. There is only so much I can do out here, anyway. I am not Superman. I have limitations, both physical and mental. I am no good to anyone worn down, tired, and mentally fatigued.

If you find yourself nodding your head in agreement, then my advice is to find a way to balance your life.

Make it work. Find the time, and make the time. Commit to a life outside of the golf course. Find a hobby, and one that both you and your family can all enjoy. The course will still be there tomorrow, and young kids grow like weeds. Blink and you'll find yourself scratching your head wondering where all that time went.

I'm certainly not advocating for you to abandon your responsibilities at work, rather to encourage you to examine how you choose to budget your time. They don't teach you this stuff in school. It's all right to have lofty goals, and to continue that endless pursuit of perfection, but every man must know his limits.

Are you willing to pay that high of a price?

Sometimes there is a cost for trying to be too super. **GCI**

Adam Garr's Plum Hollow maintenance blog is at bit.ly/N8uV9M

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