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## Changing course

SUPERINTENDENTS ALTER FERTILITY PROGRAMS TO ACHIEVE BALANCE

by  
DAVID  
WOLFF

Photos also by  
David Wolff

Just a few years ago, the “lean-and-mean” mantra dictated the greens fertility programs of many golf course superintendents. The amount of nitrogen used to fertilize greens was reduced, and at the same time, heights of cut were lowered. While the quest for ever-increasing green speed has driven Stimpmeter readings to 11 feet and faster, the consequences – often including increased turf stress and disease – have been less than desirable.

However, the pendulum is starting to

swing the other way, says Bruce Clarke, Ph.D., director of the center for turfgrass science at Rutgers University in New Jersey.

“Five to six years ago, we began to see a significant increase in anthracnose on greens,” he says. “This was most likely the result of lower cutting heights and reduced amounts of nitrogen application. Where annual bluegrass is a major component of the putting surface, low mowing can deplete the carbohydrate reserves of this species, often already weakened by environmental

stress. This told us that reduced fertility and ultralow cutting heights might not have been such a great idea.”

Todd Lowe, the U.S. Golf Association agronomist for the Florida region, sees a variety of fertility programs regularly. Some courses are lush, while others are lean, but most fall somewhere in between.

“As a whole, the industry is moving to more of a spoon-feeding program of applying nutrients on a lighter, more frequent basis,” he says. “This allows superintendents



John Cunningham, golf course superintendent at The Mandarin Golf & Country Club, modified his turfgrass management program to suit the membership and be more consistent daily.



to provide the amount of nutrients they feel the turf needs. Also, the newer bentgrasses and Bermudagrasses are more prone to develop thatch.”

The most important cultural practice impacting thatch accumulation is nitrogen fertility, Lowe says, and applying a slug of nitrogen creates lush top-growth that must be worked harder to provide optimum playing conditions. It also can create friendly environments for pathogens.

Conversely, keeping the putting greens leaner provides better playing conditions on a more consistent basis, but it's easy to go overboard and keep the greens anemic, Lowe says. It forces superintendents to manage greens on the edge as food reserves in the root system are used up. Often in these conditions, fungicides are applied more to protect the weakened plant.

#### It's not the only way

Clarke, his Rutgers colleagues James Murphy, Ph.D., and graduate assistant John Inguagiato, have conducted research that shows mowing heights can be raised about 0.015 to 0.030 inch, and, with double mowing or single mowing in conjunction with rolling, will produce a green speed similar to that of a lower mowing height. The study demonstrates that lowering mowing heights isn't the only way to obtain desired green speeds.

On the other hand, too much of a good thing can cause problems. Other research indicates that while rolling greens will increase green speed when done more than once a week, turfgrass wear might be a concern when rolling frequency is increased to more than three times a week.

Inguagiato is conducting research about the best management practices for controlling anthracnose and maintaining ball-roll distance. His preliminary results show that increasing mowing height from one-tenth inch or less to 0.125 inch or higher greatly reduced anthracnose. Furthermore, an acceptable ball-roll distance at a height of cut of 0.140 inch was obtained with a mowing frequency of 14 times a week and/or rolling every other day. The combination of double cutting and/or rolling at 0.125 or 0.140 inch also reduced the severity of anthracnose considerably.

#### Balance it out

At Cutten Club Golf & Tennis in Guelph, Ontario, Canada, the fertility program



The golf course maintenance staff at The Mandarin is careful not to overwater and relies on hand-watering because the middle of the greens don't need as much water as the edges.

is designed to achieve a balance between playability and healthy turf. The push-up greens at the 75-year-old club are a mixture of *Poa annua* and bentgrass. Golf course superintendent David Kuypers tests the soil monthly, looking at nutrient levels, pH, organic matter and exchange capacities. Then he conducts a clipping analysis.

“Nitrogen is the nutrient everyone looks at,” he says. “I pay particular attention to the dry weight percentages of the clippings. For nitrogen, 4 to 6 percent is the textbook range. But to me, 6 percent is excessive; that would be very lush conditions.”

Kuypers says he keeps the greens in the healthy range, but at the low end.

“We apply an adequate amount of nitrogen, but it's not excessive,” he says. “On the other hand, we don't starve the turf. Nitrogen is the only way plants will produce carbohydrates. All the stories that came out

of the Northeast last year after their devastating summer pointed to carbohydrate starvation as the cause of the collapse of the plants. It's just like a human being. If you starve yourself for a long time with poor nutrition and then there's a stressful period in your life, you can collapse.”

Playability is another reason Kuypers stays in the lower end of nitrogen fertility.

“If there's a target range, we'd rather be on the leaner end for control purposes,” he says. “We can always add more nitrogen if an issue comes up, such as a low growth rate. However, we can't stop the grass if it's going. Excess growth can be just as much a negative. We use short-residual, low-rate nitrogen in the spray tank. We monitor nitrogen levels weekly to make sure they're adequate. We do a lot of tissue testing and alter our inputs based on the results.”

The goal at Cutten Club is to create



The fertility program at Cutten Club Golf & Tennis is designed to achieve a balance between playability and healthy turf.



the smoothest, truest surface possible. So Kuypers and his staff roll greens three times a week and use growth regulators. Kuypers also gives credit to Jacobsen's E-Walk walking greens mower. The electric mower gives operators the ability to set clip frequency independent of walk speed.

"Every time you make a pass on a green, you'll miss some blades," Kuypers says. "That's one reason some courses double cut. The longer the turf is on that first pass, the more you'll miss, and the more impact that miss will have on ball roll. The more leaf tissue you try to cut off on any given day, the less clean the cut will be. If I want to affect green speed, changing the height of cut is the last thing I want to do. If we can get a good, clean cut on a healthy, dense stand of

wasted," he adds. "We can always increase fertility. Water and fertility programs are the two most important aspects of turf management. We pay a lot of attention to doing those things well. When you start to get lazy, the tendency is to overwater and overfertilize."

## Change with the times

Golf course superintendent John Cunningham has been involved in golf course maintenance for more than 30 years, and he realizes it's easy to fall into a rut of doing things the same way. However, during the past six years, he's changed his cultural programs based on changes in the industry.

"Today we maintain fairways like we used to maintain greens," says Cunningham, who also serves as property manager for The Mandarin Golf & Country Club in Markham, Ontario, Canada. "Golfer expectations have changed, and we have to adjust our methods and cultural practices. Our goal is to determine the ideal green speed for our property and membership and then be consistent. It doesn't matter what's going on at courses down the road or up the street. We modified our program to better suit the Mandarin membership and make us more consistent on a day-to-day basis. When we approach the member/guest day, for example, we don't have to dramatically ramp up conditions. We're going to stay consistent."

Cunningham tests soil annually and developed a foliar feeding program. He prefers foliar fertilizer because it's applied on the leaves of the plant, which absorbs it.

"Foliar is a much more consistent application," he says. "With granular, the operator has to walk at the same speed and take the same overlap. With foliar, we get a perfect application every two weeks, keeping the nitrogen level down so we don't get a flush of growth. I can back off on the potassium, phosphorus or micronutrients and spoon feed whatever is necessary. We stick to the program for the season based on soil test results, then reevaluate in fall."

The Mandarin, which opened in 1991, has bentgrass greens, tees and fairways. The greens were built to USGA specifications and are aerified once a year, in early September. At three-week intervals, they're verticut and topdressed.

Water management is another critical element of Cunningham's program. The staff is careful not to overwater and relies on hand-watering because the middle of the greens don't need as much water as the edges.

"Members tell us the greens are smooth, consistent and true regardless of their speed,

which can be slowed by topdressing," Cunningham says. "That seems to matter most to members."

## A different focus

Despite the popular "lean-and-mean" mantra, Chris Hartwiger, USGA agronomist for the Southeast region, disagrees with its premise. He says that in his area, the southern end of the transition zone, green speed isn't the focus.

"All the mid-level to high-end courses in this region have really good greens," he says. "They have converted to more heat-tolerant bentgrasses, including A-1, A-4 and Crenshaw. There is a premium on keeping turf alive during summer. The rule isn't to push green speed. No one is stealing market share over six inches of green speed. The difference is the 'wow' factor, which means exceeding customer expectations."

The best example of the 'wow' factor in Hartwiger's region is at the Atlanta Athletic Club. A few years ago, Rees Jones was brought in to renovate the Riverside Course, which received much less play than the Highlands Course, which hosted the 1976 U.S. Open and the 1981 and 2001 PGA Championships. The project included a new grassing scheme: Fairways are Zeon zoysiagrass, which has a fine leaf texture and light green color; and roughs are Tifton 10, a coarse Bermudagrass with a blue/green color.

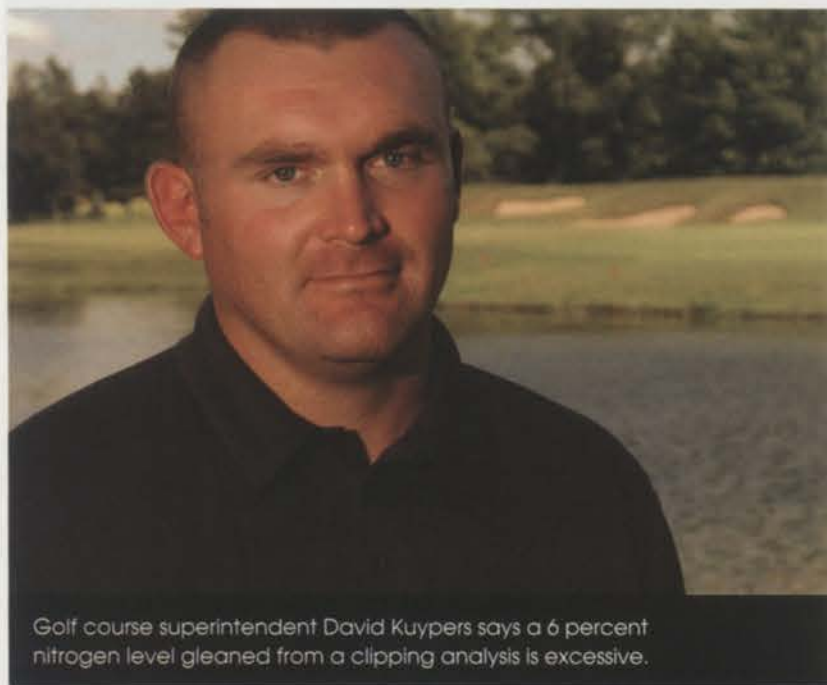
"This represents a color and texture contrast," Hartwiger says. "Golfers voted with their feet, and now more rounds are being played on the Riverside Course. Not to be outdone, the Highlands Course is being regrassed with Diamond zoysiagrass in the fairways, which has a very fine leaf blade, and Tifton 10 in the roughs. In this region, these factors take precedence over tweaking fertility programs."

## A degree of sanity

Yet fertility programs remain the heart and soul of playability and healthy turf. Clarke says the best programs are well balanced.

"It's clear the best method for maintaining green speed and turf health is a program that includes raising the height of cut, using greens rollers and implementing a program of growth regulators," he says. "This trend has brought back a degree of sanity to greens maintenance. It has heightened the awareness that mowing low isn't the only way to achieve faster green speeds." GCN

*David Wolff is a freelance writer based in Watertown, Wis. He can be reached at [dgwolff@charter.net](mailto:dgwolff@charter.net).*



Golf course superintendent David Kuypers says a 6 percent nitrogen level gleaned from a clipping analysis is excessive.

grass, speed takes care of itself. The E-Walks stand up the grass and provide a great quality of cut in one pass. We're actually getting the same results as double cutting."

This July in Guelph, the weather was hot with heavy rains, which created problems with summer patch. Extremes in nitrogen, high or low, make the plant more susceptible to this disease.

"If we are anywhere, it's low, especially after a heavy rain," Kuypers says. "Ammonium and magnesium sulfates are antagonistic to summer patch, so we came out with one-tenth of a pound of ammonium and knocked it down a bit. We raised the height of cut and took our medicine. The greens were a little slower, but they didn't die. We didn't have any turf loss from summer patch, which was key.

"Again, we want to find that balance of adequate growth and sufficient health, but not anything greater than that because it's





Winged Foot Golf Club, Mamaroneck, NY

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## Leavin' on a jet plane

DESIGNERS AND BUILDERS FIND OPPORTUNITIES ALL OVER THE WORLD

by  
JOHN  
TORSIELLO

With the U.S. golf course development pipeline constricted tighter than a Speedo on a fat guy, some in the industry are focusing more on foreign markets that are booming or poised to explode, according to golf course designers and developers. Whether it's in Asian golf hotbeds such as South Korea and China or sleepers such as Lebanon and Croatia, the world is discovering the economic significance the game wields.

"What we see in Europe is predominantly tourist and resort driven or the second home market," says Kevin Ramsey, a senior architect with Santa Rosa, Calif.-based Golfplan. "Places like Spain, Portugal, Egypt, Tunisia and Dubai are sunshine destinations for northern Europeans, much like the Southwest and Southeast are for the United States. In Asia, it's mainly resort and private club driven. There's still some real estate connected to some projects, but I don't know who is buying the stuff. Probably speculators."

About 90 percent of Golfplan's business is done overseas, Ramsey says.

"We have had some feelers from U.S. developers in Tennessee and Idaho, but there's

no real hot spot we see in the United States, per se," he says. "The economy in California is stalled and even sliding a little. There has been some money spent on rebuilding existing courses around the country, whether they're private or public, and that's keeping some people busy."

Ramsey says his coworker, Ronald Fream, is known as the "Johnny Appleseed" of golf course architects because he's usually the first one into a country.

"In fact, Ron was in Lebanon working on a course we were planning outside of Beirut when the war started," he says. "He was stuck there for several weeks, but we're still going ahead with the project. It's a beautiful piece of land near the Syrian border that luckily wasn't touched by bombs."

### Eastern Europe

Most golf course projects overseas involve much less exposure to personal danger.

"There are a lot of places overseas that had political turmoil that seems to have gone away, and their leaders are looking for ways to promote economic development," says O'Brien McGarey, president of Denver-based Dye Designs Group. "The Adriatic coast of what was formerly Yugoslavia is simply magnificent and primed for resort development. Cities and municipalities have property, and they're looking for ways to develop the land to bring tourism money into the area. One of the ways is with golf."

Robert Trent Jones II LLC has been in negotiations with individuals and officials in the former Yugoslavia, says John Strawn, the company's c.e.o.

"The two places in eastern Europe that have the strongest possibilities are Croatia and Montenegro," Strawn says. "Tourism is on the rise now that the fighting has stopped, and there's very little golf. I know Jack Nicklaus is doing the first modern golf course in Croatia, and we are in discussions with several groups to build a course there. It's a beautiful region with great history, wonderful cuisine and a long coastline. There's a need for four- and five-star resorts with golf, and I believe it will happen in the near future."

The proximity of Croatia and Montenegro to the main population centers of central and northern Europe (Croatia is within a five- or six-hour drive for more than 200 million people) makes it ideal for new resorts, Strawn says.

Eastern European countries such as Poland, Hungary and Russia are beginning to view golf as a tool to draw tourists. Currently, there's a paucity of good courses; however, there's a growing middle and upper class that's interested in the game.

### South Korea

In Asia, South Korea has been bustling with new golf course construction for more than a decade. The boom has been fueled by an increasingly financially secure middle and upper class (South Korea has the 11th-largest economy in the world) that has more free time on its hands because of labor laws that have reduced the average work week considerably. The success South Korean professionals have had on international Tours also has spurred interest in the game. Three years ago, there were 220 golf courses in the country. Presently, there are about 255.

Unlike tourism-driven development in southern and eastern Europe, the boom in golf course construction in South Korea has been a predominantly public-private partnership with cities and provinces setting aside land and sometimes funding developments, which include golf and other amenities.

On the island of Jeju off South Korea's southern coast, a favorite vacation destination for Koreans and Japanese, there are 16 golf courses, and there's a government approval to build as many as 30.

"The South Korean government really has been behind the move to make golf affordable for more of its people," says Rick Elyea, vice president of Post Falls, Idaho-based Jacklin Golf. "There are stipulations that state that even private clubs must set at least nine holes aside for public play."

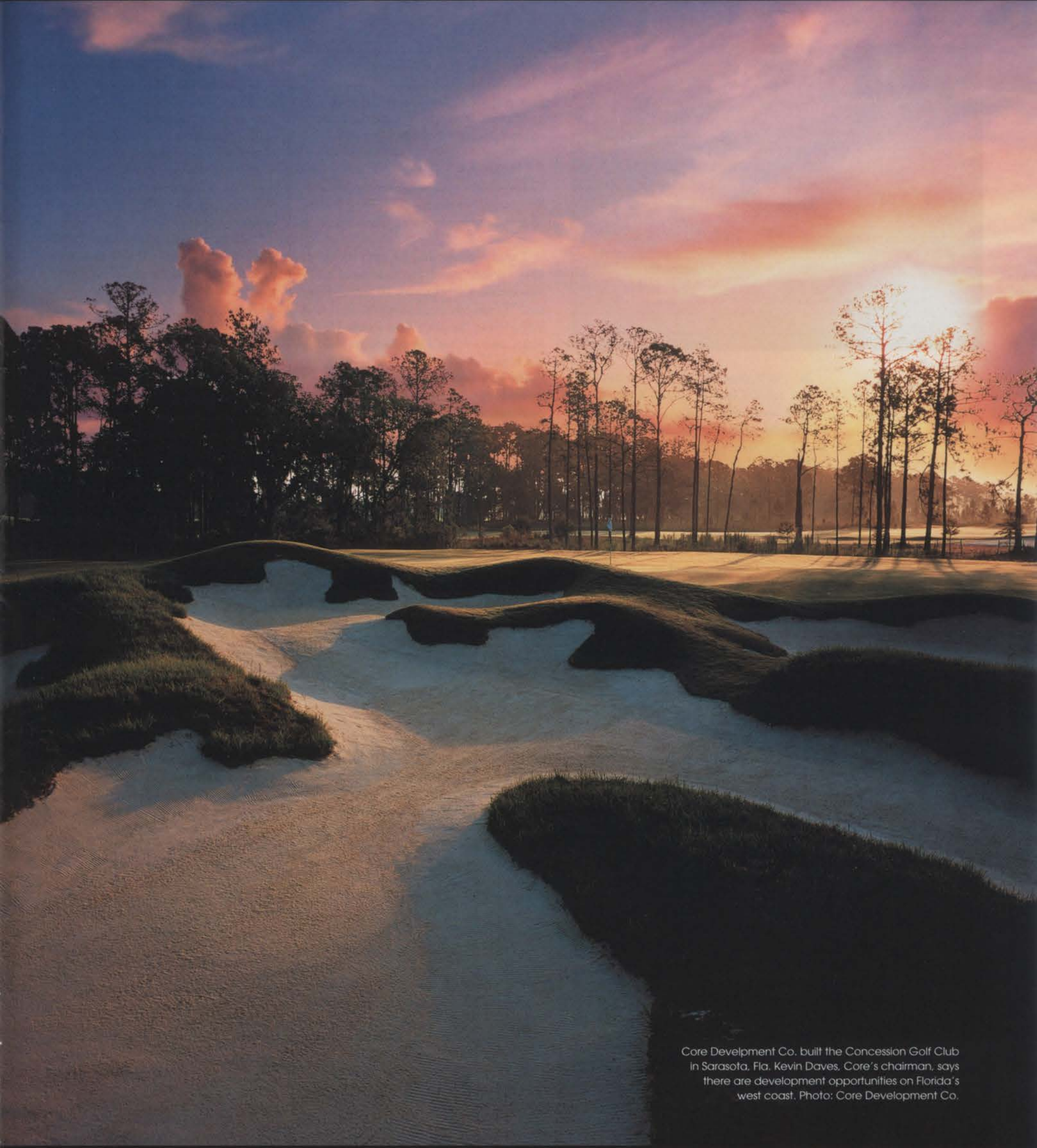
The South Korean market remains hot, McGarey says.

"My wife Cynthia (Dye-McGarey) just



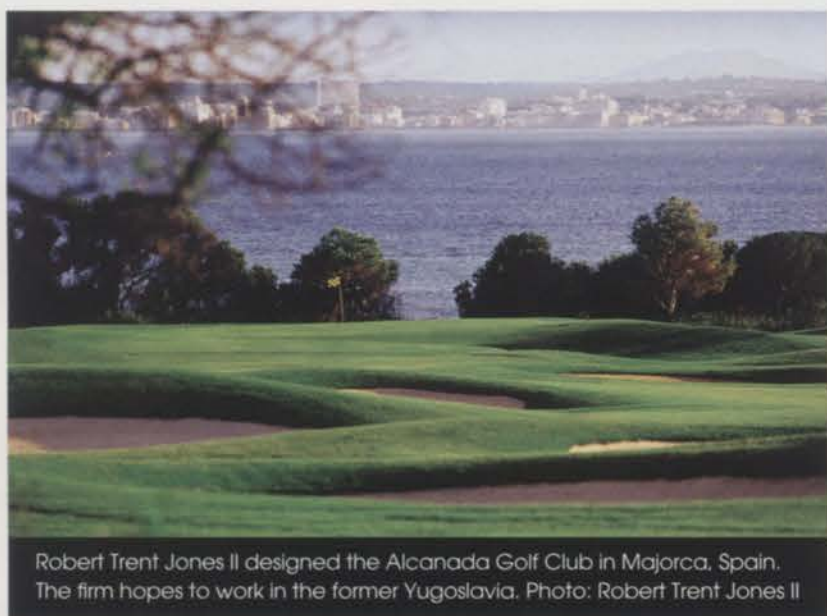
South Korea has experienced steady golf course development, which includes the Asiad Country Club in Busan. Photo: Dye Designs Group





Core Development Co. built the Concession Golf Club in Sarasota, Fla. Kevin Daves, Core's chairman, says there are development opportunities on Florida's west coast. Photo: Core Development Co.





Robert Trent Jones II designed the Alcanada Golf Club in Majorca, Spain. The firm hopes to work in the former Yugoslavia. Photo: Robert Trent Jones II

did a walk through on our latest project on Jeju called Cypress Country Club. It's 36 holes on a former cattle ranch. There's another developer who has plans for six courses and 108 holes on 2,000 acres. If there are 260 courses open now, you can bet there are another 20 to 25 under construction in the country and probably another 50 to 75 in the planning stages."

Morgan Stanley Real Estate and Gale International, a real estate developer and investor, recently reached an agreement in which Morgan Stanley will fund \$359 million of foreign direct investment for Gale's new Songdo City development project in Incheon, South Korea. The project will include a Jack Nicklaus-designed golf course.

Even the closed society of North Korea got into the act when it signed an agreement (since turned sour) last year with South Korean industrial giant Hyundai to develop three golf clubs in the inter-Korean industrial complex near Kaesong.

## Japan and Vietnam

Interestingly, the situation in Japan is similar to that in the United States. New course development is stagnant, mostly because of an enormous increase of inventory.

"Japan was building golf courses hand over fist in the mid-1980s to the early 1990s, when it was the strongest financial power in the world," McGarey says. "From 1989 to 1994, Perry Dye completed 24 courses in Japan. The Japanese started venturing out into other areas of Asia to invest in, but that stopped in the mid-1990s when their economy took a downturn. Now it's the Koreans that are going out all over Asia, investing in golf course and resort developments in places like Thailand and Vietnam. Vietnam, in particular, is on fire, but it needs almost complete foreign investment because

its economy is so weak, and it's difficult to bring deals to fruition."

Ho Chi Minh City (formerly Saigon) has four golf clubs, and Hanoi has two. The government is promoting these destinations to international travelers.

## China

China presents a potential mammoth market for new golf course development given the country's enormous population and growing economy.

"I read recently that the government of China is anticipating the building of 1,000 new courses over the next 10 years," Elyea says. "You put that against maybe 400 being built during the same time in the United States, and you see why people are looking at China."

McGarey says China is somewhat of a mystery because there had been a lot of development going on.

"A lot of the private stuff is built out," he says. "Hainan Island, which is designated as an economic tourist zone, has bounced back nicely from the economic downturn in the 1990s, and there's a pretty large degree of foreign investment on the island."

New course development in China also is being affected by the government stepping in – there are fears of corruption – and preventing about 4,000 projects, not all of them golf related.

"It's not that everyone involved corruption," McGarey says. "It's just that the government wanted to make sure everything was being done properly. The China market is a great opportunity, and it will be done smartly."

## Here at home

All the talk of potential for development overseas doesn't mean there aren't opportunities remaining for new course development in the States. The Northwest has a number of new projects up and running or in the construction phase, and the high-end market in the Southeast and Southwest remains strong, albeit predictable, Strawn says.

"Much of the new development we're seeing tends to be in those areas where there's already an existing supply," says Jim Kass, a researcher director for the National Golf Foundation.

Kevin Daves, chairman of Wichita, Kan.-based Core Development Co., developer of the ultra-high end The Concession Golf Club and Residences in Sarasota, Fla., remains bullish on Florida's west coast market.

"The last I heard there were 1,000 people a day moving to Florida, and areas of the west coast here are amazingly void of great golf

courses," he says. "In the east, they're everywhere but not in the west. You have a lot of people from the Midwest coming down the I-75 corridor landing on the west coast. Because of that, plus the fact that there aren't as many courses in the west, there's still a lot of gas left in the tank in that area."

Daves' firm also is in the initial stages of developing a large project in the Charleston, S.C., area, another area of the country he believes will see growth.

"I also see things starting to trend toward The Bahamas," he says. "Land is still decently priced, and there are a lot of small islands that are attractive locations for resorts."

Hawaii, which can almost be viewed as part of the international market because of its distance from the mainland, remains busy, says Mark Richards, president and c.e.o. of Honolulu-based The Maryl Group, a designer, developer and builder of high-end and ultra-high-end residential properties.

"The key to building overseas is having a great parcel of land to work with, and then designing and building something very different and special, but also something that's traditional in keeping with local customs and culture," says Richards, whose developments are all tied in with active lifestyle amenities.

About 95 percent of The Maryl Group's clients are from the mainland United States, and for most of them, Hawaii is a second, third and even fourth home, Richards says.

"The one challenge we have as a company is that the Hawaiian economy has been on overdrive for the last four or five years, and that has placed a serious constraint on the subcontractor market. As a result, we have had price pressures because we need to convince subcontractors they should take our work over that of another company."

## Trusting partners

Regardless of location, foreign clients are looking for the same things from a designer or developer that clients in the States want, Ramsey says.

"They're looking for value and a lot of service," he says. "Your reputation means so much in the foreign market."

It's wise to have someone on the ground when conducting business in a foreign country – someone who knows the customs and lay of the land, McGarey says.

"You want to have someone who you can trust to partner with," he says. GCN

*John Torsiello is a freelance writer based in Torrington, Conn. He can be reached at jtorsiello@megahits.com.*



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## Timber!

ASSESSMENTS AND A MANAGEMENT PROGRAM NEED TO BE IN PLACE BEFORE CUTTING DOWN AND TRIMMING TREES

by  
T.R. MASSEY

When golf started, it was played on land near seas surrounding Scotland, or so the story goes. When Scotsmen crossed the Atlantic to design courses for their American cousins, they did so in big, open fields – land resembling places they were used to playing. To them, trees were bunkers in the skies.

Nowadays, especially in parkland settings, trees play a major role on golf courses, but that role isn't always positive. Trees affect turf health and sometimes pose a threat to the well-being of workers and players. To protect turf, as well as reduce the cost of cleaning up debris and limit the liability of falling limbs, many facilities have established well-defined tree maintenance programs.

Michael Hurdzan, Ph.D., golf course architect with Columbus, Ohio-based Hurdzan/Fry Golf Course Design, believes trees should be a lightly used spice, not a red-hot chili pepper. The reason? Trees require special maintenance.

"Trees in the wrong place are nothing more

than weeds," Hurdzan says. "They complicate turfgrass maintenance and add to the cost of the game. They steal one of the things that make the game fun – wind."

Trees aren't necessarily sylvan beauties that frame golf holes. Courses can be designed without trees surrounding each green. Trees that surround greens deny turf most of its needed requirements – morning sun and air movement.

"If a tree shades your turf in the morning, you'll have problems with that turf," Hurdzan says. "Trees are competing with grass for moisture and nutrients. Less light is available, so the plant doesn't live in a healthy state. This can cause pest problems and powdery mildew. Several diseases prefer the shade, and they'll attack and weaken the turf."

The Emerald Ash borer problem plaguing the Midwest, for example, is a tree blight that might make tree programs more necessary.

"Many courses have 60 percent ash trees, and it will be like the American Elm blight from the '50s or late '40s," Hurdzan says. "Even now, up North, they still have American Elms that have to be taken down. Trees are susceptible to blight. We're not ruthless woodcutters. We're trying to manage a diversified stand of trees intelligently."

Brian Zimmerman, director of golf for the Milwaukee County Parks system that includes 15 golf courses, believes those courses are in the path of the Emerald Ash borer. He and his staff are working with the University of Wisconsin to identify trees, set up testing and collect data to see if the borer is in the area.

"Some of our properties are predominantly ash, which makes us very nervous," Zimmer-

man says. "We've tracked some of our feature trees, but that's on the radar for all of it."

### Get with the program

Tree management programs start with consulting an arborist or forester. Hurdzan suggests conducting a tree inventory and classifying the trees by type, size, age and health. A full survey of trees and shrubs should be conducted so they can be rated by condition.

Hurdzan also suggests using a GPS system to track the inventory. The user types in a code for each tree at each location and then downloads the information. The next step is to rate the trees from a playability aspect and develop an action plan to protect the trees of high value. Next, according to Hurdzan, superintendents should have a plan for lightning protection, sanitary pruning, fertilizer and clearing trees that inhibit growth.

"To say that all trees have equal value is very naive," he says. "That's like saying all geese are good. You have to tell members you have a management plan that's been put together by pros and you're looking at the long-range health of the trees and are trying to protect them."

Tree maintenance should be part of every golf course's budget, says Mike McBride, a turf consultant and renovation specialist who previously served as the superintendent at Muirfield Village Golf Club in Columbus, Ohio, for 18 years.

"Some might not have any trees, but parkland courses with mature trees have to have a line item for this," McBride says.

The first issue of a tree maintenance program is safety, regardless of the turf issues, and health is next, he says. When putting together a tree maintenance program, McBride recommends hiring an arborist to identify diseases and nutrient deficiencies because not all superintendents have that knowledge. If trees are having a degrading effect on turf, superintendents should consider removing them.

