Once we had the test results we selected tine size, spacing and blade depth based in percent organic matter test. Then I was able to determine frequency and time required to reach our desired organic matter levels.

Our program for fairway improvement for the summer of 2010 was as follows:

- Core aerate fairways 1x with ³/₄" tines on 3- inch spacing;
- Dethatch fairways with Koro machine using 3mm blades on 1" spacing;
- Koro removed cores by dumping into



"My objective was then to determine the best methods, establish frequencies and project costs that would control organic matter."

three 6-cubic-yard trailers;

- Mowed at ¾" behind Koro with rotary mower to complete clean up and scalp turf;
- Cleaned up material that was left be hind from Koro and mower;
- Mowed at ½" with reel mower to even up surface;
- Topdressed fairways and dragged in sand;
- Mowed at 7/16" to scalp and smooth surface;
- Rolled fairways with 1 ton roller; and
- Applied fertilizer and soil amendments

Labor hours totaled 312 and the budget was set at \$32,500, which included rental equipment, tines, blades, sand, fuel and fertilizer but did not include labor.

Even with the aggressive scalping, coring

and de-thatching that took place, we still were able to open five days after for member play and 21 days after the process took place the members were unable to notice anything.

The feedback has been very positive toward the playability of the fairways. The membership is noticing more ball roll, less debris on the ball after impact and faster drainage after rainfall. The Koro machine will play a part in the yearly organic removal process at Carlton Woods.

Throughout this whole process, I have really learned that we must remain proactive in educating our owners and membership that as a golf course ages the maintenance approach in providing a perfect surface needs to change as well. **GCI**

Eric Bauer is director of grounds at The Club at Carlton Woods, The Woodlands, Texas.



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WORLD TURF

Below: The author with architect David Dale, GolfPlan, at the local country club. Right: Darak Gadzinski, superintendent, who is Polish has worked in Eastern Europe. He speaks Polish, Russian, Spanish and English, a very valuable skill.



GOLF in MONGO

Freelance agronomist Jim Connolly shares his adventures in getting golf off the ground in the land of Genghis Kahn.

JIM CONNOLLY

A s I landed at the Genghis Khan Airport in Ulaanbaatar, Mongolia I thought about how little I knew about this country. Taxiing to the terminal, I looked out the window to see an array of old biplanes parked in a field, beside them were several Cold War-

era Russian Tupalev passenger jets with dismantled engines, and next to all of this were a half dozen new Lear jets that are reserved for the rich and prosperous. Mongolia – a land of extremes.

Ulaanbaatar is the coldest capital city in the world located at



40,00 feet on the rolling steppes of inner Asia with Siberia to the north and China to the south. Mongolia is rich with natural resources such as timber and vast deposits of minerals. The country is changing from a very poor country into a developing nation that is attracting foreign



MCS hired GolfPlan-Fream, Dale and Ramsey Golf Course Architects from Santa Rosa, Calif., to provide the design and spearhead the hiring of an international team of consultants responsible for delivering a world-class facility. They have designed courses in more than 60 countries, including The Club at Nine Bridges in South Korea. GolfPlan has designed courses in every corner of the globe, and can now add Mongolia to its list of exotic locations such as Nepal, and Tunisia.

GolfPlan contacted my company, JCC Ltd., to handle all agronomic issues.

My first visit to the site was in October 2009 to gather information on soils and climate and to begin the task of specifying seed, fertilizer, greens mix, mowing equipment and other agronomic issues. The climate in Ulaanbaatar is arid, with wintertime temperatures of 50 degrees below zero with summertime temperatures approaching 100 degrees. The seeding window is very narrow and any seed planted after August 15 and not protected during the winter has little chance of survival.

Mongolia's landscape of consists of millions of acres of grasslands grazed for thousands of years. Native grasses include Siberian Barley, Xerophytes, Needle grass, Wheat Grass, Feather Grass, Oat Grass and fescue. There are many wild non-grass plants such as Wild Onion, Ge-



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Far left: Heave ho on the rubber lake liner. This lake is huge, about 10 surface acres. They apply a geotextile first and then drag this liner. Top: In August, we found ice in the mainline at a depth of 3.5 meters. This is a homemade steam maker. They stuffed a pvc hose into the pipe after they cut a hole in it and then jammed the steam hose in there. Above: Fairway conditions at Chingis Khaan (Genghis Kahn) CC – tight and dry.

WORLD TURF

ranium, poppy and many small flowering plants.

Many of the golf course native areas are being planted with these varieties purchased from various Russian sources. The greens will be seeded to Jacklin Seed Co. T-1 creeping bentgrass, Kentucky bluegrass fairways and irrigated rough and a mixture of sheep, hard, and fine fescue for the rough.

Greens will be protected during the winter with heavy sand topdressing and geotextile blankets. Greens mix is 100 percent and fairways are top soiled with six inches of screened loam. The irrigation system is valve-in-head Toro 800 series heads with a Watertronics pump station.

Finding a qualified superintendent to supervise the construction, seeding and early maintenance was not easy. The applicant must be willing to work six months, take six months off during the long winter and relocate to the world's coldest capital city. He also has to tolerate occasional electrical outages, hot water shortages, speak Russian and be able to lead and train a



Jimmy Stevens (US), Bill Jackson (US), Aren Fredrikson (Canada) and Robin Gibson (US). Golf course Architects David Dale and Jim Slugocki, along with irrigation designer David Bedingfield, visit the site on a regular basis to ensure the course is being built to design specifications.

Coordinating a construction crew in a country that has no It is worth noting that Sky Resort is not Mongolia's first golf course. It is the first golf course with 100 percent grass. About an hour from Ulaanbaatar is Genghis Kahn Country Club, a par 72, 18-hole course with artificial tees and greens. The caddies direct you toward a vast expanse of brown, non-irrigated pasture leading to an artificial

"The physical and mental challenge of working in a foreign country is very high, and when communication is lacking, it can become an impossible situation."

crew with no golf construction experience or used grass for anything but grazing animals.

Enter Darek Gazdzinski. Polish born with golf experience in Spain, Canada, US and Poland. Darek speaks Polish, Russian, Spanish and English.

The physical and mental challenge of working in a foreign country is very high, and when communication is lacking, it can become an impossible situation.

Darek is directing the day-today tasks in preparation for seeding this past August and in spring 2011. Also supporting Darek is project manager Craig Brown (Australia), equipment operators

experience with golf construction or land development is a difficult task. The best outcome is to find a few local leaders who can keep over 60 workers focused on one job. Sky Resort has several projects going at once and workers are shuffled between clubhouse construction, ski slope maintenance, infrastructure development and building a golf course. The frost level is deep and sometimes lasts all year. We had to melt ice in August from a mainline 14 feet deep. This, in addition to extremely rocky soil, has complicated the golf course construction and presents some unique challenges.

carpeted green complete with carpet seams, ripples and shreds of material. It is almost impossible to stop a shot on the greens because you have to land the ball about 75 yards short of the green and hope it comes to rest on the firm and very fast putting surface. Stopping the ball on the green is like lagging a cue ball on a billiard table. The fairways are mostly composed of crispy brown weeds and a thin cover of fescue. The maintenance equipment consists of one old 5 gang Japanese fairway mower, a Craftsman belly-mount rotary and a few brooms for sweeping debris off the carpeted greens. Swing, a

Left: A local Mongol crew carries drainage stone by the bag onto a green. Below: The author on top of a ski hill with the construction site in the background.



puff of dust and off you go.

Golf follows economic prosperity and Mongolia's future looks bright due to the demand for energy, coal and mineral exports to China and Russia. Sky Resort hopes to draw clientele from foreigners as well as local people. The golf course also has a teaching academy and practice range that will grow interest in the game. Ulaanbataar population is 1.2 million and Mongolia has 3 million people and 30 million livestock. There are more than 50 foreign embassies in Ulaanbaatar and a number of foreign teachers and business people. The ski area was opened this year and produces excellent snow due to the low temperatures. The golf course will be part of a full-service resort with spa, hotel and amenities.

Genghis Khan once said, "Meat is for man, grass is for animals." Mongolians love sport and perhaps Genghis would approve of grass being used for a sport like golf. In any event, given his reputation, I would not want to be around if he did not. **GCI**

Jim Connelly is a certified agronomist, former USGA agronomist and president of JCC Ltd.

High-flying **RENOVATION**

Even in tough economic times one U.S. Air Force course renovation soared with careful planning.

By Nathan Crace



DSTAT

There is no shortage of stories about the recent struggles of the golf industry amid a global economic meltdown – including course closures quickly outpacing new course openings. Rounds played are down, superintendents and golf professionals are being laid off, and golf course homes continue to devalue as some courses close their doors for good. But rather than dwell on the negative for yet another disheartening story, why not focus on one of the bright spots in the golf course design and construction business: the Cypress Tree (West) Golf Course at Maxwell Air Force Base in Montgomery, Ala.

A decade before the economy ground to a near standstill, stimuli came packaged for mass consumption, and taxpayers each owned a little slice of GM, the US Air Force began the due diligence of a study in conjunction with the USGA to determine which base golf courses were most in need of repair with the goal being long-term savings and generating revenue. After years of study, courses in Ohio and Florida were tapped to go under the knife, followed by Bay Breeze Golf Course at Keesler AFB in Biloxi, Miss., and then Cypress Tree.

Cypress Tree's No. 7 before (top), and No. 7 after renovation.

Cypress Tree is a case study in what is possible with the right project team - owner, architect, builder, and golf course staff - and carefully detailed planning. When our firm was selected to handle the design of the Cypress Tree project, we were still finishing the Bay Breeze project in Biloxi. The scope of work for the two projects was similar in nature: the focus was on improving greens and bunkers using "repair by replacement to current industry standards." However, the funding for Cypress Tree was considerably less - about \$650,000 to renovate 19 green complexes, greenside bunkers, irrigation green loops, sprigs and sod - with constraints on maximum aggregate and individual green sizes, the number of bunkers and one last thing - it all had to be completed and grassed in 16 weeks before the fiscal year ran out.

While a number of "signature" architects have recently discussed being forced to take on much smaller projects to keep their staffs busy, over the last 15-plus years of my career I have been no stranger to tight construction budgets and felt as though our firm was up to the task. We have built a reputation for our firm by squeezing \$1.25 out of every \$1 we have been budgeted and we have yet to be given carte blanche on any project. I knew the Cypress Tree project would work if we could establish two critical points up front. First, we would have to build the new greens to "California" greens specifications instead of USGA specs. The Air Force allows for using this construction method and I had designed a number of renovation projects in the recent past using variations of this method as a means of cutting cost without cutting quality.

Secondly, we would have to provide the contractor and myself with more flexibility not only in the design, but also in the construction methodology to be utilized and timing of the schedule. Before we came on board, the prevailing thought regarding the project for some at the Air Force was to simply core out the existing greens and rebuild them to USGA specifications using the existing contours, install new irrigation green loops, and "re-dress" the bunker faces and install new sand – all done without disturbing any areas between the greens and bunkers. Given my experience with similar projects – and as the son of a lifelong general contractor – my gut instinct was that forcing a contractor to dance around nineteen green cores and nearly thirty separate bunkers would require a tremendous amount of hand labor and headache for the contractor, thus adding additional cost to the project.

Additionally, the base would not allow stockpiling of the material so the contractor would be required to haul the cored out material off base, adding a tremendous amount of hauling cost and damage to the rest of the course. Conversely, my solution was to treat each green complex as nineteen separate yet interconnected work sites. We would use the material from each existing green to build the new surrounds and bunkers in that complex, eliminating the cost of hauling off material and providing much needed fill for creating the mounding and contours I felt were necessary. As a result, my design called for the complete razing and re-shaping of each



"Cypress Tree is a case study in what is possible with the right project team – owner, architect, builder, and golf course staff – and carefully detailed planning."

green complex to create a newly-designed green and bunkers - we could have neither more nor fewer total bunkers than we found on the existing course, though we could move the bunkers between holes if needed. This enabled the contractor to move a small dozer and shaper into a green complex and work within the limit of work without having to dance around dozens of areas that were off limits and smoothly transition the new bunkers, greens, and mounds into the surrounding topography to produce a natural and appealing finished look. While some degree of hand labor on every course may be inevitable, I have long held that the end result of one of my renovation projects should be the reduction - and not the increase - of the cost of subsequent daily maintenance. To that end, my bunker design style calls for semi-flat bottoms



Bottom: Hole No. 13 before renovation. Left: Hole No. 13 after and sodded faces. This not only eliminates a good deal of hand labor from raking up flashed faces, but it also does not require expensive bunker matting material to be installed. The old bunkers on the West course were eyesores typical of their day which held water after a rain and were costly to maintain. Allowing us to treat the entire green complex as one single work area enable us to remedy that problem while transitioning into the green surfaces seamlessly.

Lastly, the timing of the project was critical. With time running out to complete the project, I put the project out for bid in late summer with the construction start date set for Jan. 2. I knew some golf course contractors in the Southeast would be wrapping up projects at that time and looking for projects for the coming year. Even though the contractor would only have 16 weeks to finish the project, I hoped securing a contract early before contractors began really chasing projects for the coming year, we could nail down a better price. The gamble paid off. Not only did we secure a bid within our tight budget number, but we also did so with one of the country's most respected golf course contractors.

I cannot say enough about the project team members for the project who each enabled the work to be completed in just four months and within budget. Golf course superintendent Glenn McWhirter and his staff did a tremen-



dous job of aiding me in monitoring construction and growing-in the course before opening day. The Air Force Center for Engineering and the Environment (AFCEE) based in San Antonio served as the USAF representative for the project and Contracting Officer, working closely with me in the administration of the project from conception to completion, and kept the project moving forward despite the typical unforeseen circumstances that those in our line of work run into on nearly every renovation project. The general contractor and golf course contractor - Texas-based E2M, and Nebraska-based Landscapes Unlimited - were superb in the professionalism and quality of their work and the finished project looks like we had a budget twice as large as the actual budget.

The project at Cypress Tree proves that opportunities still exist for moderately-priced renovation to existing courses even in these economic times with the proper planning and the right project team. There may be far fewer new courses opening these days, but existing courses cannot be allowed to become stagnant and rest on their laurels waiting for things to get better. Clubs and public course must be proactive because there are still core golfers who play regularly and are shopping for better value and opportunity.

This could prove to be an excellent time for you to invest in carefully-planned and conservatively-funded capital improvement plans at your course that may prove to be the difference between struggling financially or attracting new golfers from other facilities that are forced to cut back. Some projects such as bunker renovations, improving green complexes, or upgrading your irrigation will actually be a cost savings in daily operations with a quick return on investment, and the right improvements attract the golfers who will help to pad your bottom line - thus preventing continued budget cuts, layoffs, and the defection of members for private facilities and players for public courses. Instead of asking "Can we afford renovations right now?" perhaps the better question really is "Can we afford not to look at renovations?" GCI

Nathan Crace is the principal at Watermark Golf/Nathan Crace Design.



MORE ADVANCED



Travels With

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He shares 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.

THE VANHERAKER

A very efficient way to help eliminate hand raking of leaves and putting branches into piles, where the idea actually came from a dream, was envisioned and designed by Jim VanHerwynen, CGCS, at the South Hills Golf and Country Club in Fond du Lac, Wis. The seven Union Tools plastic rakes are two feet wide each with squared-off bottoms and they are attached to the plywood with 2-inch muffler clamps and one bolt with washer. The rakes intentionally overhang each end of the plywood so the rakes will not snag. The plywood is positioned at a 30-degree angle and it is lag bolted to a 4 x 4 that is lag bolted to a 2 x 8 plank. The 2 x 8 is then held together to the square metal plate with a "c" clamp to the framework that was already mounted on the Toro Sand Pro. Two large springs from an old mower deck were used to provide resistance when needed. The shovel handles, which raise and lower the rakes, were used ones that were shaved-down and bolted to the square steel tubing arms. The rake is held in the up-position for transporting by simply putting a bolt into the right side of the welded metal framework.



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.



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PARTING SHOTS



Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 330-523-5384.

TRUTH AND CONSEQUENCES

H ave you ever heard the story about the Australian rabbits? Way back in the 1850s, an English transplant to the then-colony decided to release a dozen rabbits into the area to hunt for fun. This fine fellow, Thomas Austin, wrote at the time: "The introduction of a few rabbits could do little harm and might provide a touch of home, in addition to a spot of hunting."

A lovely thought...except those 12 rabbits proceeded to do what rabbits do best and, within a decade, there were millions of those adorable little fur balls hopping around the territory eating everything in sight. They devastated crops and defoliated the landscape, leading to erosion, flooding and a massive change in the ecosystem.

Thus was born the "Law of Unintended Consequences." It's kind of like Murphy's Law only it usually involves negative side-effects from a seemingly positive act.

In our happy little business, it helps us understand why perfectly good pesticides sometimes promote the development of impossible-to-kill resistant species. It partly explains why the huge construction boom in the '90s is now recognized as a crushing oversupply of courses. It is the reason that doing the right thing for the long-term enjoyment of your golfers (e.g., aerification) can cause anger or occasionally even unemployment.

So, here we are in the 21st century – 160 years after Mr. Austin's faux pas – and we once again find ourselves up to our elbows in rabbits. Specifically, I refer to the unique problem facing local chapters right now.

A decade ago, as part of a massive overhaul of GCSAA's governance structure, a new rule was put forth and enacted that required reciprocity for memberships. In short, if you were a member of a GCSAA-affiliated chapter, you also had to be a member of the national, and vice versa.

It was a great idea at the time. Even

curmudgeons like me supported it. It created an incentive for more superintendents to come into the "big tent" of the national. It helped chapters professionalize their operations, draft legitimate charters and benefit more from GCSAA's programs. The "carrot" held out by the national leadership was broadly welcomed by most chapters who desperately wanted the help. Affiliation was a pain in the butt, but it was deemed as worthwhile for nearly all local associations.

At the time, a few members grumbled about the fact that instead of just paying their local dues of \$50 or \$100, file member – a guy making \$38,000 a year at a daily-fee in Nebraska – is struggling just to get by like everyone else. Education, meetings and big conferences are a luxury when you're wondering how to pay the mortgage.

I've talked to many chapter leaders over the past year about how they're dealing with this. They're cutting back on activities, going digital with their newsletters and doing other smart things to manage on a limited budget. But what really concerns them is the membership renewal cycle that's going on right now. They have many folks who they're carrying as members

"So, here we are in the 21st century – 160 years after Mr. Austin's faux pas – and we once again find ourselves up to our elbows in rabbits. Specifically, I refer to the unique problem facing local chapters right now."

they were paying national dues of another \$300 or whatever. For supers at mom-and-pop operations where those dues often came out of the individual member's pocket, it was a strain. But, golf was booming, jobs were plentiful and most didn't balk. National and chapter membership grew.

Then the golf economy began to sag and facility budgets really got hit hard in late 2008 and 2009. Predictably, one of the first line items to get zeroed-out at many courses was the dues and education budget. Suddenly many superintendents – not just those at limited-budget facilities – were faced with the unhappy prospect of reaching into their own pockets for dues. And paying both local and national dues was tough.

Let's face it: when it comes to a choice between paying your professional association dues or paying the rent, there is no choice. That's the reality for many superintendents who aren't making six-figure salaries at upscale clubs. The typical rank-andwho haven't paid dues in a while. At some point, they have to kick them out or reclassify them as "inactive."

GCSAA has already seen a 15-percent reduction in membership over the past few years and I suspect the conclusion of this dues cycle will reduce the total a bit more. But, with all due respect to the national, chapters are the heart and soul of the profession. Local education, local agronomic knowledge and local networking are vastly important to the average superintendent... particularly when times are tough and cheap, creative ideas are the order of the day.

So, the Law of Unintended Consequences has reared its ugly head within our association structure. The dual affiliation concept that was so promising a few years back now threatens to shred the very fabric of professionalism in our business. Perhaps it's time to reconsider – or at least temporarily suspend – that rule to make sure we don't lose the very folks we wanted to bring into the fold. **GCI**