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

DEBATING FAIRWAY WIDTHS

Superintendents strive to reduce maintained areas, and it makes environmental and economical sense to reduce fairway acreage. However, the impact on golf must be considered before undertaking such measures, since the course exists for golfers' pleasure. At most courses, narrow fairways decrease revenues by slowing play and reducing enjoyment. Players go elsewhere, offsetting much of the cost savings.

Fairway widths range from 25 to 65 yards, with medium widths of 35 to 45 yards. Widths vary for a variety of reasons, including course theme, hole design, natural conditions and the effective throw of the irrigation system.

For example, dense trees often suggest narrow fairways, while prairie sites and public courses may feature wider fairways to fill space and account for windy conditions and poorer players. Many older and formally open courses have planted trees without considering their full growth potential, and end up narrowing fairways as the trees matured. Club members see tournament courses on TV with narrow fairways and often follow suit. However, fairways are often narrowed specifically for tournament play, so clubs that maintain these widths year round create conditions that may play too difficult for the average member.

Everyday golfers prefer hitting drivers on long holes, leaving layups to basketball, so most fairways should accommodate full drives. The USGA Slope Rating Charts say that scratch players need 32 yards and 20 handicappers need 40-yard widths to regularly hit fairways, making that range a good "standard" width. Fairways can narrow gradually from 200 to 300 yards off the tee to make them tougher for long hitters than for average players, generally accommodating all levels of player.

Every player, though, achieves success through different combinations of driving length, driving and approach accuracy

and putting and chipping skills. Standard fairway widths favor one type of player (wide fairways favor the "bomber" and narrow fairways favor accuracy), while varying fairway widths – from 25 to 55 yards at the prime landing zone with all widths in between – favor different players on different holes and provide more competitive golf and enjoyment.

Standard fairway widths favor one type of player ... varying widths – from 25 to 55 yards at the prime landing zone – favor different players on different holes and provide more competitive golf.

Width variation shouldn't be arbitrary. Longer par-4 holes should generally get wider fairways since golfers need to hit big drives to get home in regulation. While longer hitters probably want short par-5 holes to have wide fairways to let them really rip a tee shot to get home in two, shorter hitters see this as an unfair advantage. Architects normally, but not always, make par-5 fairways narrower than par-4 holes to add to risk to getting home in two.

Shorter holes can have precision or layup tee shots strongly suggested – but not demanded – by hazards and narrower landing areas.

Layups work best where they create a two- to three-club approach difference with a maximum length of 175 yards, because few lay to create substantially long approach shots.

If all long par 4s have wide fairways, while short ones get narrow fairways, they may get too similar. Some long holes

should have narrow fairways and vice versa, just for variety.

Individual fairway widths also should consider natural conditions and play factors like:

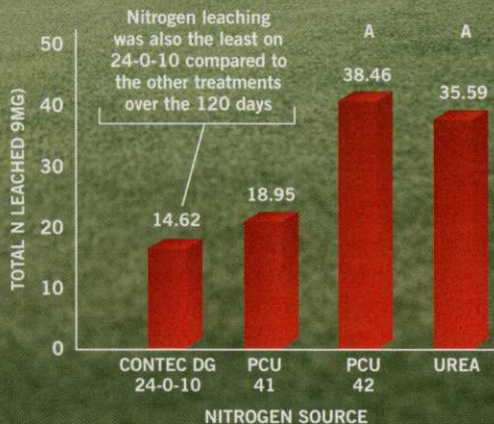
- Hole spacing – Where holes are close together, narrower fairways keep them better separated;
- Hazards – Tough and/or numerous hazards usually demand a little more room to operate, as do landing areas with hazards on both sides of the fairway instead of just one;
- Prevailing winds – Strong cross or head winds necessitate wider fairways;
- Fairway slopes – Landing areas with either steady cross and/or down slopes cause more roll and wider fairways to hold more shots, especially on reverse-slope doglegs (i.e. the outside of the dogleg being lower than the inside);
- Round position – Most golfers prefer the opening holes be wider, especially if you have no practice range or they haven't allowed time for warm-up. It also speeds play;
- Approach and putting difficulty – In most cases, shot difficulty should probably be averaged out on a hole. Holes with hard tee and approach shots plus difficult putting should be rare, because there is too little reward for a well played shot (and they are not much fun).

It can be a better option to reduce fairway acreage by starting fairways further from the tee, if you limit forward tee carries to 70 to 90 yards, middle tee carries to 100 to 120 yards and back tee carries to about 180 to 200 yards. With longer carries, golfers may not be able to reach the fairways in stiff headwinds. So, it's better to be somewhat conservative, especially for the forward tees.

A little design thought goes a long way in creating enjoyable golf, and fairways are too important to be designed, cut, or maintained without thinking through play considerations first – even if there is some mowing to be saved. **GCI**



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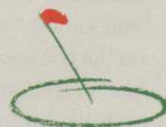
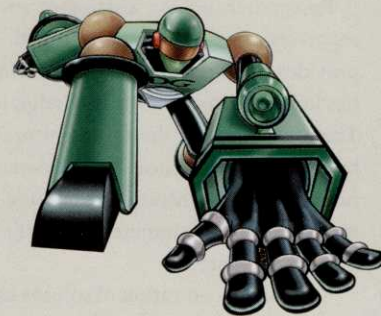
New University Research Concludes Contec DG Provides Superior N Uptake While Minimizing Leaching

The University of Florida, along with seven other well respected universities, recently released 2008 Contec DG test results.* The purpose of the testing was to determine the effects of Contec DG on turfgrass quality, growth and N uptake as well as potential N leaching losses. The charts above provide telling data of how Contec DG performed on Fairways vs. competitive materials. The Research Summary states Contec DG:

- "...produced a higher quality turfgrass..."
- "...contributed less potential environmental impact due to reduced leaching of N."

*See your territory manager for specific trial data.

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Erik Christiansen is a licensed irrigator and president of EC Design Group, an irrigation consulting and water management firm based in West Des Moines, Iowa. A board member for the American Society of Irrigation Consultants, Christiansen can be contacted at erik@ecdesigngroup.com.

ANSWERS FOR EFFLUENT WATER CHALLENGES

There's no question that high-quality water is becoming limited and turf professionals throughout the country are seeking alternative sources.

Experts say sewage effluent – the wastewater from sewage treatment facilities – is probably the most available alternate source of irrigation water for turf. This trend began more than 30 years ago in the arid regions of the Southwest. In recent years it's become increasingly popular in humid regions as well, as older treatment facilities have been upgraded and now produce a very high-quality effluent.

When looking for alternative water sources, our main challenges are water-quality problems caused by soluble salts, which – by the way – can occur in nearly any region of the world. Increasing numbers of golf courses and commercial sites are being encouraged to use alternate water sources potentially high in saline, like recycled municipal water, for irrigation. Through this span of use, we're seeing the effects of excess soluble salts on turfgrass plantings in a wide range of climates.

Water analysis and periodic monitoring have become necessary parameters for sound irrigation management. *Before a superintendent commits to using any alternative water source for irrigating turf, he should conduct a sodium adsorption ratio (SAR) test to estimate the source's sodium hazard.*

Researchers believe a standard water report for commercial applications provides numerous data, some of which has little bearing for turfgrass irrigation. Therefore, any test should be performed by a qualified laboratory that understands turf applications. Most experts agree the most important parameters for turfgrass management are:

- Total concentration of soluble salts (salinity);
- Sodium (Na) content;
- Relative proportion of sodium to calcium (Ca) and magnesium (Mg) (Sodium

Adsorption Ratio or SAR);

- Chloride (Cl), boron (B), bicarbonate (HCO₃), and carbonate (CO₃) content;
- And pH.

Other parameters you're likely to find and should review in a water test report are nutrient content – nitrogen (N), phosphorus (P) and potassium (K) – chlorine content and suspended solids.

Once you know the results, you can develop a plan of action. I highly recommend every golf facility use the talents of a professional agronomist to interpret the alternative water source's effects on soils. A proper agronomic program renders most water sources adaptable for turfgrass irrigation.

After a comprehensive plan is in place with your agronomist, potential remedies for poor irrigation water quality are many and may include any of the following:

- **Sulfuric acid** is commonly used to reduce carbonates and bicarbonates by converting them to a gas and literally "fizzing" them away. The remaining sulfur then converts the sodium to sodium sulfate, similar to gypsum. Sulfuric acid, however, is expensive and can be dangerous to handle. It also may deteriorate any metal or cement that it contacts within the irrigation distribution system. There is a risk of property damage and personal injury.
- **Sulfur burners** are an alternative to sulfuric acid. Sulfur burners heat soil sulfur to create sulfuric acid, which "fizzes off" bicarbonates, similar to what sulfuric acid does. Sulfur burners are safer to operate, but still can harm metal and cement piping. The crudeness of the equipment can lead to over acidification of the irrigation source. They also can be unsightly out on the golf course, require manual storage and reloading of bagged sulfur and may emit a burnt sulfur smell when operating.
- **Urea-sulfuric acid** is an alternative to sulfuric acid that uses urea as a buffer,

making it easier to handle. Urea-sulfuric acid will contain high amounts of nitrogen in addition to sulfuric acid. This ratio can result in the over application of nitrogen while trying to supply the needed acidity.

- **Liquid calcium** is another option. The two most common forms are calcium polysulfide and calcium chloride. Liquid calcium is very expensive when comparing the cost-per-unit of calcium to solution-grade gypsum. With "liquid calcium," you must pay for a prepared liquid solution comprised mostly of water. Calcium polysulfide also emits a strong sulfur odor and can add a yellow tint to the irrigation water. Calcium chloride adds additional chloride to the effluent water, which is typically already high in chloride and does not create all the benefits that calcium sulfate does.

- **Nutrient injectors** can be used to add solution-grade gypsum, as well as other water management tools, such as wetting agents and micro and macro nutrients.

- **Non-corrosive sprayable acids** have been developed to allow targeted applications of acidity. This technology enables the user to treat potential trouble areas, such as greens, individually without any concern for nitrogen or sulfur excesses. One company has developed the technology even further by incorporating the safe acid onto a dry particle.

With such a wide variety of tools available, it's crucial that the turfgrass manager learn and understand the pros and cons of each. In addition, the superintendent may need to review all cultural practices to ensure a cohesive soil/water management plan is in place. Water reports are the equivalent of getting blood work from your physician; it's an important component to the overall health of your site. Remember, however, that water treatment is only a part of a solid, comprehensive water management plan. **GCI**

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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.

A GOLF TRIP SANS GOLF CLUBS

Two good friends of mine – Rod Johnson and the late Wayne Otto – were famous in these parts for their golf trips. They played golf all over the country, taking full advantage of golf privileges extended to them by their colleagues in golf. Everywhere they went, their clubs were in the trunk.

I have taken many golf trips myself; the difference is that I never take clubs with me. I have a dearth of ability, and the enjoyment of playing isn't there for me like it is for millions of others. The beautiful thing about golf is there are so many aspects to the game that can be enjoyed without playing. There's the rich history. There are the great players, past and present. We have the fields of play – no two alike. The opportunities to immerse yourself in the game are almost endless.

I was in Raleigh, N.C., this winter to welcome our granddaughter Ella into the world. While there I drove the short trip to Wake Forest, N.C., the former home of Wake Forest University (then called Wake Forest College). The campus moved to Winston-Salem in the mid 1950s, but Arnold Palmer was a student on the old campus starting in 1947. Mr. Palmer is well remembered there yet today, as I found out on my trip.

The Wake Forest College Birthplace Museum has a sports collection that bears Palmer's name. He came back to Wake in 2003 for its dedication. The pro shop staff at the Paschal Golf Club told me how he stopped there, too, in 2003, to reminisce about games he played on the course in the 1940s and early 1950s. We had lunch at Shorty's as Palmer did many times when he was a student and again in 2003. He wrote a thank-you note to them and they displayed it proudly.

The half-day spent in Wake Forest was the culmination of my nearly lifelong interest in Mr. Palmer.

We left Raleigh and headed for Providence, R.I., to attend the New England Regional Turfgrass Conference, and

stopped in Far Hills, N.J., at Golf House – the USGA headquarters and museum – to see the museum addition, not coincidentally named the Arnold Palmer Center for Golf History.

It's been described as the world's premier collection of golf memorabilia. To me, that's an understatement. The collection is so well presented that you're drawn in and focused the entire way through. We maxed out the experience on a cold Saturday, nearly by ourselves. The self-guided tour begins in the Arnold Palmer Room, a room filled with items and information about his career.

A Palmer portrait greets you as you enter the room. Artist Jim Chase created it, using quotes from Arnold's career to form the lines and shades that make up the portrait. It took him 14 years to complete, working at the rate of eight words per hour. He also had to research the quotes to verify them. What a piece of artwork he created. Palmer himself was overwhelmed by Chase's interest in him and the work itself.

You move from room to room, each dedicated to a period of golf that's easily identifiable. The "Golden Age" is followed by the "Depression and World War II," followed, in turn, by a room of displays and collections called the "Come-back Age." The "Age of Superpowers" becomes very familiar to people my age; it was dominated by many players alive yet today. The "Global Game" focuses on Tiger Woods and players we currently watch. We finished our visit with walk-throughs of the Ben Hogan Room and the Bob Jones Room.

We left Far Hills impressed with the great gift the USGA has given golf, and we headed north.

I usually have a chance to visit one of golf's great treasures each year – Geoffrey Cornish.

Mr. Cornish lives in an area of Amherst, Mass., called Fiddlers Green. We arrived there on a cool Sunday and, in

true New England fashion, Geoffrey was cutting wood in his backyard, a bit of the four cords he burns each winter. He invited us into his cozy home and we visited in comfort and warmth, surrounded by lots of books.

Best known for the hundreds of golf courses he's designed, Geoffrey also has been a premier author of books related to the endlessly interesting subject of golf courses, their design and maintenance. We had a grand time talking about golf – not players or tournaments, but rather superintendents and architects and academics and authors. There isn't anyone I know who's more interesting to visit with or easier to talk to. It was a highlight of our trip without clubs.

I attended the New England Regional Turfgrass Conference, a truly outstanding regional meeting that has grown under the leadership of Gary Sykes, a former golf course superintendent in Rhode Island. We headed home with one more stop in mind.

We returned on Interstate 80, a route that takes you through Youngstown, Ohio. Youngstown was the home of the first GCSAA (NAGA back then) president and one of its founders – Col. John Morley. He is also the namesake of the GCSAA Distinguished Service Award.

I called Margo Szabo, one of the excellent staff members at GCSAA, to see if she knew where Col. Morley was pillowed. She didn't, but an hour later she called with detailed directions to the Tod Homestead Cemetery on the eastern edge of Youngstown.

John Morley rests with his wife and two other Morleys in the Acacia section of the cemetery, an area reserved for Masons. His headstone indicates he was a 32nd degree Mason. I was proud to pay quiet tribute to the man who did so much to get our profession rolling.

With that we headed home, well satisfied with another golf trip that didn't see us hit even a range ball. **GCI**

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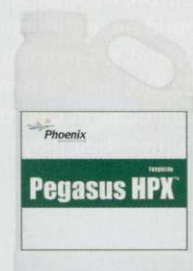
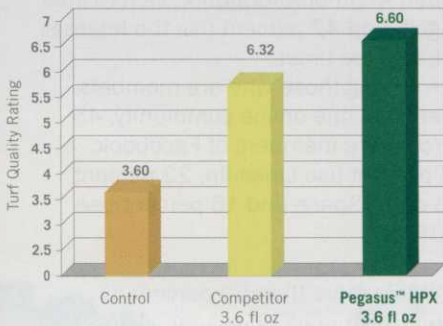
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WOMEN'S WATCH

The independent Women's Golf Market Study details a range of attitudes of serious women golfers about the game, equipment and apparel they wear. Golf Datatech, an independent research firm, conducted the study.

More than 1,000 female serious golfers (those playing a minimum of 12 rounds per year) participated in the survey, which was conducted in November 2008. A majority of female respondents live active lifestyles and have an average household income of six figures. Key findings are:

GOLFING HABITS

- Respondents were asked what they enjoy about playing the game – 91 percent said they like being outdoors, 82 percent enjoy the time with friends, 80 percent are always trying to improve, and 79 percent enjoy the game's challenge.

- When asked to identify the factor they enjoy best about playing the game, 32 percent chose the game's challenge as their primary motivation, and 18 percent said being with friends is most important.

- One in three say playing the game costs too much, and almost half said they'd be likely to play more golf if it cost less.

- 21 percent disliked that a round of golf takes too long to play; 40 percent are constrained by limited leisure time; and 31 percent work too much to play as much as they'd like.

SPENDING ON GOLF

- The average respondent estimates she spent slightly less than \$700 during the past year on golf equipment, and 18 percent said they spent more than \$1,000. Respondents estimate they spend an additional \$515 on golf apparel; 14 percent spend above \$1,000; and 74 percent believe technology in club designs can improve their play significantly.

MEDIA HABITS

- 55 percent said they watch golf or golf-related programming on TV at least once a week; 14 percent watch golf three to four times a month. Of those who watch golf or golf-related programming on TV, 94 percent said they frequently watch the PGA Tour, and 80 percent watch the LPGA.

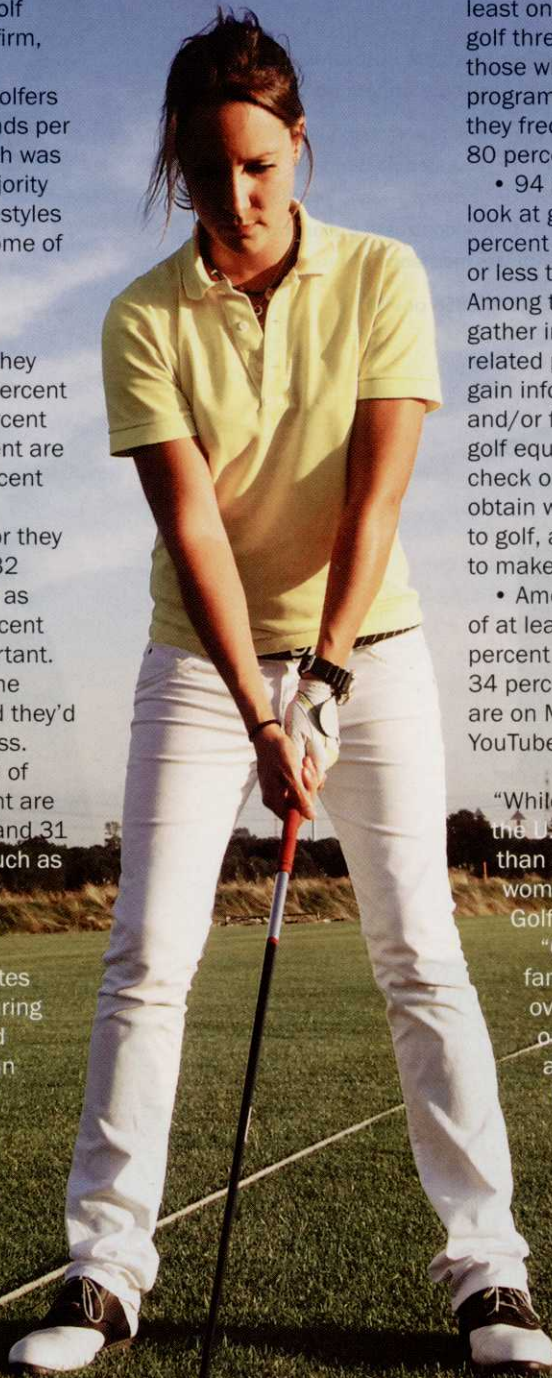
- 94 percent use the Internet to look at golf-related Web sites, and 80 percent use it 25 percent of the time or less to look for golf-related content. Among those who use the Internet to gather information about golf and golf-related products, 58 percent use it to gain information about golf courses and/or for directions, 55 percent get golf equipment pricing, 50 percent check on equipment specs, 49 percent obtain weather information as it relates to golf, and 42 percent use the Internet to make tee times.

- Among those who are members of at least one online community, 45 percent are members of Facebook, 34 percent use LinkedIn, 22 percent are on MySpace and 15 percent use YouTube.

"While more than 50 percent of the U.S. population is female, less than 25 percent of total golfers are women," says Tom Stine, partner of Golf Datatech.

"Combine the cost, time and family pressures with their overall perception of the male orientation at the golf course, and it's not surprising women leave the game as often as they enter. This is the basis for the women's golf population to be at a near standstill."

Source: Golf Datatech





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Ron Dodson, founder of Audubon International and the Cooperative Sanctuary Program for Golf Courses, is working on several new endeavors that are more global in scope.

