There's a spot for a new controller on your course. How will you II it?

Fact is, this used to be an easy answer. There were only a few choices in irrigation system controllers, a n d more or less they performed roughly the same. Well, that has changed quite a bit. The demand for increased water conservation, more exibility, and better ef ciency has led to dramatic breakthrough technologies, and many new options. So what used to be a routine decision isn't. (And, of course, irrigation controller technology isn't something most of us stay as up-to-date on as say who's at the top of the leaderboard at a PGA TOUR event, or who was just voted off the island last night.) So where to go from here? That's the million-dollar question. Literally - the right controller system can have that much of an effect. First off, don't just consider the brand. Instead, look at capabilities too. If you do,

a year. Sometimes as much as 40% in total power and water costs. This same system also allows any con-

troller to act as a central control for all the rest. Why does this matter? It's

> a huge time saver if you operate without a central, or during a renovation. Instead of having to visit each and every standalone controller on the course, you can just go to one. (Or simply hook one up to a maintenance radio and control them all. Or even better, connect one to the internet with a modem, and manage the whole irrigation system from anywhere you can access the internet, like the clubhouse—or perhaps the couch in front of your TV at home.) Then, there's the question of how easy the controller is to upgrade in the future—as more and more sensor and web-based technology comes online. Here again, the answer is simpler than you might expect. Only one control system is totally software-based. Which means upgrading is just a matter of con-

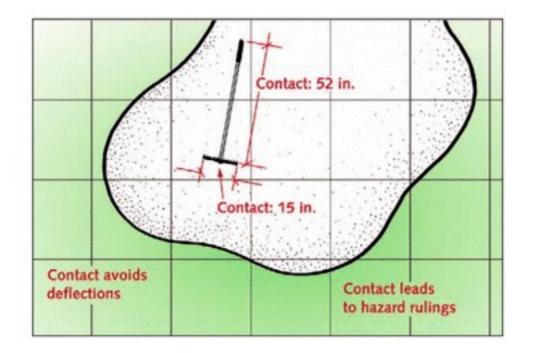
you'll discover your choice is simpler than you might think. Because there are significant differences. For instance, there's a control system that can offer much greater precision (to the second instead of the minute) in setting rotor run times. Why is this important? Because shaving seconds of program run time can save hundreds of thousands of gallons of water over Golf of

necting the controller to a laptop and taking only a few minutes to upload the latest software. What is this advanced system? It's the John Deere Aurora Control Series. Sure it might not be the rst name you consider in irrigation, but when you look at everything it offers, it might be just the right one to II the position. Like to learn more? Call your local John Deere Golf distributor or visit www.JohnDeere.com/Aurora.

EXCLUSIVE BIR BIRBATION SUPPLIER

For the full story visit www.JohnDeere.com/Aurora.





Continued from page 50

• **Ruling complexities** — Greatest potential. Grade: F

• Access to the golfer — There's potential to disturb more sand than necessary to reach the rake. *Grade: D*

• Aesthetics — Mostly, it places the rake out of view. *Grade: A*

• Interference with maintenance: Avoids the necessity of having to pick up rakes during mowing. *Grade: A*

• Wear and tear to the rake: Not ideal. Not only wet, but also gritty. *Grade:* C

• **Speed of play:** Although easy to find, it may involve more raking time and infinitely more ruling issues. *Grade:* C

• Game traditions: While the rake may involve a ruling, it's not likely to deflect a ball out of a bunker. A ball resting against a rake within a bunker would likely be somewhere else in the bunker had the rake not been there. *Grade:* C 17 inches, or 75 percent less surface contact. While the variable of a rake interfering with a ball in flight is at play with the propped rake, balls in and around bunkers are more apt to roll and bound near the ground, so this factor is rather insignificant.

• Interference to play — The propped rake has the least amount of ground contact among the three positions. *Grade: B*

• **Ruling complexities** — While significantly less than with a rake entirely within a bunker, there can still be issues. *Grade:* C

• Access to the golfer — Among the best, both visually and with the exposed handle that's easy to reach. *Grade: A*

• Aesthetics — Mostly out of view. *Grade: B* • Interference with maintenance: Avoids having to pick up rakes during mowing. *Grade: A*

• Wear and tear to the rake: Ideal, with the grip and handle not having ground contact. *Grade: A*

• **Speed of play:** Easy to find, but may involve ruling issues. *Grade: B*

• Game traditions: May involve a ruling, but only remotely will the rake deflect a ball out of a bunker. *Grade: B*

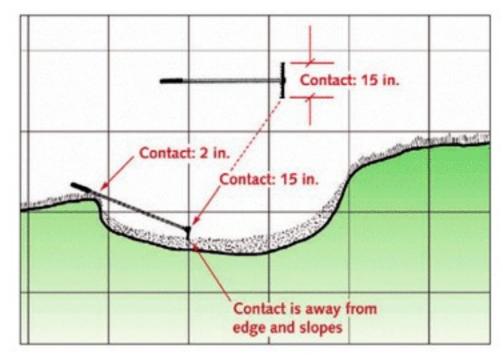
OVERALL GRADE: B+

I hope I've provided you with a pragmatic assessment of bunker rake positions - part scientific, part physics and part as if Olympic gymnastics judges were in charge of the scores. Certainly, not everyone will agree with my findings. For some, a more in-depth evaluation at their courses may show the issues of maintenance or aesthetics deserve less or more weight. For others, ruling complexities are so rare they should not be a primary influencing factor. A worthwhile exercise might be to assign your own grades. But, in the end, there are compelling reasons to take a serious look at the propped Position for bunker rakes. The great rake debate may be closer to resolution than ever before.

OVERALL GRADE: C+

Propped position

In this position, the rake is placed in the bunker with the tines down and the handle propped on the lip. Ideally, the length of handle will be a foot or less beyond the lip so it can be grabbed,



yet does not place the tines too far up on steeper slopes. The theory holds there's far less surface contact with the course.

While a rake lying on the ground or sand involves 67 inches of surface contact, the propped rake has just Forrest Richardson is a golf course architect based in Phoenix. In addition to his work for clients across the United States, Mexico, Canada and Europe, he's the author of three books on golf architecture: "Bunkers, Pits & Other Hazards," "Routing the Golf Course" and "Of Course." He can be reached at www.golfgroupltd.com.

Crowding Out *Poa*

Interseeding these two bentgrass varieties proves an effective tool in the battle against annual bluegrass

By Christian M. Baldwin and Doug Brede

Golf course superintendents are all too familiar with *Poa annua* and the increased management inputs associated with managing *Poa annua* compared to creeping bentgrass. Therefore, interseeding creeping bentgrass into *Poa annua* is a goal superintendents have tried to achieve for years, often ending in frustration.

As recent research suggests, interseeding is not as simple as throwing out any bentgrass cultivar seed, topdressing and expecting bentgrass to overrun Poa annua. Traditionally, a fall or spring date is preferred when seeding bentgrass. However, when interseeding bentgrass into an area with a high Poa annua seed bank, Jim Murphy and associates at Rutgers University (Murphy et al., 2005) noted a June seeding resulted in greater bentgrass coverage and less Poa annua compared to a September or October seeding. The researchers also noted using an improved cultivar, L-93, increased bentgrass coverage compared to an older variety, Penncross. Similarly, at Rutgers University, Murphy and colleagues (Henry et al., 2005) noted interseeding L-93 into a 100-percent Poa annua stand at the end of June provided about 70 percent coverage, while interseeding in mid-August resulted in about 15 percent coverage two years after seeding. Midsummer seeding is an effective strategy as Poa annua, a winter annual, is least competitive because seed germination rate slows and nearly stops as soil temperatures approach 77 degrees Fahrenheit. However, bentgrass seedlings can germinate and grow through the warm summer months. Therefore, two key factors for successful interseeding include: (1) early- to mid-summer seeding and (2) using improved cultivars.

Research objectives

In a previous *Turfgrass Trends* article (Brede, 2006), it was reported that three months following interseeding in Post Falls, Idaho, with either T-1 or Alpha creeping bentgrass into a 100 percent *Poa annua* green, about one-third of the putting green was converted to bentgrass. (Jacklin Seed by Simplot released T-1 and Alpha creeping bentgrass in 2004.)

The breeding objective of these cultivars was to effectively compete with *Poa annua*, giving superintendents the upper hand when trying to convert *Poa annua*-based playing surfaces to creeping bentgrass (Brede, 2007).

To put these cultivars to the test, several interseeding trials were initiated in real-world environments on golf courses across the country in 2007. Specific objectives included evaluating: (1) best establishment techniques when interseeding T-1 or Alpha creeping bentgrass into a predominant *Poa annua* putting green and (2) best seeding rates when interseeding T-1 or Alpha creeping bentgrass into fairways.

Site descriptions

Establishment technique studies were con-



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ducted on practice putting greens. Sites included Downriver Golf Course and Esmeralda Golf Course (daily-fee courses) in Spokane, Wash. T-1 and Alpha were seeded in mid-July 2007 at a rate of 2 pounds per 1,000 square feet at both sites. Treatments included spiking, aerifying, vertical mowing, no surface disruption and an unseeded control.

Seeding rate studies were conducted on fairways. Sites included Bunker Hills Golf Course in Coon Rapids, Minn., (daily-fee) and Green Valley Country Club in Lafayette Hills, Pa. (private). Seeding rates at both sites were 0, 1, 2 or 4 pounds per 1,000 feet. At Bunker Hills and Green Valley, T-1 and Alpha were seeded on June 8 and Aug. 2, 2007. Plots were seeded using a TriWave 60-inch overseeder (Turfco Manufacturing Co., Minneapolis). For both studies, percent bentgrass establishment was evaluated.

Continued on page 56



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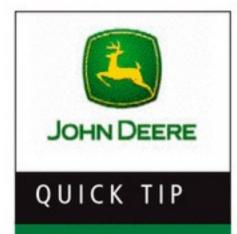
turf roots and improves turf density. Of course new Reserve is Backed by Bayer, which means all of our research and support is at your fingertips to help you create the healthiest, thickest, greenest turf possible. Because when it comes to your course, good enough isn't good enough. To learn more, go to www.BackedbyBayer.com/Reserve.



RESERVE

INTERSEEDING

The Downriver Golf Course practice putting green was interseeded with T-1 and Alpha creeping bentgrass. Note the amount of dark green bentgrass compared to the lighter green Poa annua more than a year later.



Continued from page 53

Establishment technique studies

Three months after interseeding at Esmeralda Golf Course, no trends emerged indicating one establishment technique was more beneficial than another. In fact, control plots (not seeded) had as much, if not more, bentgrass coverage than treated plots. The bentgrass seed likely migrated into control plots following mowing events, cultivation practices and/or golfer traffic.

One year following interseeding, no differences indicated one establishment method was superior to another (data not shown). By the beginning of August 2008, only 37 percent *Poa annua* (63 percent bentgrass) remained in plots when averaged across all treatments. Similar trends were noted at Downriver Golf Course as all establishment treatments yielded similar percent T-1 or Alpha coverage (data not shown).

Establishment method may be most influential four to eight weeks after interseeding. However, meaningful differences were not detected after this time period. Results suggest minimal surface disruption is required for successful interseeding of T-1 or Alpha, which means less play disruption.



Conclusion

Overall, these studies, conducted in various climatic conditions on golf courses around the country, confirmed the competitive ability of both T-1 and Alpha as an effective tool to combat *Poa annua*.

About 12 to 14 months after interseeding, averaged across treatments and sites, there was about 68 percent creeping bentgrass in the putting green trials and 41 percent creeping bentgrass in the fairway trials. Also, it's worth noting plots were interseeded in 2007 and no other interseeding events occurred in 2008.

Meanwhile, a tailored fertility or plant growth regulator program was not implemented to favor bentgrass over *Poa annua*. Therefore, these studies mimicked a worstcase scenario where minimal inputs and interruptions in play were required for successful conversion from *Poa annua* to T-1 or Alpha creeping bentgrass. Future studies will evaluate various PGR/fertility rates and timings to further promote T-1 and Alpha establishment into *Poa annua*.

With fall quickly approaching, it's time for overseeding. Timing is crucial, so once daytime temperatures begin to fall, be ready to put your seed down. Removal of excess thatch is instrumental in ensuring new seeds germinate successfully. For more information on overseeding, or to discuss the best varieties of coolseason seed for your specific needs, contact your local John Deere Golf sales representative.

Seeding rate studies

Increasing seeding rates at both sites (Minnesota and Pennsylvania) increased percent T-1 and Alpha bentgrass coverage. Specifically, one-year after interseeding Alpha at 4 pounds per 1,000 square feet, 48 percent bentgrass was noted in plots compared to only 27 percent when seeded at 1 pounds per 1,000 square feet at Bunker Hills Golf Course in Minnesota.

Therefore, results suggest best seeding rate when interseeding into a fairway ranges from 2 to 4 pounds per 1,000 square feet. Superintendents may be reluctant to seed at higher rates thinking too much seed will lead to weak seedlings competing with each other. But higher seeding rates appear to compensate for increased seedling mortality that may occur when interseeding. Christian M. Baldwin, Ph.D., is a turfgrass scientist and Doug Brede, Ph.D., is research director for Jacklin Seed of the J. R. Simplot Co. in Post Falls, Idaho.

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TURFGRASS TRENDS

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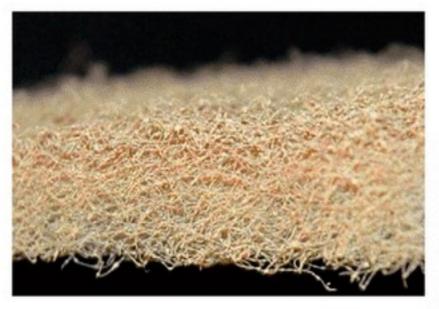
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The Company Line

BUNKER PRODUCTS

The following products are designed to help superintendents and their crews with many aspects of bunker maintenance:



Fiber Bond Corp. introduces its "next generation," white, recycled, synthetic fiber geotextile bunker liners that feature enhanced protection against sunlight exposure and antibiological growth inhibitors. The liners help maximize water flow long-term by preventing buildup that can clog liners and reduce drainage. The product range also will feature fabric-backing options for use with fine-grained soils where bunker sand contamination is of potential concern. Corrosion-resistant heavyduty steel staples are also available.



The Deep Face Bunker Rake is the latest addition to the Par Aide bunker rake line. The extra-long, 8-foot aluminum handle makes this rake perfect for large, deep-face bunkers. It virtually eliminates the need to enter the bunker for maintenance. Use this rake to vary your location and eliminate wear patterns on bunker edges. The rake features a 25-inch Accuform Ace II rake head, which is also popular with one of Par Aide's 54- or 72-inch handle options, including its new ProTect splinter-resistant handle.

eliminate stress fracture and deck replacement. Tripod polyethylene decks eliminate scalping and resist cracking and fracture.





Smithco offers the new Super Star bunker rake, which the company says is the most advanced banker rake it has ever made. The operator-friendly tractor make operation easy and safe. The Super Star offers whatever power one needs: gas, diesel or electric. The gas version's small size means better maneuverability. It also comes in a choice of two- or three-wheel drive. The electric rake can rake every bunker on any 18-hole course on a single charge, according to the company. It features four 12-volt, ultra-deep-cycle batteries. The diesel version was built to be powerful and with a long life, Smithco says. It features three-wheel drive hydraulic power steering.

and quiet operation. A simple mechanical transmission provides plenty of pushing and pulling power and eliminates the chance of hydraulic leaks. A one-piece cowling design allows for easy access to all service locations - no tools required. The optional front blade and mid-mount cultivator/scarifier have a spring-assisted lift with ergonomic handle for easy operation.



Broyhill's new Legacy PRO multipurpose bunker vehicle replaces its Highlander series and features: 3-by-3 hydrostatic AWD with zero-turn radius, a 16-horsepower air-cooled engine, automatic throttle control with speeds as fast as 12 mph, an ergonomic operator's seat with engine kill switch, improved operator controls, 12-volt power source, cup holder, rear cargo rack and headlight. The Legacy PRO accepts a variety of attachments. Midand rear-mount attachments are controlled by standard hydraulic lift. Broyhill's sand rake offers an optional finishing brush that mounts on the sand rake for absolute smooth finish in bunkesr.

For more than a decade, Eastman Industries has been manufacturing the Hover Mower, which floats on a cushion of air without wheels, allowing it to mow a variety of difficult terrain, including around bunkers. The mowers feature efficient impellers for excellent hovering and ease of operation, according to the company. Steel-handle brackets connect to the deck with reinforced metal mounts to



The three-wheeled, self-propelled John Deere 1200A Bunker and Field Rake delivers power, reliability and versatility, according to the company. With features like superior traction, low maintenance and ease of operation, the 1200A provides more machine for the money. Its powerful 9.5-horsepower, aircooled Kawasaki engine delivers efficient

Bunkers clog, having to be pumped out and rebuilt too often. With a drainage system from AirField Systems, golf courses and superintendents can enjoy a longer bunker life without the problems related to gravel lockups and clogging, according to the company. The system creates an inch of water space beneath the sand while keeping the sand in place, moving water rapidly to the drain without clogging. This means less maintenance and more time spent on other course objectives.

Continued on page 58

The Company Line

BUNKER PRODUCTS

Continued from page 57



Designed to meet superintendents' needs, the **Baroness SP05 Bunker Rake** comes equipped with two-wheel and three-wheel drive for high maneuverability, the company says. The rake also features power steering to reduce operator fatigue, and a finishing rake and brush. The easy-to-use cultivator and front-blade attachments will maintain bunkers so they always look their best.

Developed by the manufacturers of Sandtrapper bunker liners, the EC Blaster from IVI-GOLF offers cost savings for users and installers that require sod staples for product installation, according to the company. Used in construction applications for more than 10 years, the EC Blaster employs the proven performance and power of pneumatics in its operation. It sets galvanized 11-gauge wire staples with 100 pounds of air pressure. At 10 pounds, it's equipped with several time-saving features. It's easily attached to its air supply using quick-connect fittings. Loading the 50-staple clips is also easy. Just slide the spring-loaded pusher, drop the staples into the holder and release the pusher. The EC Blaster is fitted with a



side handle that can be mounted on the left or right side of the tool for increased leverage.



Built for durability, the **Magnum Maintenance Rake** from **Standard Golf** is designed as a multifunction tool that's also ideal for construction and repair, according to the company. Featuring a 66-inch straight handle, the Magnum Maintenance Rake has long teeth to tackle grading and a straight edge for leveling. As with all Standard Golf Magnum Rake products, the rake features twist and gusset bracing to improve strength and eliminate head-tohandle wobble.



Milliken & Co. offers the SandMat Bunker Liner, available in three versions to meet specific needs of golf courses around the world. SandMat provides architects with design flexibility, builders with high-quality product delivered in the widest rolls for installation ease and lower cost, and golf course superintendents with bunkers that stay more consistent and are better playing with lower maintenance costs. The best thing about SandMat is its rain-event performance, according to Milliken & Co.



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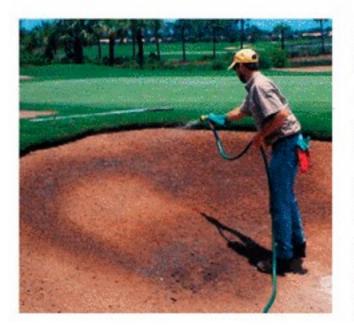


The Toro Co. offers its Sand Pro 3040 and 5040 Bunker Rakes. Equipped with a fuel-efficient, 16-horsepower Vanguard engine, the Sand Pro 3040 features improved gear-drive assisted steering, a Quick Attach System for rear attachments, increased ground clearance and a new gear system that is completely sealed from the environment. Complementing the standard series features, the premium Sand Pro 5040 offers an 18-horsepower engine, hydraulic power steering and a Quick Attach System for front and rear attachments – ensuring quality performance when faced with intimidating bunker maintenance challenges, according



to Toro. The company also offers the Sand Pro 2020. Whether raking, edging,

spiking or grading, the 16-horsepower 2020 model delivers plenty of power and productivity. It comes in two-wheel drive only.



Klingstone is a patented, polyurethane-based soil-binding agent used to line bunker cavities and prevent sand contamination, erosion and bunker-drainage problems. Klingstone is in use at many of the best golf courses in the world, including Bethpage Black Golf Course, site of the 2009 U.S. Open.

Jacobsen offers the Groom Master II, which combines ergonomics, power and maneuverability to provide solid productivity, the company says. Coming with a standard series-parallel three-wheel drive traction

system that won't slip on the loosest bunker sand, the Groom Master II is available with a Briggs & Stratton 18-horsepower gas engine or a 19-horsepower, three-cylinder Kubota diesel engine. Featuring power steering, a tilt-



ing steering wheel and a redesigned hydro pedal, it's easy to operate and comfortable to drive. The Groom Master II is available with several attachment options, including a plow, cultivator, rake and scarifier.

Ad Index

| Advertiser | Page No. |
|-----------------------|---------------|
| Agrium Adv. Tech. | 11 |
| Andersons | CV4 |
| BASF | 13, 18-19, 39 |
| Becker Underwood | 38 |
| Bell Labs | 59 |
| Bird-X | 10 |
| Club Car | 26-27 |
| DuPont | 15 |
| E-Z-Go | 3 |
| Jacobsen | 37 |
| Lebanon Turf | 46, CV3 |
| Mauget | 17 |
| Milorganite | 4 |
| PBI/Gordon | 58 |
| Phoenix Environmental | 7 |
| ProGro Inc. | 40 |
| Quali-Pro | 35 |
| Rain Bird | 9 |

| SipcamAgro | 16 |
|---------------------------|--------|
| Smithco | 43, 46 |
| SolarBee | 12 |
| SoluCal | 45 |
| Syngenta | 23 |
| Target Specialty Products | 14 |
| Tee-2-Green | CV2-1 |
| Toro | 21 |
| Turfco Mfg. | 36 |
| Valent | 31 |
| White Metal Golf | 44 |

TURFGRASS TRENDS

| Bayer Environmental | 54-55 |
|---------------------|-------|
| John Deere | 51 |

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The AutoBlanket Staple System from Nordloh Industries enables superintendents to install an erosion-control blanket and bunker liner for pennies per yard, according to the company. The AutoBlanket Staple System allows superintendents to install blanket faster, requiring less work. Installation of bunker mat can be completed up to three times faster. The hand-held stapler will increase worker productivity by enabling crews to install more blanket per day with less effort, according to the company.

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A Young Person's Game?

he accusation has been made for a while. American golfers have gone soft. Years of pampering have caught up to the best and brightest of American golf.

It's an easy accusation to make and an even easier one to refute. Regarding the latter, just look at Tiger Woods, Phil Mickelson and the U.S. Open champion Lucas Glover as examples of continued American superiority. And lest we not forget our boys who won the last Ryder Cup and our gals who won the most recent Solheim Cup.

But the future does not look bright. Maybe it's even time for the golf industry to ask why we are producing so many fine, but ultimately incomplete players.

Sure, I know you have too much

THERE'S PLENTY WRONG WHEN IT COMES TO GROWING THE GAME AMONG OUR NATION'S YOUTH. AND, BOY, DOES IT SHOW

BY GEOFF SHACKELFORD

and countless others are managed by the many wonderful regional golf associations and are doing their parts to produce future generations of elite golfers.

We also know golf courses have never been better conditioned and practice facilities are more complete than ever before.

Throw in an improved understanding of the swing, physical conditioning, hi-tech club fitting, and it all should add up to better American players. Yet, if you go to a junior or college tournament, it's hard not to think about what has gone wrong — mostly because the pace of play is so brutally slow, but also because you see such weak short games. Even worse, many of today's younger players don't seem to understand how to play golf. To know when to lay up, to know when to hit threewood off the tee and most of all, how to get up and down. Imagination has always been a tricky thing in golf — too much and you're liable to notice every single thing that could go wrong. But even in the era of hi-tech equipment and soulless setups, the sport still requires a certain amount of craftiness to succeed. Tiger and Phil remind us of this when they pull off miracle recoveries and jaw-dropping wedge shots.

Those two hucksters grew up at the end of the V-groove, persimmon, blade-iron era and before some of the hi-tech instruction made its way into the game. They also learned to play the game when it was cheaper and more accessible to juniors.

That's right, getting course time may just be what ails the American hopefuls. For all of the great things we do for the next generation, our clubs and public courses often restrict or discourage playing time. Just poking around the new and excellent playgolfamerica.com's guide to junior golf rates will tell you all you need to know: Only a handful of courses in each state have signed up to promote their rates or even suggest a desire to have the kids around. You'd think during these lean times that golf courses would take anyone's money. Even if it's a couple of bucks from a kid eager to be the next Tiger Woods.



on your plate trying to survive in this economy, but consider the numbers as of mid-July. On the men's side, five of top 10 players in the world were American, and just three of the top 10 on the women's side were American.

More disturbing are the ranks down the list. Just 18 of the top 50 players on the men's side are American, and a mere 13 of the women's top 50 were born and raised in the United States.

This, despite a thriving junior and college golf world and a Tiger-aided cool factor that has made golf more enticing to top athletes. And thanks to lax United States Golf Association rules on amateur status, burgeoning talents rarely pay for equipment anymore.

Programs such as The First Tee

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